

Catalog 1992-1993

NORTHERN
VIRGINIA
COMMUNITY
COLLEGE





CURRICULUM CODES

Non-Degree-Seeking Students—Select your major area of interest from the following list. Place the curriculum code of your choice in item I on the Application for Admission form.

Degree-Seeking Students—Select your major field of study from the following list. Place the curriculum code of your choice in item I on the Application for Admission form.

Codes

Associate in Arts:

- 15290 Fine Arts, AL, AN, LO, MA, WO
- 16480 Liberal Arts, AL, AN, LO, MA, WO
- 16489 Liberal Arts/Art History, AL, AN, LO, MA, WO
- 16486 Liberal Arts/International Studies, AL, AN, LO, WO
- 1648A Liberal Arts/Music, AL, AN, LO
- 16487 Liberal Arts/Philosophy, AL, AN, WO
- 16488 Liberal Arts/Religion, AL, AN, WO
- 16482 Liberal Arts/Speech Communication, AL, AN, LO, MA, WO
- 15550 Music, AL, AN, LO

Associate in Science:

- 16980 Art Education, AL, AN, LO, MA, WO
- 12130 Business Administration, AL, AN, LO, MA, WO
- 12460 Computer Science, AL, AN, LO, MA, WO
- 18310 Engineering, AL, AN
- 18311 Engineering/Electrical Engineering, AN
- 16990 General Studies, AL, AN, LO, MA, WO
- 18800 Science, AL, AN, LO, MA, WO
- 18802 Science/Mathematics, AL, AN, LO, MA, WO

Associate in Applied Arts:

- 65300 Fine Arts, AL, AN, LO, MA, WO
- 65301 Fine Arts/Photography, AL, LO, WO
- 65590 Music, AL, AN, LO
- 65591 Music/Jazz/Popular Music, AL, AN, LO
- 65592 Music/Sacred Music, AL, AN, LO

Associate in Applied Science:

- 62030 Accounting, AL, AN, LO, MA, WO
- 62480 Acquisition and Procurement, AL
- 64000 Administration of Justice, AL, AN, WO
- 69040 Air Conditioning and Refrigeration, WO
- 69010 Architecture, AL, AN, MA
- 69090 Automotive Technology, AL, MA
- 69091 Automotive Technology/Diagnostician, AL, MA
- 69050 Aviation Technology, MA
- 69051 Aviation Technology/Career Pilot, MA
- 62120 Business Management, AL, AN, LO, MA, WO
- 62121 Business Management/International Business, AL, AN, LO
- 69150 Civil Engineering, AL, AN
- 69151 Civil Engineering/Land Surveying, AN
- 65130 Communication Design, AL, LO
- 65135 Communication Design/Computer Graphics Design, AL, LO
- 65133 Communication Design/Illustration, AL, LO
- 62341 Computer Information Systems/Microcomputer Usage, AL, AN, LO, MA, WO
- 62342 Computer Information Systems/Programming, AL, AN, LO, MA, WO
- 62343 Computer Information Systems/System Analyst, AL, AN, LO, MA, WO
- 62344 Computer Information Systems/Technical Support, AL, AN, LO, MA, WO
- 69170 Construction Management Technology, AL, MA
- 61180 Dental Hygiene, AN
- Dietetic Technology (See Hotel, Restaurant and Institutional Mgmt.)
- 66360 Early Childhood Development, AL
- 69810 Electronics, AN, WO
- 69811 Electronics/Computer Technology, AN, WO
- 61460 Emergency Medical Services Technology, AN
- 64270 Fire Science Administration, AN
- 64275 Fire Science Administration/Fire Protection Technology, AN
- 64272 Fire Science Administration/Fire Science Investigation, AN
- 64020 Gerontology, AL
- 63350 Horticulture Technology, LO
- 63351 Horticulture Technology/Floriculture, LO
- 62350 Hotel, Restaurant and Institutional Mgmt., AN
- 62354 Hotel, Restaurant and Institutional Mgmt./Dietetic Technology, AN
- 62351 Hotel, Restaurant and Institutional Mgmt./Food Service Mgmt., AN
- 62352 Hotel, Restaurant and Institutional Mgmt./Hotel Mgmt., AN
- 64800 Human Services Associate, AL
- 65200 Interior Design, LO
- 62600 Legal Assisting, AL
- 62510 Marketing, AL, AN, WO

Codes

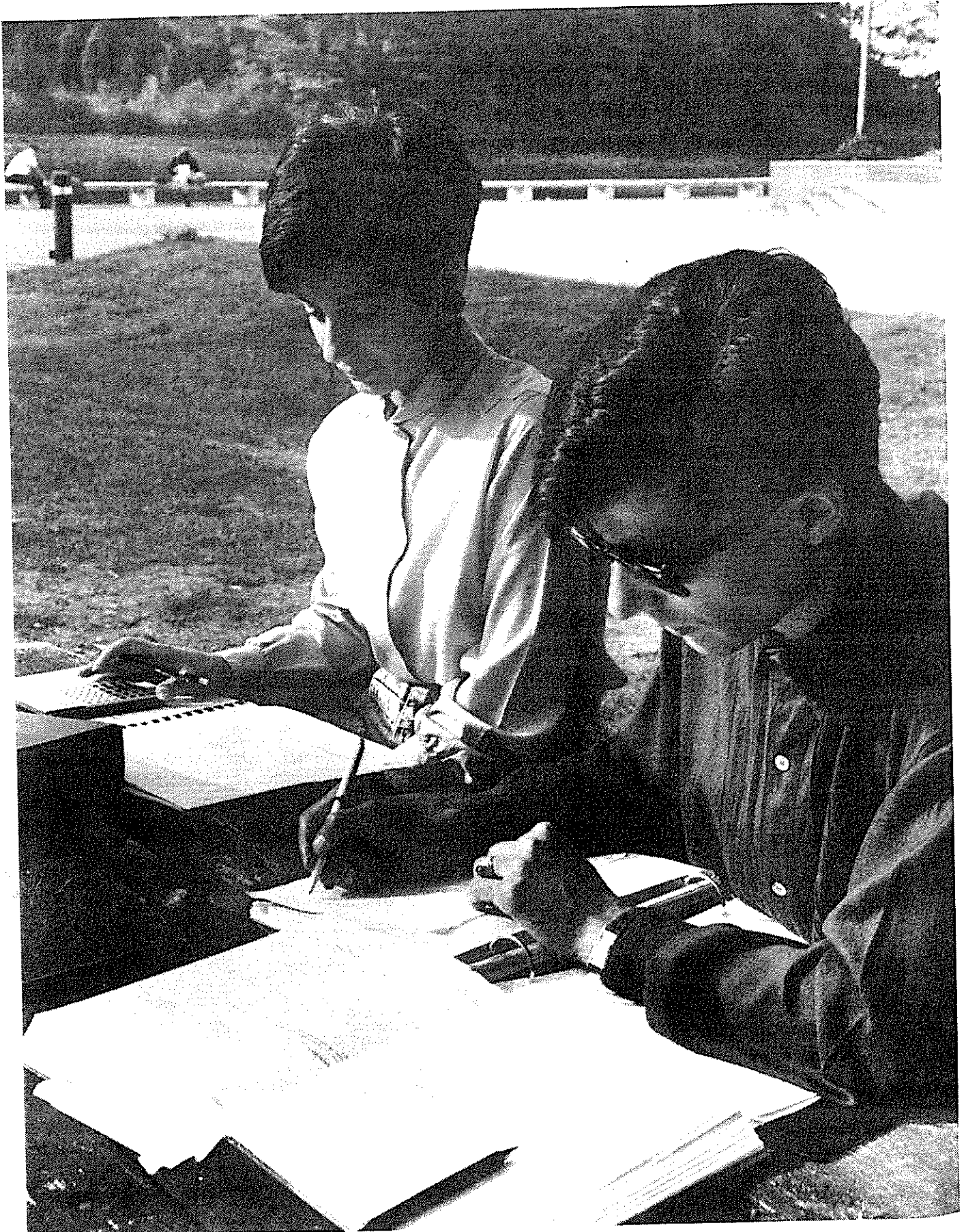
- 62511 Marketing/Fashion, AL, AN, WO
- 69560 Mechanical Engineering, AN
- 69562 Mech. Engineering/Computer-Aided Drafting and Manufacturing, AN
- 69561 Mech. Engineering/Electro-Mechanical Technology, AN
- 61510 Medical Laboratory Technology, AN
- 61520 Medical Record Technology, AN
- 61560 Nursing, AN
- 62250 Office Administration and Management, AL, WO
- 62940 Office Systems Technology, AL, WO
- 62942 Office Systems Technology/Executive Secretary, AL, WO
- 62944 Office Systems Technology/Word Processing, AL, WO
- 65020 Photography, AL, LO
- 65021 Photography/Studio Photography, AL, LO
- 61800 Physical Therapist Assistant, AN
- 61720 Radiography, AN
- 62720 Real Estate, AL, AN, MA
- 64600 Recreation and Parks, AN
- 61810 Respiratory Therapy, AN
- 64700 Security Administration, AL, AN, WO
- 64010 Substance Abuse Rehabilitation, AL
- 62490 Travel and Tourism, AN
- 61880 Veterinary Technology, LO

Certificate:

- 44060 Administration of Justice, AL, AN, WO
- 49030 Air Conditioning and Refrigeration, WO
- 49300 Architectural Drafting, AL, AN, MA
- 49080 Automotive Body Technology, AL
- 49100 Automotive Driveability, AL, MA
- 49840 Automotive Electrical Technician, AL, MA
- 49660 Civil Engineering Technician, AL, AN
- 49180 Construction Inspection, AL, MA
- 46320 Early Childhood Development Assistant, AL
- 46380 Early Childhood Education/Child Home Care (Nanny), AL
- 49250 Electronics Technician, AN, WO
- 41450 Emergency Medical Services Technology, AN
- 49220 Engineering Drafting, AL, AN, MA
- 44281 Fire Protection Technology, AN
- 44282 Fire Science Administration, AN
- 44283 Fire Science Investigation, AN
- 42410 Hotel, Restaurant and Inst. Management/Food Service Mgmt., AN
- 42400 Hotel, Restaurant and Inst. Management/Hotel Mgmt., AN
- 49520 Machine Tool Operation, AN
- 45570 Music Recording Technology, LO
- 42180 Office Systems Technology, AL, WO
- 42650 Professional Writing for Business, Government and Industry, AL, AN, WO
- 42730 Real Estate, AL, AN, MA
- 41820 Respiratory Therapy, AN
- 47010 Site Management, AL, AN, MA
- 42320 Small Business Management, AL, AN, LO, MA, WO
- 44030 Substance Abuse Rehabilitation Counselor, AL
- 42430 Travel and Tourism, AN
- 49950 Welding, MA

Career Studies Certificate:

- 4221T Air Conditioning and Refrigeration, WO
- 4222A Automotive Machinist, AL
- 4221B Cardiac Care Technician, AN
- 4221X Desktop Publishing, AL, WO
- 4221Y Fitness Instructor, AL, AN, LO, MA, WO
- 4221W Histotechnology, AN
- 4221V Industrial and Commercial Security, AN, WO
- 4221Z International Business, AL, AN, LO
- 4221U Landscape Technician, LO
- 4221N Medical Office Assisting, AN
- 4221P Microcomputer Repair, AN, WO
- 4221Q Microcomputer Usage, AL, AN, LO, MA, WO
- 4221L Phlebotomy, AN
- 4221K Physical Security, AL, AN, WO
- 4221J Turf and Grounds Management, LO
- 4221R Welding/Advanced Techniques, MA
- 4221S Welding/Basic Techniques, MA



Quiet corner for study

PRESIDENT OF THE COLLEGE

Richard J. Ernst

NORTHERN VIRGINIA COMMUNITY COLLEGE BOARD

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It is the policy of the Virginia Community College System to maintain and promote equal employment and educational opportunity without regard to race, color, sex or age (except where sex or age is a bona fide occupational qualification), religion, handicap, national origin, or other non-merit factors. Inquiries concerning the affirmative action policy should be addressed to the College's Coordinator of Affirmative Action and Minority Affairs, whose office is located in the Brault Building at the Annandale Campus (323-3266).

Administrative Offices

Brault Building

4001 Wakefield Chapel Road

Annandale, Virginia 22003

Telephone: (703) 323-3000

Alexandria Campus

3001 North Beauregard Street

Alexandria, Virginia 22311

Telephone: (703) 845-6200

Annandale Campus

8333 Little River Turnpike

Annandale, Virginia 22003

Telephone: (703) 323-3000

Loudoun Campus

1000 Harry Flood Byrd Highway

Sterling, Virginia 22170

Telephone: (703) 450-2500

Manassas Campus

6901 Sudley Road

Manassas, Virginia 22110

Telephone: (703) 257-6600

Woodbridge Campus

15200 Neabsco Mills Road

Woodbridge, Virginia 22191

Telephone: (703) 878-5700

Extended Learning Institute

(Mailing Address)

8333 Little River Turnpike

Annandale, Virginia 22003

Telephone: (703) 323-3368

For those who live in the Metropolitan area, where Manassas or Woodbridge may be a long-distance call, a Metro number is provided—323-3000. Ask for the campus and extension.

Manassas	ext. 6600
Woodbridge	ext. 5734

The following is a list of telephone numbers for Telecommunication Devices for the Deaf (TDD):

Alexandria Campus	(703) 845-6016
Annandale Campus	(703) 764-6415
Loudoun Campus	(703) 450-2548
Manassas Campus	(703) 368-3748
Woodbridge Campus	(703) 878-5790
Extended Learning Institute	(703) 764-6711



COLLEGE CALENDAR

FALL SEMESTER 1992

16-Week Session

Classes Begin	August 24
Last Day to Apply for Graduation	September 4
Labor Day Holiday	September 5-7
Non-Instructional Day/No Classes	October 12
Last Day to Withdraw Without Grade Penalty	October 29
Non-Instructional Day/No Classes	November 25
Thanksgiving Holidays	November 26-29
Classes and Examinations End	December 18

First 8-Week Session

Classes Begin	August 24
Last Day to Apply for Graduation	September 4
Labor Day Holiday	September 5-7
Last Day to Withdraw Without Grade Penalty	September 28
Non-Instructional Day/No Classes	October 12
Classes and Examinations End	October 20

Second 8-Week Session

Classes Begin	October 21
Last Day to Withdraw Without Grade Penalty	November 23
Non-Instructional Day/No Classes	November 25
Thanksgiving Holidays	November 26-29
Classes and Examinations End	December 18

WINTER INTERSESSION 1993

Classes Begin	January 4
Last Day to Withdraw Without Grade Penalty	January 11
Classes and Examinations End	January 15

SPRING SEMESTER 1993

16-Week Session

Classes Begin	January 18
Last Day to Apply for Graduation	January 29
President's Day Holiday	February 15
Spring Break	March 15-21
Last Day to Withdraw Without Grade Penalty	March 25
Classes and Examinations End	May 14
Commencement Ceremony	May 14

First 8-Week Session

Classes Begin	January 18
Last Day to Apply for Graduation	January 29
President's Day Holiday	February 15
Last Day to Withdraw Without Grade Penalty	February 22
Classes and Examinations End	March 13

Second 8-Week Session

Classes Begin	March 22
Last Day to Withdraw Without Grade Penalty	April 26
Classes and Examinations End	May 14
Commencement Ceremony	May 14

SUMMER SESSION 1993

12-Week Term

Classes Begin	May 17
Last Day to Apply for Graduation	May 28
Memorial Day Holiday	May 31
Independence Day Holiday	July 3-5
Last Day to Withdraw Without Grade Penalty	July 6
Classes and Examinations End	August 6

First 8-Week Term

Classes Begin	May 17
Last Day to Apply for Graduation	May 28
Memorial Day Holiday	May 31
Last Day to Withdraw Without Grade Penalty	June 21
Independence Day Holiday	July 3-5
Classes and Examinations End	July 9

Second 8-Week Term

Classes Begin	June 14
Independence Day Holiday	July 3-5
Last Day to Withdraw Without Grade Penalty	July 19
Classes and Examinations End	August 6

First 6-Week Term

Classes Begin	May 17
Last Day to Apply for Graduation	May 28
Memorial Day Holiday	May 31
Last Day to Withdraw Without Grade Penalty	June 10
Classes and Examinations End	June 25

Second 6-Week Term

Classes Begin	June 28
Independence Day Holiday	July 3-5
Last Day to Withdraw Without Grade Penalty	July 22
Classes and Examinations End	August 6

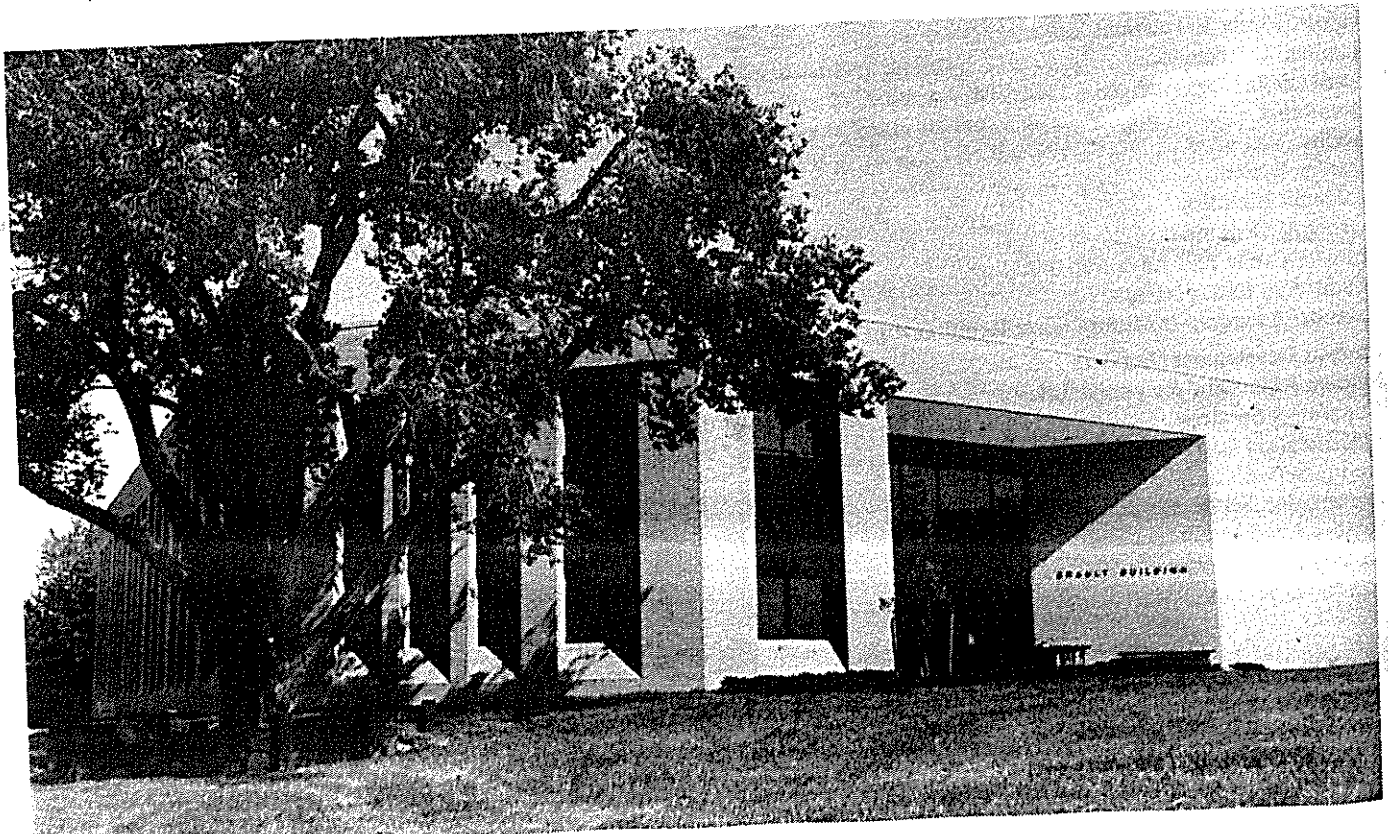
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Administrative Information	19	A— Alexandria Campus—3001 North Beauregard Street, Alexandria; 51.4 acres.	
Classification of Students	19	N— Annandale Campus—8333 Little River Turnpike, An- nandale; 76.4 acres; one mile west of Interstate Route 495 on Route 236.	
Academic Load	19	L— Loudoun Campus—1000 Harry Flood Byrd Highway, Sterling; 91.4 acres, on Route 7 at State Route 637, midway between Tysons Corner and Leesburg.	
Student Level	19	M— Manassas Campus—6901 Sudley Road, Manassas; 100.4 acres, on Route 234 between Interstate Route 66 and Route 29/211.	
Admission Requirements	19	W— Woodbridge Campus—15200 Neabsco Mills Road, Woodbridge; 109 acres, adjacent to Interstate Route 95 at State Route 642 in Prince William County.	
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College Staff

The Brault Building, 4001 Wakefield Chapel Road, is located on the northwest corner of the Annandale Campus at the intersection of Wakefield Chapel Road and Little River Turnpike (Route 236). College staff are housed in this facility, as well as in other locations on the Annandale Campus and off campus.

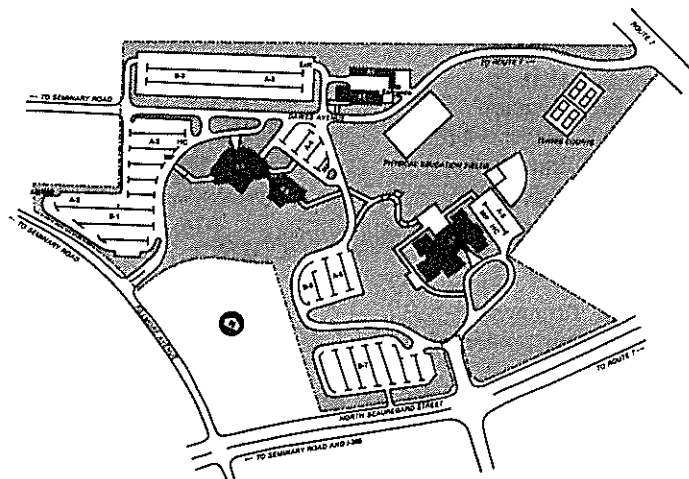
College Staff	Room	Telephone		
President Dr. Richard J. Ernst	CH305	323-3101 /3102	Director, Computing and Information Services Vincent J. Pizzurro	CT228 323-3278
Dean, Academic and Student Services Dr. Max L. Bassett	CH310	323-3195	Director, Extended Learning Institute Dr. Randal A. Lemke	ELI 210 323-3379
Dean, Financial and Administrative Services Dr. Roy Flores	CH214A	323-3122	Director, Facilities Planning and Support Services Daniel R. Wells	CW307 323-3120
Associate Dean, Curriculum Services Dr. Gary E. Ballmann	CH310	323-3198	Director, Fiscal and Auxiliary Services Stephen H. Mahood	CH214 323-3125
Associate Dean, Instructional Technologies and Extended Learning Dr. Steven G. Sachs	ELI200	323-3371	Director, Human Resources James A. Van Dyke	CH203 323-3361
Associate Dean, Planning and Institutional Effectiveness Director, Budget Director, College Relations and Development M. Charlotte Wilhelmi	CH316-D CH214 CH312	323-3273 323-3125 323-3753	Director, Telecommunications Center Dr. C. Edward Cavert Executive Director, NVCC Educational Foundation John J. Ruffino	CTM14 323-3350 CH312 323-3023
			Coordinator, Affirmative Action and Minority Affairs Everett V. Eberhardt	CH210 323-3266 CH307 323-3154
			Coordinator, Grants Development Coordinator, Institutional Research Dawit Teklu	CH316-B 323-3129
			Coordinator, Media Processing Services Sandra J. Beeson	CG112 323-3096
			Coordinator, Public Information and Publications	CH210 323-3196
			Coordinator, Student Benefits and Support Services Carol A. Mowbray	CH109 323-3199



Alexandria Campus

The Alexandria Campus is located at 3001 North Beauregard Street on a 51.4 acre site, just off Interstate Route 395 and Route 7. A major addition to the main building and an engineering building were completed for the fall of 1980. The John Tyler School was purchased from the City of Alexandria in 1980. The campus also maintains classrooms in leased, temporary facilities at other off-campus locations.

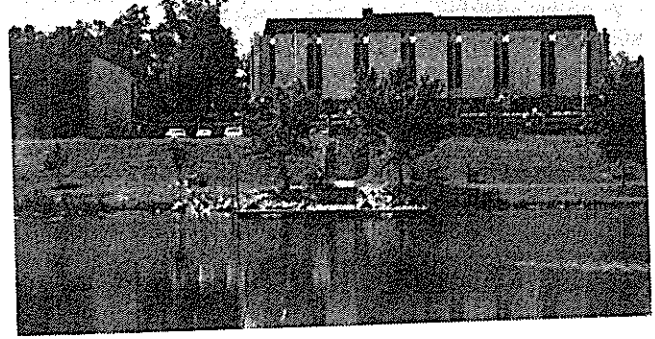
Campus Staff	Room	Telephone
Provost		
Dr. Jean C. Netherton	AA210	845-6222
Dean of Student Development		
Dr. John H. Popeck	AA216	845-6219
Chair, Division of Science and Applied Technologies		
Dr. Craig S. Washington	AE209	845-6263
Chair, Division of Business		
Dr. Fay R. Avery	AA373	845-6314
Chair, Division of Humanities		
Dr. Elaine C. Niner	AA263	845-6206
Chair, Division of Social Sciences		
Dr. Elizabeth L. Johns	AA273	845-6214
Chair, Division of Visual and Performing Arts		
Dr. Rudolph J. Fiorillo	AT246	845-6244
Admissions and Records		
Suzanne H. Fuller	AA220	845-6217
Bookstore		
Mary Ann Mulroy	AT144	845-6221
Business Office		
Roger J. Tancreti, Jr.	AA225	845-6281
Community Services		
Rebecca W. Gates	AA366	845-6280
Continuing Education		
Dr. Nancy M. McNamara	AA239	845-6212
Cooperativg Education		
Patricia A. Rheams	AA366	845-6354
Counseling Services		
Dr. Fred J. Hecklinger	AA232	845-6301
Financial Aid		
Dr. Chalmers Archer, Jr.	AA170	845-6350
Job Counseling Services		
Bernadette M. Black	AA232	845-6245
Learning Resource Center		
Dr. Gloria P. Terwilliger	AA318	845-6254
Learning Laboratory	AA344	845-6215
Library	AA232	845-6231
Security		
Clifford H. Shelley	AA242	845-6270
Student Activities		
Amy D. Goss	AT241	845-6207
Veterans Advisor		
Hope G. Dailey	AA136	845-6352



- A—Staff/Faculty Parking
- AA—Donald L. Bisdorf Building
- AE—Engineering Building
- AM—Maintenance Building
- AT—Tyler Building
- B—Student Parking
- MP—Motorcycle Parking
- O—Official (State Vehicle) Parking
- SH—Severely Handicapped Parking
- V—Visitor Parking

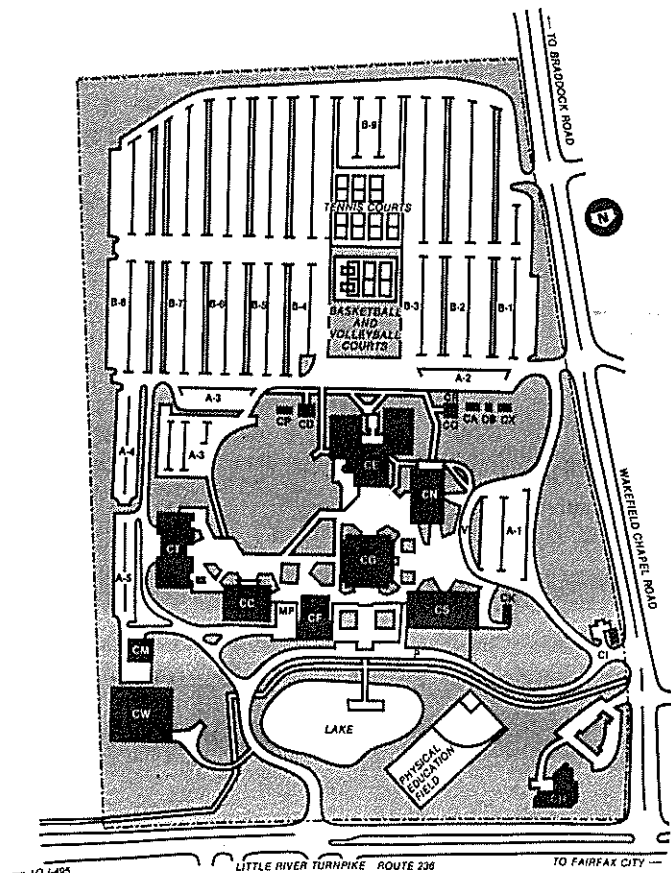
Annandale Campus

The Annandale Campus is located at 8333 Little River Turnpike on a 76.4 acre site in central Fairfax County, one mile west of the Capital Beltway, Interstate Route 495, on Route 236. This campus has the College Services Building, a Classroom Building, Science Building, Library Building, TV/Technical Building, Nursing Building, temporary Music Buildings, temporary EMT Buildings, three temporary faculty office buildings, and the Community Cultural Center.



Campus Staff	Room	Telephone
Provost		
Dr. Barbara Guthrie-Morse	CG214	323-3222
Dean of Student Development	CG205A	323-3382
Chair, Division of Business		
Dr. Sharon A. Sass	CC223A	323-3157
Chair, Division of Communications and Humanities		
Dr. Jonathan A. Yoder	CT318	323-3189
Chair, Division of Health Technologies		
Dr. Charlene W. Connolly	CN214D	323-3426
Chair, Division of Mathematics, Science, and Engineering	CS122A	323-3228
Chair, Division of Social Sciences and Public Services		
Dr. John F. Burgess, Jr.	CS203	323-3260
Admissions and Records		
Lang W. Fields, Jr.	CG211C	323-3328
Bookstore		
Tom Riposa	CG124	323-3185
Business Office		
Bob Roark	CG202	323-3131
Community Services		
Diane S. Harris	CG203A	323-3168
Continuing Education		
Dr. Kay K. Haverkamp	CG203	323-3159
Cooperative Education		
Dr. Josef R. Horowitz	CG203	323-3146
Counseling Services		
Karen A. Wray	CG216	323-3200
Financial Aid		
James R. Brunner, Jr.	CG206	323-3427
Job Counseling Services		
Wyatt McGinnis, Jr.	CG206	323-3144
Learning Resource Center		
Dr. Gen S. Chu	CG302A	323-3216
Learning Laboratory	CG407	323-3221
Library	CG300	323-3128
Security		
Roger C. Simond	CI103	323-3111
Student Activities		
Terry A. Johnson	CG103	323-3147
Veterans Advisor		
Steve C. Smith	CG213	323-3145

- A—Faculty Parking
- B—Student Parking
- CA—Temporary Building A
- CB—Temporary Building B
- CC—Classroom Building
- CD—Temporary Music Building D
- CE—Community Cultural Center
- CF—Food Services Building
- CG—Godwin Building
- CH—College Services Building
- CI—Security and Information Building
- CK—Greenhouse
- CM—Maintenance Building
- CN—Nursing Building
- CP—Parcos Building
- CQ—EMT Trailer
- CR—Radiographic Trailer
- CS—Science Building
- CT—TV-Tech Building
- CW—Warehouse
- CX—Temporary Building C
- MP—Motorcycle Parking
- P—Open Parking—Right Hand Side of Road
- V—Visitor Parking—30 Minutes

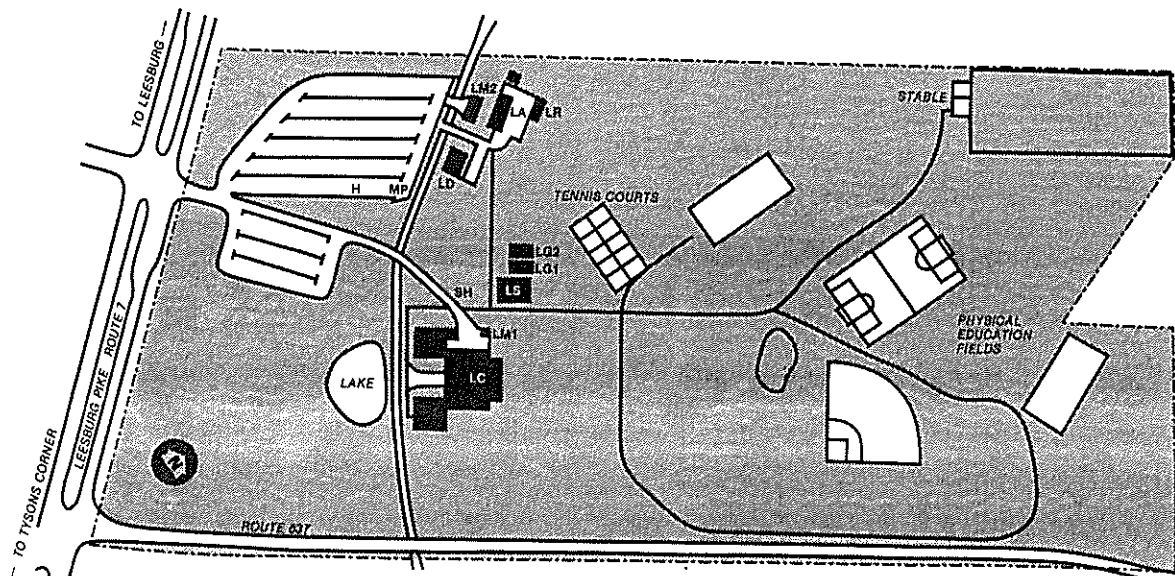


The Loudoun Campus is located at 1000 Harry Flood Byrd Highway at Sterling on a 91.4 acre site at the intersection of Route 7 and State Route 637 in Loudoun County. There are four permanent buildings, plus a temporary Interior Design Building and greenhouse/laboratories. The Loudoun Campus also supplements limited on-campus space with off-campus rentals for off-campus instruction.



Campus Staff	Room	Telephone
Provost		
Dr. R. Neil Reynolds	LC214	450-2517
Dean of Student Development		
Dr. John C. Sartorius	LC214	450-2512
Chair, Division of Communication and Human Studies	LC304	450-2527
Chair, Division of Natural and Applied Sciences		
Dr. Nancy C. Aiello	LC303	450-2575
Admissions and Records		
Barbara B. Lowe	LC220	450-2501
Bookstore		
Maureen Farrar	LC111	450-2589
Business Office		
Robert M. Thompson	LC222	450-2562
Continuing Education		
Betty J. Beyer	LC214A	450-2551
Counseling Services	LC216	450-2571
Financial Aid and Job Counseling		
Helen L. Ross	LC220	450-2537
Learning Resource Center		
Dr. Bernadine C. Thomas	LC217B	450-2566
Learning Laboratory	LC217A	450-2508
Library	LC217	450-2567
Security		
William D. Collins	LC222	450-2540
Student Activities		
Lloyd L. Wells	LC216E	450-2571
Veterans Advisor		
Jamie Nikstaitis	LC220E	450-2583

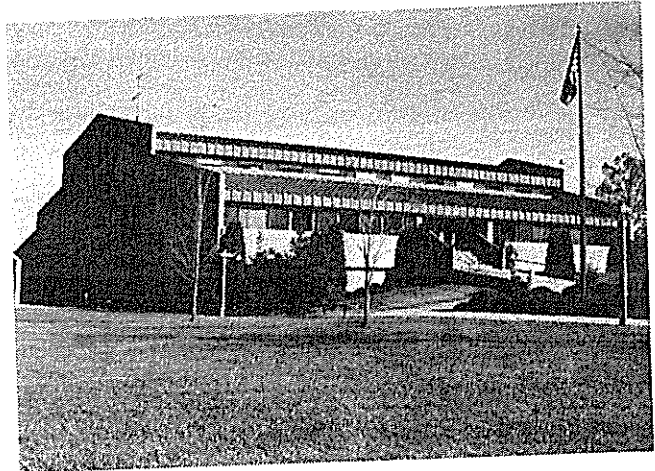
- A—Faculty Parking
- B—Student Parking
- H—Handicapped Parking
- LA—Animal Science Building
- LC—Classroom and Administrative Building
- LD—Temporary Interior Design Building
- LG1—Greenhouse 1
- LG2—Greenhouse 2
- LM1—Volatile Storage Building
- LM2—Maintenance Building
- LR—Dog Runs
- LS—Natural Science Building
- MP—Motorcycle Parking
- SH—Severely Handicapped Parking



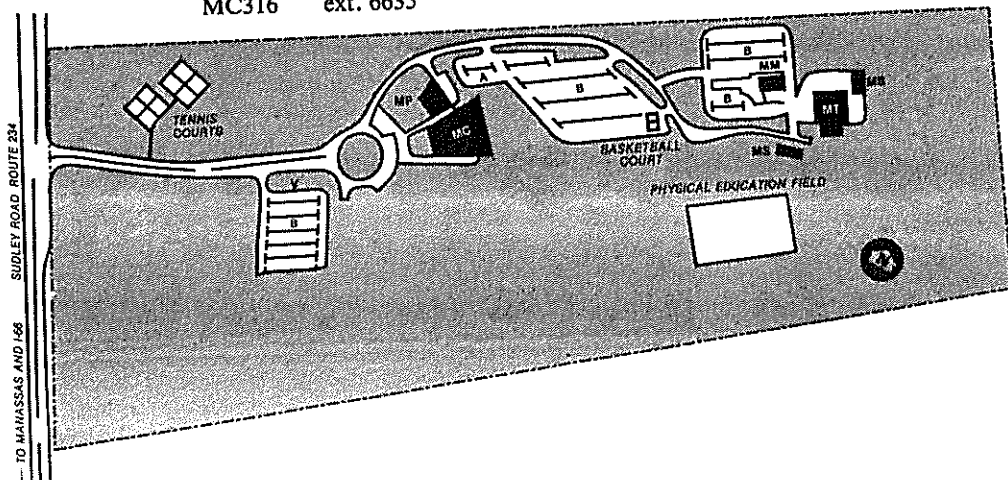
Manassas Campus

The Manassas Campus is located in western Prince William County on a 100.4 acre site at 6901 Sudley Road. The campus is just north of Interstate Route 66 on State Route 234. In addition to the main building, a power technology building provides laboratories for highly specialized programs. There is also a permanent maintenance building and a temporary Art Laboratory Building. Off-campus instruction is offered at several locations, including a local high school.

Campus Staff Campus Telephone	Room	Telephone Metro 323-3000 (703) 257-6600
Provost Dr. Gail B. Kettlewell	MC317	ext. 6664
Dean of Student Development (vacant)	MC318	ext. 6660
Administrative Intern Dr. Anthony C. Tardd	MC318	ext. 6660
Chair, Division of Arts, Humanities, and Business Dr. Arnold J. Bradford	MC404	ext. 6681
Chair, Division of Science and Technology Marilou S. Giacofci	MC404	ext. 6606
Admissions and Records Donna M. Vandevender	MC321	ext. 6624, 6623
Bookstore Bruce Evatt	MC131	ext. 6667
Business Office Nancy V. Wyatt	MC327	ext. 6628, 6627
Continuing Education M'Kean M. Tredway	MC321A	ext. 6634, 6631
Counseling Services Financial Aid Guy F. Gibbs	MC330 MC316	ext. 6610 ext. 6635
Learning Resource Center Cathy E. Sabol	MC101	ext. 6641
Learning Laboratory	MC102	ext. 6645
Library	MC101	ext. 6640
Security Candido Alicia	MC322	ext. 6650
Student Activities Nancy B. Adams	MC124	ext. 6665
Veterans Advisor Guy F. Gibbs	MC316	ext. 6635

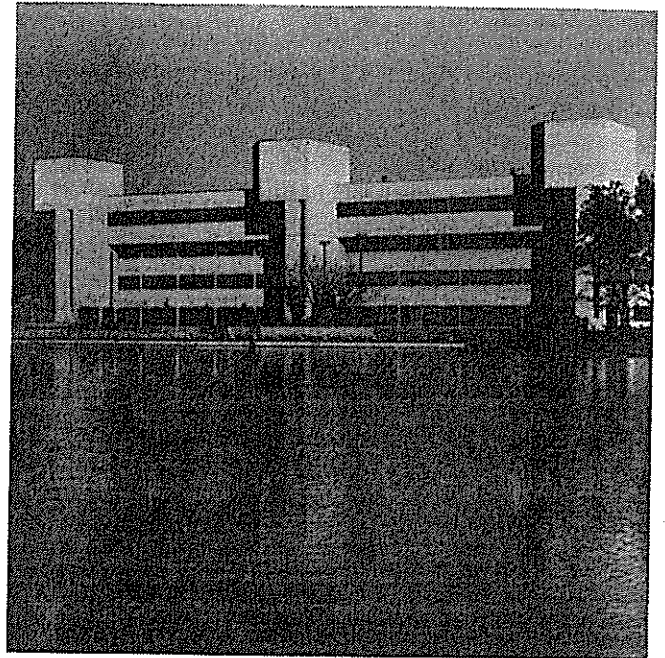


- A—Faculty Parking
- B—Student Parking
- MB—Paint Spray Building
- MC—Classroom and Administration Building
- MM—Maintenance Building
- MP—Central Plant
- MS—Temporary Art Studio A
- MT—Power Tech Building
- V—Visitor Parking

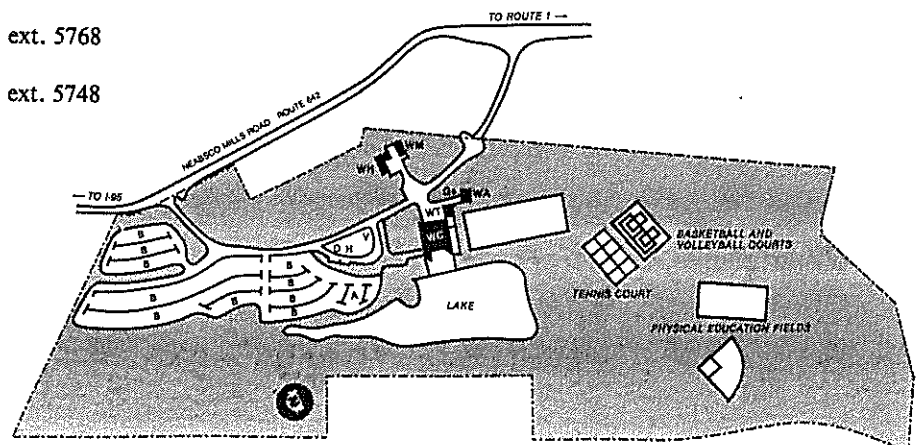


The Woodbridge Campus is located at 15200 Neabsco Mills Road on a 109 acre site in Prince William County. The campus is adjacent to Interstate Route 95. A major (Phase II) addition to the main building was completed for spring semester, 1991. The campus also has the Heating, Ventilation, and Air Conditioning (HVAC) building, the temporary Photography and Design building, and the temporary HVAC laboratory and classroom facility.

Campus Staff	Room	Telephone
Campus Telephone		Metro 323-3000 (703) 878-5700
Provost		
Dr. Lionel B. Sylvas	208	ext. 5751
Dean of Student Development		
Dr. Thomas R. Niles, II	203	ext. 5759
Chair, Division of Business and Social Science		
Dr. Mary B. NeSmith	340	ext. 5706
Chair, Division of Communications and Humanities		
Dr. Robert M. Como	436	ext. 5716
Chair, Division of Environmental and Natural Sciences		
Dr. Alan R. Clarke	279J	ext. 5740
Admissions and Records		
Susan W. Liller	213	ext. 5738
Bookstore		
Gail Pender	115	ext. 5774
Business Office		
Robert J. Warren	214	ext. 5701
Continuing Education		
Dr. James A. Mustachio	230	ext. 5754
Counseling Services	273	ext. 5760
Financial Aid		
Ervinia H. Miller	256	ext. 5726
Job Counseling Services		
Dr. Janet K. Vitalis	275B	ext. 5762
Learning Resource Center		
Dr. Gordon M. Cook	409	ext. 5728
Learning Laboratory	412	ext. 5727
Library	418	ext. 5733
Security		
Eddie C. Williams	150	ext. 5744
Student Activities		
Marcus K. Lawrence	275G	ext. 5768
Veterans Advisor		
Carol A. Baird	225	ext. 5748



- A—Faculty Parking
- B—Student Parking
- G—Greenhouse
- H—Handicapped Parking
- O—Official Parking
- V—Visitor Parking
- WA—Temporary Photo Lab Building A
- WC—Classroom and Administrative Building
- WH—HVAC Lab Building
- WM—Maintenance Building
- WT—HVAC Trailer



Extended Learning Institute

The Extended Learning Institute (ELI) provides courses for those who prefer not to attend regular classes on campus. You may be eager to learn, but find it difficult or impossible to attend regular classes when they are scheduled. Instruction for ELI courses utilizes television, audio and video cassette tapes, and printed materials designed especially for independent study.

Most ELI courses are self-paced. The maximum time allowed for completing most ELI courses is usually longer than for on-campus courses.

When taking an ELI course, you are not entirely on your own. Faculty members assigned to each course provide valuable assistance by telephone, office visits, or through the mail. When on-campus examinations are required, you may take them at any one of the five NVCC campuses.

You may register by mail and begin most ELI courses at any time, or you can register at any of the five NVCC campuses each semester. It is necessary to designate a home campus for college records and any other on-campus activities.

If you are a veteran and enroll in an ELI course, you will not be certified for benefits until you satisfactorily complete the course.

The Extended Learning Institute has no classrooms or laboratories. Student services and faculty are provided by the campuses. Offices are located on Forbes Place, off Port Royal Road, behind the Ravensworth Shopping Center in Springfield.

For additional information or assistance, see the "Extended Learning Institute Course Requirements" section of this catalog or write to the Extended Learning Institute, Northern Virginia Community College, 8333 Little River Turnpike, Annandale, Virginia, 22003. You may also telephone (703) 323-3368.

ELI Staff

Director of the Extended Learning Institute

Dr. Randal Lemke

Manager of Records and Registration

Jayne Townend

Telephone

323-3379

323-3379



NVCC Television Center produces courses for Extended Learning Institute.

The College

Northern Virginia Community College serves the counties of Arlington, Fairfax, Loudoun and Prince William, and the cities of Alexandria, Falls Church, Fairfax, Manassas Park and Manassas. NVCC strives to meet the educational and training needs of people with differing abilities, education, experiences and individual goals through a variety of curricula and community services.

Northern Virginia Community College consists of the Alexandria, Annandale, Loudoun, Manassas and Woodbridge campuses, and the Extended Learning Institute. All of the campuses provide classrooms, laboratories, student services, counseling, faculty and administrative offices, a Learning Resource Center, a cafeteria, and a student lounge.

Offices for college-wide services are on the Annandale Campus. These include the president's office, academic and student services, financial and administrative services, public relations, human resources, accounting, college records, affirmative action and minority affairs, institutional research, facilities planning and support services, veterans programs, and others. These offices provide services to all five campuses and the Extended Learning Institute.

The College operates on the semester system with 16-week fall and spring semesters and a shorter summer session.

Credit, non-credit and community service courses of the College are designed to help meet the requirements for trained manpower in Northern Virginia by cooperating with local industry, business, professions and government. Certificate and associate degree programs in occupational and technical curricula are designed to help meet this need by preparing you for the types of employment generally available in Northern Virginia.

College transfer curricula are designed for those planning to work toward a bachelor's degree. These associate degree programs offer freshman and sophomore courses in the arts and sciences for transfer to four-year colleges and universities. The developmental studies program offers courses to meet the prerequisites needed for admission to certificate and degree curricula.

Many of the curricula at NVCC are available on any campus. Some of the highly specialized programs are offered on only one or two campuses.

NVCC provides a strong counseling program to assist you in making sound decisions regarding occupational, educational and personal goals. A counselor will help you find the curriculum best suited to your interests and needs. The College also provides services in pre-college and freshman orientation, job placement, financial aid, testing, veterans affairs, and student activities.

Virginia Community College System

Northern Virginia Community College is one of 23 two-year colleges that make up the Virginia Community College System (VCCS). The VCCS was established in 1966 with a mission which complements the missions of the second

ary schools and the senior colleges and universities in the Commonwealth. The VCCS mission states:

"The Virginia Community College System functions within the educational community to assure that all individuals in the diverse regions of the Commonwealth of Virginia are given a continuing opportunity for the development and extension of their skills and knowledge through quality programs and services that are financially and geographically accessible.

The Virginia Community College System, through comprehensive community colleges, provides leadership in determining and addressing both the needs of individuals and the economic needs of the colleges' service areas.

Occupational-technical education, transfer education, developmental studies, continuing education, and community services are the primary avenues through which the mission is fulfilled. To assure that all students have the opportunity for success, each college shall provide a comprehensive program of student development services."

Administration

The governing board for all 23 colleges in the Virginia Community College System is the State Board for Community Colleges. Members of this Board are appointed by the Governor of the Commonwealth of Virginia. The Northern Virginia Community College Board provides local leadership and approves items to be recommended to the State Board for consideration. Members of the NVCC Board are appointed by the nine political jurisdictions served by the College. The local board is composed of three members from Fairfax County and one member from each of the other jurisdictions.

Members of the community also serve on curriculum advisory committees for occupational and technical curricula offered at the College. Committee members are selected from occupational fields which are directly related to the career objectives of programs at NVCC. These committees provide the guidance necessary for planning new programs and insuring that courses and programs continue to provide instruction in the skills suited for the job market in Northern Virginia.

The maintenance and operating budget for the College is provided through appropriations made by the Virginia General Assembly. The nine political jurisdictions of Northern Virginia provide local funding for the purchase of sites and site development. The General Assembly approves capital outlay funding for building construction and the initial equipment.

Statement of Values

Our Commitment:

We at Northern Virginia Community College are committed to our students, to our community, and to each other. We are committed to excellence in education and take pride in our educational mission as a significant extension of the democratic tradition, and we remain true to the ideals and principles of that cherished tradition. The foundation of our institution is the unique diversity of educational experiences we provide for the community, shaped by our dedication to teaching and learning and to the values that we share.

Our Shared Values:

Opportunity with Excellence:

We are committed to providing open access and promoting equality for all who seek to improve their lives.

We are committed to offering a wide variety of programs and services within the means of all citizens and with each having its standards of excellence.

We encourage our students to take advantage of opportunities and to seek the limits of their potential in aesthetic and cultural enrichment, technical knowledge, personal growth, understanding of the basic academic disciplines, and recreational and avocational pursuits.

Responsiveness:

We believe that the citizens of Northern Virginia, both individual and corporate, should help shape the programs, courses, and services of the College.

We are committed to listening to the community and inviting its participation in shaping the programs and services of the College.

We believe our worth as a community college is measured by the quality and timeliness of our response and service to the community.

Comprehensive Educational Programs:

We see learning as an end in itself, as the most practical means to a full life, and as essential to improve the quality of life of the individual.

We value our comprehensive programs—liberal arts and sciences, career and technical education, continuing education, developmental education, specialized educational services, and student services—and hold all to be of equal distinction and prominence.

We believe each aspect of our comprehensive educational program has high value to those served; therefore, we advocate the offering of these comprehensive services alongside each other and in a unified educational setting.

We are foremost an institution focused upon teaching—we are dedicated to teaching through varied approaches and to upholding innovation with free, open discussion of ideas and values.

Caring Environment:

We believe in the worth, dignity, and human potential of each individual who participates in the programs and services of the College.

We recognize our responsibility to build and maintain a college environment which encourages all individuals to realize their potential and to provide the diverse learning support and growth opportunities each person needs to be successful.

We are committed to maintaining a caring environment for all those associated with the College—students, faculty, staff, and the community in general.

Public Trust and Responsibility:

We are committed to individual and organizational performance which builds and maintains public trust and confidence.

We hold ourselves accountable for attaining management, operational, and fiscal practices which are efficient and effective.

We are committed to high ethical standards, assertive affirmative action, and effective involvement in and support for local community activities and economic development.

Mission and Goals

Northern Virginia Community College believes that education is the cornerstone of a free society.

In keeping with the mission of the Virginia Community College System, the mission of NVCC is to respond to the educational needs of a changing community and its institutions, ensuring that all individuals in the Northern Virginia area have an opportunity to develop and enhance their values, skills and knowledge. To achieve this mission, the following goals are established:

1. To provide programs and courses of instruction, up to the associate degree level, encompassing occupational-technical education, college transfer education, general education, developmental education, training for business and government, continuing education and community services, and experience in the work environment.
2. To provide a comprehensive program of student development services.
3. To provide a broad range of instructional methods, materials, facilities, and instructional support services that accommodate students of varied backgrounds, interests and abilities.
4. To create an educational environment that encourages and supports the highest level of performance.
5. To enhance economic, cultural and educational partnerships between the College and the community.

Programs

Northern Virginia Community College is a comprehensive institution of higher education, offering programs of instruction generally extending not more than two years beyond the high school level.

1. Occupational Technical Education

The occupational and technical education programs are designed to meet the increasing demand for technicians, clerical workers, para-professionals, and skilled craftsmen for employment in industry, business, the professions, and government. These programs, which normally require two years or less of training beyond high school, may include preparation for agricultural, business, engineering, health and medical, industrial, service, and other technical and occupational fields. The curricula are planned primarily to meet the needs for workers in the region being served by the College, but the State Board for Community Colleges may designate certain community colleges as centers to serve larger areas of the state in offering expensive and highly specialized occupational and technical education programs.

2. College Transfer Education

The College transfer program includes freshman and sophomore courses in arts and sciences and preprofessional programs meeting standards acceptable for transfer to baccalaureate

degree programs in four-year colleges and universities. NVCC transfer courses closely parallel courses at four-year institutions. Since requirements vary among four-year schools, if you are planning to transfer, you should check the requirements of the receiving institution before you plan your course of study at NVCC.

3. General Education

The courses in general education encompass the common knowledge, skills, and attitudes needed by each individual to be effective as a person, an employee, a consumer, and a citizen. These include the basic courses required of all students in the occupational and technical education program and in the College transfer program.

4. Continuing Education

Continuing Education programs are offered to enable you to continue your learning experiences. This may include credit and non-credit work offered during the day and evening hours.

5. Community Services

The College provides specialized services to help meet the cultural and educational needs of the citizens of the Northern Virginia area. These services include non-classroom and non-credit cultural events, workshops, meetings, lectures, conferences, seminars, short courses, and special community projects which are designed to provide needed cultural and educational opportunities for the citizens of the region. The College works cooperatively with other local and state agencies and with businesses interested in developing such services. The College facilities also are available insofar as possible to four-year colleges and universities desiring to offer extension programs at the level of the third and fourth year of college and of graduate education in the region, subject to the prior approval of the State Council of Higher Education for Virginia.

6. Special Training Program

Special training may be provided where specific job opportunities are available. This special training is coordinated with Virginia's economic expansion efforts and with the needs of prospective or established employers. Instruction is designed to assist Virginia residents in gaining skills necessary for entering employment and/or to retrain persons displaced from other jobs so that they may obtain gainful employment. Such special training programs shall be terminated at that point where the learning of skills ends and the development of speed in these skills begins. These programs, which are usually of a short-term nature, are tailored to fit the exact needs of a company and shall terminate when known new employment needs are met and when the primary objective stated above has been met. The training sites for these programs may be any suitable space within the Commonwealth of Virginia approved by the Virginia Community College System.

7. Developmental Studies

Developmental or preparatory courses are offered to prepare you for admission to the College transfer and occupational technical programs in the College. These developmental courses are designed to develop the basic skills and understandings necessary to succeed in other courses and curricula.

Learning Resource Centers

A Learning Resource Center at each campus provides library services, audiovisual services, and learning laboratory facilities. The materials, systems and services in the Learning Resource Center are designed to support the programs of the College and to create an environment conducive to learning. While the primary emphasis is directed towards supporting instructional programs at each campus, appropriate services are provided to citizens as a part of the College commitment to serve the educational needs of the community.

The combined College collection of more than 300,000 units of print and non-print materials is "accessed" through joint union catalogs and is available to students at any of the campuses. Books, periodicals, films, and other resources are loaned among the campuses by intercampus mail couriers.

Open stacks and immediate access to materials are common to all campuses. Books, newspapers, pamphlets, documents, and other materials are selected primarily for support of the campus instructional programs, as well as for personal intellectual growth and the development of a cultural environment. Extensive use of micro-forms for information storage and retrieval adds breadth and depth to the resources. On-line searching of bibliographic databases is available at all campuses. Access to microcomputers is available at most campuses.

Library

Each campus library offers basic reference and curricular resources, and is enriched by access to the total College collection. Staff members provide reference assistance and instruction in the use of resources.

Through regional consortia arrangements, the College ID card may be used to borrow library materials from any of the public libraries and from the other institutions of higher education in Northern Virginia.

Learning Laboratory

Systems for individual use of self-instructional materials are common to all campus learning laboratories. Individualized instruction is offered through a variety of instructional systems, including electronic study carrels and computer-assisted instruction. Testing services for placement purposes, for classes, and in support of the Extended Learning Institute are administered in the learning laboratories. Trained staff members provide access, instruction, and tutorial assistance in foundation subjects. Both specialized and generalized learning laboratories are designed to support and complement the instructional programs on the individual campuses.

Audiovisual Services

Support for classroom instruction, community services, the library, and the learning laboratory is a function of Audiovisual Services. Assistance in the technological aspects of instructional design is also provided. Reprographics and photography are available. Video and other mediated approaches to instruction are supported by Audiovisual Services.

Television Services

Television production, satellite downlinking and two-way video links among the campuses are provided by campus Audiovisual Services along with the College Telecommunications Center. The Telecommunications Center is located on the Annandale Campus and provides a complete television production, editing and transmission facility. The Telecommunications Center provides a direct link to most local cable-tv systems for credit telecourses and other College programming. The center also connects with the College's satellite uplink.

Accreditation and Recognition

NVCC is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award associate degrees, and certificates in selected occupational areas.

Curricula of the College are approved by the NVCC Board and by the State Board. The two-year, associate degree programs are also approved by the State Council of Higher Education for Virginia.

Certain curricula of the College are accredited by specialized accrediting organizations. They include health technologies programs, accredited by the American Medical Association, the American Dental Association, the National League for Nursing or the American Physical Therapy Association; the Legal Assisting program, accredited by the American Bar Association; the Veterinary Technology program, accredited by the American Veterinary Medical Association. See the individual program descriptions for additional details.

NVCC Educational Foundation

In order to supplement state and local monies, the College has established a foundation to provide additional financial support. The Northern Virginia Community College Educational Foundation, Inc., was established in December, 1979 as a nonprofit, tax-exempt 501(c)(3) charitable foundation to the College and the Virginia Community College System. Its purpose is to raise money to support the College's programs, students, and activities.

Gifts to the Foundation are tax deductible under Section 170 of the Internal Revenue Service Code and may be restricted or unrestricted. The Foundation will accept gifts of cash, securities, real estate, insurance policies, and personal property such as books and other library materials, works of art and equipment. Charitable gift annuities, remainder unitrusts, bequests, life-income plans, and memorial gifts can also be arranged for the donor's and College's benefit. Special procedures have been worked out for the establishment of scholarship funds for the benefit of currently enrolled students.

The Foundation is governed by a board of directors representing both public and private agencies and businesses in Northern Virginia. Day-to-day operations are managed by the Foundation Staff. The Foundation is located at the Brault Building, 4001 Wakefield Chapel Road, Annandale, Virginia 22003, (703) 323-3023.

Alumni Federation

Established in June, 1983, the Northern Virginia Community College Alumni Federation comprises graduates and former non-graduate students (30 credits or more) from the five NVCC campuses.

The Federation seeks to advance the growth and development of the College; to promote the personal, educational, and professional development of alumni; and to establish, encourage, and maintain a mutually beneficial relationship among the College, its alumni, and the Northern Virginia community.

Federation policy is formulated by a Board of Governors, elected annually by the membership; Federation management and operation is under the supervision of the Assistant Director of the Educational Foundation. Active committees include Publications, Scholarship, Awards, Program, Nominations-Elections-Bylaws, and Alumni Senate. If you have interest in the Alumni Federation, contact the Assistant Director of the Educational Foundation, Brault Building, 4001 Wakefield Chapel Road, Annandale, VA, 22003, at 323-2364.

History of the College

Northern Virginia Community College was established in 1964 as Northern Virginia Technical College to serve the eighth planning district. A statewide technical college system was established with 23 regions under legislation enacted by the Virginia General Assembly. Robert W. McKee was the first president.

The College opened for classes in the fall of 1965 in a renovated warehouse at Bailey's Crossroads. The initial enrollment was 761, served by a faculty and staff of 46. Enrollment for the 1966 fall quarter increased to 2,226 students.

The College was renamed Northern Virginia Community College in 1966 when the General Assembly changed the new system to the Virginia Community College System. College transfer curricula were added to the existing occupational/technical curricula for a more comprehensive program.

In 1966, the College Board purchased 78 acres in Annandale as the first of five permanent campus sites. The first permanent building for the College was constructed at the Annandale Campus and opened in 1967. Sites of approximately 100 acres each were purchased in 1967 for future campuses in Loudoun, Manassas and Woodbridge. In 1969, a 22.5-acre site was purchased in Alexandria for that campus.

Dr. Richard J. Ernst became the second president of the College in September, 1968.

The College has experienced rapid growth in student enrollment and the expansion of educational programs. College enrollment steadily increased to almost 10,000 students in the 1970 fall quarter. In the 1973 fall quarter, NVCC became the largest institution of higher education in Virginia with 17,260 students.

The Annandale Campus added buildings in 1969, 1970 and 1972.

The Loudoun, Manassas and Woodbridge Campuses began operation in the fall of 1972 by setting up temporary offices and offering eve-

ning courses at community locations. The Alexandria Campus continued the use of the Bailey's Crossroads facilities and opened the first phase of construction on the new site in the spring of 1973.

The Loudoun and Manassas Campuses added day and evening classes on campus when the first permanent buildings were completed in the fall of 1974. The Woodbridge Campus did the same in the fall of 1975.

The Extended Learning Institute (ELI) of the College began offering home study courses in January 1975. ELI has served more than 100,000 students.

During the 1990-91 fiscal year (July 1, 1990-June 30, 1991), the College served 57,990 different students in credit courses. In addition, 20,171 students registered for non-credit courses. Community service activities attracted 119,673 participants during the year.

The 1991 fall semester enrollment was 38,182 full-time and part-time students.

Honors Courses

Honors education is for the student who wishes to inquire more deeply into issues. Honors courses are concerned with freeing the motivated student to think broadly and independently. Primarily, two kinds of courses are offered: those consciously interdisciplinary, perhaps coordinating two or more courses, and those within particular disciplines on special topics or new approaches to standard courses. Emphasis is not upon increased amounts of course work, but on greater enrichment through a more intensive learning experience.

Genuine intellectual curiosity and willingness to challenge oneself are the real measures of qualification. To (be admitted to an honors course, you should meet at least one of the following requirements: (1) a minimum of 24 on (the Reading portion of the Basic Skills Assessment Test and 33 on the Writing portion of the Basic Skills Assessment Test, (2) a GPA of 3.5 at NVCC, (3) SAT scores of 1100, (4) placement in the top 10 of your graduating class, or (5) life experience or special aptitude or interest which may outweigh past, uneven academic performance.

If you wish to inquire further about honors courses, you should contact the honors committee chair or the Counseling Office at the campus of your choice.



Mrs. Barbara Bush, 1991 commencement speaker, greeted by NOVA President Richard J. Ernst.

Classification of Students

Curricular Student

You are classified as a curricular student when program placed in a curriculum of the College. You must be a high school graduate, have earned a Graduate Equivalency Diploma (GED), have completed an approved developmental program, or have been otherwise determined qualified for admission. Your academic file must contain all of the information required for admission to the College. A curricular student may be either a full-time or part-time student working toward completion of a certificate or associate degree at the College.

Non-Curricular Student

If you have not requested admission to a curriculum or developmental program, you may still register for courses by identifying your reason for enrolling at NVCC. You may be classified as a non-curricular student under one of the following circumstances:

1. Upgrading employment skills for your present job;
2. Developing skills for a new job;
3. Exploring a new career. You may be undecided about a career goal or an occupational choice. If you are changing from one educational objective to another, you are expected to declare another objective prior to completing 30 credit hours of course work;
4. Personal satisfaction or for general knowledge;
5. Transient student. You may be enrolled at NVCC while maintaining primary enrollment with another college or university;
6. Non-degree transfer student. You may be enrolled at NVCC to take only a certain number of courses for transfer to another college or university prior to completing the graduation requirements of a specific curriculum at NVCC;
7. High school student. You may get special permission from NVCC and your principal to enroll at the College;
8. General or curricula requirements pending. You may not have met all of the general or specific admission requirements as stated in the College *Catalog* but may be accepted by the College to take courses for one semester only, with special approval from the College;
9. Restricted enrollment. You may meet admission requirements of a specific curriculum but be temporarily denied entry because of an enrollment limitation. You could enroll in other courses while waiting for entry into your chosen curriculum, with special approval of the College.

Full-Time Student

You are considered a full-time student if you have enrolled in 12 or more credits of course work in a semester or summer session.

Part-Time Student

You are considered a part-time student if you are carrying fewer than 12 credits of course work in a semester or summer session.

Academic Load

The minimum full-time academic load is 12 credits, and generally the maximum full-time load is 18 credits. To carry an academic load of more than 18 credits, you ordinarily must have a 3.00 grade point average or higher, the approval of the provost or his/her designee, and usually the approval of your faculty advisor or counselor.

Student Level

You are classified as a freshman until you complete 30 credits of course work in a degree program. You are classified as a sophomore after you complete 30 credits of course work in a degree program. Credits transferred from other institutions are included, provided they apply toward meeting the requirements of your curriculum at NVCC.

Admission Requirements

Admission to the College

If you have a high school diploma or the equivalent, or are at least 18 years of age, and are able to benefit from enrollment, you are eligible for admission to Northern Virginia Community College.

All applicants must complete the Application for Admission. At this time, you are strongly advised to seek the assistance of counselors for academic, career or transfer information.

Students are accepted on a first-come/first-served basis with priority given to: (1) legal residents domiciled in the cities and counties supporting the College, (2) other Virginia legal residents, (3) out-of-state applicants, and (4) international students. It is even more important for you to apply early to the College if you are interested in being admitted to a curriculum. Certain programs have space shortage which can limit enrollment. Some of these curricula may have waiting lists.

High school transcripts are used for academic advisement to enhance your prospects for success in your chosen curriculum. These transcripts are required in order to be considered for admission to the following curricula: Veterinary Technology, Dental Hygiene, Medical Laboratory Technology, Nursing, Physical Therapist Assistant, Radiography, and Respiratory Therapy. Transcripts are preferred for Emergency Medical Services Technology and Medical Record Technology programs. Contact the appropriate campus Counseling Office regarding admission to these programs.

Official transcripts from other colleges or universities are required for acceptance of transfer credits at NVCC. Students seeking veterans benefits will also be required to submit transcripts of all previous college-level study.

International students requiring an I-20 form for admission on an F-1 or M-1 visa must provide official transcripts as noted in the section on "International Student Admission Requirements" in this catalog.

Application for Admission forms may be mailed to the Admissions and Records Office of

your choice or brought to the campus during registration. You are urged to submit your Application for Admission to the College at least 30 days prior to the first day of registration for the semester in which you plan to enroll. This should provide you with the opportunity to meet with a counselor for academic assistance prior to registration. Applications mailed to the College at least two weeks before registration can be processed and a response will be mailed back to you. If you do not mail your application at least two weeks before registration, you should take the application to your selected home campus.

The College reserves the right to evaluate Application for Admission forms and to refuse admission to applicants when it is considered to be in the best interest of the College.

When you enroll as a student at NVCC, you accept the rules and regulations of the College. Any violation may be subject to appropriate action by the College.

Student Identification Number

You are requested to use your Social Security number as an identification number at the time you apply for admission. If you are unable or unwilling to provide this number, a substitute identification number will be assigned to you. The Social Security number identification system provides for a consistent and efficient means for student records. Your identification number is used for grade reporting, class rolls and other records.

Applicants for financial aid are requested to submit Social Security numbers. Pell Grant Program applicants are advised that Social Security numbers are required by the U.S. Department of Education when processing applications.

Student Records Access

The College observes Public Law 93-380 in providing for the privacy of official student records and the rights of students to review these records. You may review your official records by making a request to the office of Admissions and Records. The College will not release any personally identifiable information about you without your permission, except to certain school and governmental officials as provided by the law.

Requests by individuals and agencies for release of student information must be presented in writing. Your permission for the College to release any information must also be in writing. Information which is considered public information is described in the current issue of the *College Student Handbook*.

Home Campus

When you apply to the College, you must designate a home campus. Student records are maintained at the campus you designate. Requests for transcripts should be forwarded to your home campus.

Change of Home Campus

Should circumstances require you to change your home campus, you should do so as soon as possible before the beginning of the registration period for the next semester. If you have re-

ceived financial aid, you must notify the Financial Aid Office to transfer your financial aid records.

If you have been a student at the College previously but are not currently enrolled in classes, you may change your home campus by simply going to any campus for registration for the upcoming semester. If you are enrolled in classes for the current semester, you must request a change of campus at least five working days prior to the beginning of registration for the next semester, or you must wait until after the last day of the add/drop period for that semester to make a change.

Admission to a Curriculum

In addition to the general admission requirements for acceptance by the College, there are specific requirements listed in the "Instructional Programs" section of this catalog for each individual curriculum. Be sure to check the curriculum of your choice to see if you have the required prerequisites for enrolling in that curriculum. If you do not meet these requirements, you may be able to make up deficiencies by taking developmental courses.

Registration for Non-Credit Community Service Courses

You do not need to apply for admission to the College to take non-credit courses. Contact the Office of Continuing Education at the campus where you wish to attend for course and registration information.

International Student Admission Requirements

NVCC does not issue I-20 forms to international applicants who are not in the United States at the time of application. International Students requiring I-20 forms who entered the United States to study at another college, university, or language school must successfully complete at least one term of work at that institution and submit an I-20 or I-538 form, as appropriate, prior to being considered for admission to NVCC.

You should have accident and sickness insurance during your enrollment. In addition, there are special requirements for international students who must have an I-20 form and are seeking enrollment at NVCC. You must:

1. have the equivalent of an American high school diploma;
2. have official transcripts and records of previous educational experiences translated into English and certified before they are sent to NVCC by the institution you attended;
3. submit verification of financial support (INS form I-134);
4. submit a minimal TOEFL score of 500;
5. submit all appropriate forms and test scores sixty (60) days prior to the beginning of classes for the semester you plan to attend. The deadline for the fall semester is June 26, 1992, and for the spring semester is November 20, 1992. Information about required forms and tests is contained in an international student admissions form available in the office of Admissions and Records. You will not be accepted until all general and special application requirements are completed.

Generally, you will not be admitted if you are not in good academic standing at your previous institution.

If you are an international applicant for admission and your native language is not English, you must either achieve a 500 TOEFL score for holders of student visas or a satisfactory score on the College English Proficiency Test for holders of other visas. Information on this testing requirement is available from the Admissions and Records Office.

If an I-20 form has been submitted for you, you must be admitted to a curriculum and maintain satisfactory full-time enrollment status.

High School Student Enrollment at NVCC

If you have not yet earned a high school diploma or its equivalent, you may attend the College full-time as part of an early admissions program. Some of your College courses can fulfill your Virginia high school graduation requirement if you have prior written approval of your high school principal.

It is also possible to be a part-time NVCC student while still enrolled in high school. Once again, you would need to have written approval of your high school principal.

Any high school student who wants to attend NVCC is required to comply with the admission requirements of the College.

Domicile Requirements

Effective July 1, 1984 all applicants for admission to Northern Virginia Community College, who are claiming entitlement to in-state tuition privileges are required by Section 23.7-4, of the Code of Virginia, to complete an "Application for Virginia In-State Tuition Rates" form.

To be eligible for in-state tuition rates, you must be domiciled in Virginia for a minimum of one year before the first official day of classes. Domicile is defined as your "present, fixed home where you return following temporary absences and where you intend to stay indefinitely."

As a minor you have the same domicile as your parents/legal guardian. Once you become 18 years old, you can establish a domicile that is different from your parents/legal guardian. However, if you are over 18 and are financially dependent on your parents/legal guardian, they must be domiciled in Virginia in order for you to be eligible for in-state tuition benefits.

The College will review many factors when determining your domicile, for example: residence during the past year prior to the first official day of classes, state to which income taxes are paid or filed, voter registration, motor vehicle registration, driver's license, employment, sources of financial support, other social or economic ties with Virginia or other states. The presence of any or all of these factors does not automatically result in Virginia domicile. The factors used to support a case for in-state tuition benefits must have existed for one year before the first official day of classes.

Residence or physical presence in Virginia primarily to attend a college or university does not entitle you to in-state tuition rates.

If you are a nonmilitary student whose parent or spouse is a member of the United States

armed forces, you may establish domicile in the same manner as any other student. However, a nonmilitary student, not otherwise eligible for in-state tuition, whose parent or spouse is a member of the military residing in the Commonwealth pursuant to military orders and claiming a state other than Virginia on their State of Legal Residence Certificate, shall be entitled to in-state tuition charges under certain conditions. Contact the Admissions and Records office at your home campus for more information.

It is presumed that people falling within the following categories do not have the intent to be domiciled in Virginia: holders of temporary visas, persons who by law must maintain their domicile or legal residence in another state and persons who have selected another state or country as their domicile.

When enrollments must be limited for any program or course, first priority shall be given to qualified students who are domiciled in one of the political subdivisions supporting the College. These subdivisions are listed under General Information.

Domicile requirements are subject to any changes in Virginia law pertaining to entitlement to reduced tuition charges.

Assessment and Placement Testing

Basic skills assessment and placement testing are two different processes which are intended to assist you in selecting courses and designing an academic program in which you will most likely be successful. These tests are not admissions tests. The basic skills assessment tests may be waived for students who qualify for a specified exemption. Waiver of the basic skills assessment does not constitute waiver from taking placement tests which are required in some courses.

- Prior to testing, you must submit an Application for Admission to the College.
- You will need a picture identification when you come to the Testing Center to take the tests.
- For information about testing, contact the Counseling or Testing Centers.

Basic Skills Assessment

Assessment of your strengths and weaknesses in reading, writing, and mathematics will help you determine the appropriate courses to select. This assessment is accomplished through a group of three college basic skills assessment tests administered through the Testing Centers at each campus.

- You are encouraged to take the basic skills assessment tests as soon as you apply to the College; however, before you can enroll in your 13th credit at NOVA, you *must* take basic skills assessment tests in reading, writing, and mathematics.
- If you enrolled in credit courses at NOVA before the fall semester 1991, you are not required to complete the basic skills assessment tests.
- If you do not have a high school diploma or the equivalent, you *must* take the three basic skills assessment tests before enrolling.

Exemptions:

- You may be exempt from all required basic skills assessment testing if you
 - are a non-degree-seeking senior citizen or

- have previously completed an associate degree or above at a regionally accredited college or university.

You may be exempt from reading and writing basic skills assessment testing if you

- have credit for the equivalent of ENG 111 through transferable college courses, Advanced Placement (AP) or CLEP or
- have an ACT score at or above 16 for English Usage and at or above 20 for Reading or
- have a SAT score at or above 400 for Reading Use/Verbal and at or above 35 on the Test of Standard Written English.

You may be exempt from mathematics basic skills assessment testing if you

- have credit for the equivalent of college algebra or higher level mathematics course through transferable college courses, Advanced Placement (AP) or CLEP or
- have an ACT score at or above 22 for Math or
- have a SAT score at or above 460 for Math.

If you qualify for an exemption, please make arrangements to see a counselor and bring evidence of your scores or previous college experience with you.

Course Placement Testing

The reading and writing placement tests used for assessment are also required for placement into English courses. Mathematics, English as a Second Language (ESL), and some chemistry and music courses have specific placement tests. You should see a counselor to determine the appropriate test to take for each course.

The following courses require placement testing. The requirement applies to all campuses and ELI where the course is offered, unless noted otherwise.

English:	ENG 001 through 007, 108, 111
ESL:	ESL 001 through 013
Chemistry:	CHM 111
Mathematics:	MTH 003 through 007, 115, 120, 150, 151, 160, 165, 166, 173, 181 and 271
Music:	MUS 111 (Loudoun only)

Testing Centers

Alexandria Campus:	AA344
Annapdale Campus:	CG402B
Loudoun Campus:	LC217A
Manassas Campus:	MC102, MC203
Woodbridge Campus:	WC456
Extended Learning Institute:	You may take placement tests at any NOVA campus Testing Center.

Course Prerequisites

Successful completion of some courses is required before enrolling in other courses. These prerequisites are identified in the course listing of this catalog. You cannot enroll in a course for which you do not meet one of the prerequisites, unless prerequisites are waived by the chair of an instructional division.

Registration

Before you can register, you must be admitted to NVCC and must designate a home campus, where your records will be maintained. You may register at any campus unless you are enrolled in a restricted program, or unless you are on an F-1 or an M-1 visa. If you are in any of these categories, you must register at your home campus. If

you are receiving financial aid, you may register at any campus, but you must pay tuition and process financial aid forms at your home campus.

Refer to the *Schedule of Classes* for specific instructions on how and when to register.

Extended Learning Institute Registration

Most Extended Learning Institute courses are available for you to start at any time convenient for you. Registration may take place on a campus or by mail through ELI. Registration details are available by calling the Extended Learning Institute (703) 323-3368. See the Extended Learning Institute section for additional information. You may apply to the College and register by mail at the same time.

Late Registration

If you have not registered by the time classes have begun, you may register during the late registration period. If you add a class and then, before paying your tuition, you decide not to take it, you must drop the class and process your drop form through the Business Office. Otherwise, you will be charged for the course. The dates for the late registration period are published in the *Schedule of Classes*. Late registration is not encouraged. If you register late, you are responsible for any course work you have missed.

If you have already registered, you may add or drop classes during the add/drop period as published in the *Schedule of Classes*. You may register and begin most ELI independent study courses at any time.

Change of Registration

A Registration Worksheet is required by the Office of Admissions and Records for making any change in your schedule after registration. Failure to follow established procedures could place your College attendance in jeopardy. Changes are effective as of the time they are requested and approved. Retroactive changes are not usually permitted. Schedule changes may be made during the periods printed in the *Schedule of Classes*.

1. Dropping a Course

A Registration Worksheet is required by the Office of Admissions and Records and must be processed through the Business Office. You may drop a course within the add/drop period as published in the *Schedule of Classes*. See the Refund section for additional information.

2. Adding a Course

A Registration Worksheet is required by the Office of Admissions and Records and must be processed through the Business Office for adding a course. Once registered, you may add a course at any time during the add/drop period which is published in the *Schedule of Classes*. Any request for entry into a class after the late registration period must be approved by the instructor, division chair and provost. Requests must be made through the Office of Admissions and Records, and payment made at the Business Office.

3. Withdrawal from a Course

A refund of tuition is given only when a course is dropped by the last day to drop for tuition refunds.

You may withdraw from a course within the first 60% of a session without academic penalty, and you will receive a grade of "W". You must complete a Course Withdrawal form (NVCC 125-47) and submit it to the Office of Admissions and Records. Withdrawal after the first 60% of the session will result in a grade of "F", except under mitigating circumstances which must be documented on the Course Withdrawal form, approved by the instructor of the course from which you are withdrawing, and submitted to the Office of Admissions and Records. This documentation will be retained electronically. See the Grading System section for explanation of grades.

If you have received any financial aid or veterans' benefits, you must also report your withdrawal to your campus Financial Aid Office and/or veterans advisor. Failure to follow established procedures could affect your eligibility to return to NVCC or enter another college.

4. Cancellation of a Section or Course by the College

The College will process a refund for courses or sections canceled by the College if no other course or section carrying the same number of credits is added.

5. Curriculum Change

To change from one curriculum to another, you must contact a counselor to initiate completion of a new Program Placement form.

Specific Course Schedule Changes

In some circumstances, you may change courses or sections without additional tuition expense.

1. Regular Course to Developmental Course

In cases where a student enrolls in an entry-level regular course for which there is a preparatory developmental course, and then incurs difficulty in keeping up with the regular course work in the first three weeks (21 calendar days) of the course, students may, with the approval of the instructor, initiate a drop, and enroll in a developmental course which is more suited to his/her capabilities. In making the transfer from the regular course to the developmental course, the student will be charged additional tuition on a per hour basis for any additional credit hours. If the exchange results in fewer credit hours, the student qualifies for a tuition refund only if the transaction occurs during the regular add/drop period for the course being dropped.

2. Developmental Course to Another Developmental Course

Students may transfer from one developmental course to another within the same discipline using the add/drop procedure form even though this transaction may occur after the standard add/drop period for the sixteen-week session. In these cases, the three-week (21 calendar days) limit does not apply. No change in tuition occurs if the change from one developmental course to another developmental course occurs within the same discipline and the credit-hour values of the courses remain identical. Any credit hours which are added as a result of this course exchange will result in additional tuition on a per hour basis. If the exchange results in fewer credit hours, the student qualifies for a tuition refund only if the transaction occurs during the regular add/drop period for the course being dropped.

3. Developmental Course Changes

Course changes after the end of the add/drop period require the approvals of the gaining instructor, the gaining division chair, and the provost. There is no refund for courses dropped and tuition is charged for courses added.

4. Course Section Changes

You may request a change from one section to another of the same course and course length within the same semester after the add/drop period for the sixteen-week session if you can justify mitigating circumstances. This justification must be recorded on an add/drop form and approved by the instructors of the sections involved and their respective division chairs. If such changes are approved, no additional tuition will be charged.

Auditing a Course

You may audit a course and attend without taking examinations. Registrations for audit will be accepted only during the late registration period each semester, and the approval of the instructor and the division chair is required. The regular tuition rate is charged. Requests for credit enrollment in a class will be given priority over audit enrollment. You may also audit Extended Learning Institute courses.

Audited courses carry no credit and do not count as a part of your course load. If you desire to change your status in a course from audit to credit, you must do so within the add/drop period for the session. Changes from credit to audit must be made by the official last day for students to withdraw from a class without penalty. After this day, the audit grade "X" is invalid if you are enrolled for credit.

Contact the office of Admissions and Records for instructions on auditing a course.

Repeating a Course

You will normally be limited to two enrollments in the same credit course. If you wish to enroll in the same credit course more than twice, you must request permission from the provost or designee. This limitation does not apply to courses in the "Description of Courses" section of this catalog identified by a single or double asterisk, or the general usage courses numbered 090, 190, 290, 095, 195, 295, 096, 196, 296, 097, 197, 297, 098, 198, 298, 099, 199, and 299.

Senior Citizens Enrollment

The Virginia Senior Citizens Higher Education Act of 1974, and amendments, provide educational benefits for Senior Citizens. If your age is 60 or over before the beginning of the term, your legal domicile has been Virginia for one year, and your Federal taxable income for the year preceding enrollment did not exceed \$10,000, you may enroll in courses for credit without charge.

Regardless of your income, you may enroll in credit courses for audit (receive no credit) without charge and/or enroll in non-credit courses without charge. Non-credit and audit enrollment is limited to three courses in one term.

You must complete an Application for Admission and be admitted to the College. You may register only at the start of the late registra-

tion period, after tuition-paying students have registered. However, if you have completed seventy-five percent of your degree requirements, you may register at the same time as tuition-paying students.

Financial Information

Application Fee

There is no fee for the submission of an Application for Admission.

Tuition

Tuition rates for 1992-1993, which were not available at the time this catalog was published, will be printed in the appropriate *Schedule of Classes*.

Tuition is due upon registration. Payment of tuition entitles you to use the library, bookstore, student lounge, and other facilities of the College except parking. There are no special library fees. You must pay for any school property that you damage or lose, such as laboratory or shop equipment, supplies, library books and materials.

Some courses such as music, physical education and aviation require non-college support services from other agencies and individuals. Costs for these additional charges are paid by you directly to the individual or agency providing the service.

All tuition and fees are approved by the State Board for Community Colleges which has the authority to change any and all tuition and fees without prior notice.

In-State Tuition Eligibility

To be eligible for in-state tuition rates, you must be domiciled in Virginia for a minimum of one year before the first official day of classes. See the Domicile Requirements section for details.

To change your tuition status from out-of-state to in-state you must initiate the process by completing an "Application for Virginia In-State Tuition Rates" form. This form can be obtained in your home campus Admissions and Records Office. All forms should be completed before the registration period begins for the semester in which the in-state charges will take effect.

The College reserves the right to recoup deficiency charges when the wrong tuition rate is paid. Your home campus Admissions and Records office can clarify any question concerning domicile status.

Payment

Tuition is payable by cash, check, money order, contract, VISA or MasterCard.

Checks (payable to NVCC) can only be accepted for the exact amount due. Credit cards are accepted only for tuition. A service charge of \$15.00 is charged to you for any check that is dishonored, except when the bank is at fault. A dishonored check that is not an error of the bank must be redeemed with cash, certified check or money order before you can complete or withdraw from current courses, or register for future courses. If you issue a dishonored

check that is not a bank error, you will be required to pay by cash, certified check or money order for one year from the date of payment to the College for the dishonored check before personal checks will be accepted again. Under extenuating circumstances, waiver of this policy may be considered upon written request to the campus business manager.

For students who have paid tuition by VISA or MasterCard, authorized refunds can be issued as credits to charge card accounts. The card must be presented to the Business Office. Otherwise, refunds will be processed for a check to be mailed to you at your address of record with the College.

Refunds for Courses Dropped

Tuition refunds are not automatic except for courses canceled by the College.

You are eligible for a full refund if a course is dropped during the official add/drop periods as published in the *Schedule of Classes* and as indicated on your official receipt form. For special session classes without a published add/drop period, add/drop will be proportionate to the length of the class. **There is no refund after these points in time.** Specific dates for tuition payments and refunds are published in the *Schedule of Classes* and are on your official receipt form.

To drop a course, you must complete the Registration Worksheet, process it through the Admissions and Records Office, and deliver it to the Business Office.

Requests for refunds for ELI courses must be made in writing to ELI and postmarked within 15 percent of your enrollment period. Refund dates will be included in the packet mailed to you by ELI when you register.

Refunds for Withdrawal from the College

You must drop all classes by completing a Registration Worksheet to withdraw from the College. This form must be processed through the Admissions and Records Office and delivered to the Business Office. Official withdrawal from the College will become effective on the date that this form is received.

Students withdrawing from the College are eligible for a full refund of tuition if they withdraw during the add/drop period for the courses in which they were enrolled as published in the applicable *Schedule of Classes*.

Non-Payment of Debts

Continued attendance at NVCC is dependent upon proper settlement of all debts owed the institution. Should you fail to satisfy all due and payable amounts for tuition and fees, College loans, College fines, or other debts you owe the College, you may be suspended. Until all current debts you owe the College have been satisfied, you will not be reinstated if suspended and will not be permitted to register. Transcripts will not be issued and recommendations will not be written, nor other services provided.

The policies governing the failure to meet financial obligations will also apply to other institutions' library fines if you used your NVCC student ID card to borrow the overdue or lost materials.

Hold on Student Records

A hold may be placed on your official record under certain conditions. A hold may restrict you from registering, having transcripts issued, or receiving other college services. Non-payment of financial obligations such as tuition, college fines, and other debts may result in a hold on your record. Disciplinary action, academic suspension, or dismissal may also result in a hold.

Graduation Fee

There is no fee for graduation.

Books and Supplies

You are expected to obtain your own books, supplies, and consumable materials needed in your studies. It is estimated that the cost of these items will average \$245 per semester for a full-time student.

Transcripts

An NVCC transcript of your academic record may be issued from your home campus Admissions and Records Office. Official transcripts are released only to other colleges or agencies upon your written request, and only after you have completed one course at NVCC. Only an unofficial copy of your transcript may be released directly to you. There is no fee for transcripts. Financial Aid transcripts are available at no cost through your home campus Financial Aid Office.

Library Fines

There is a charge for all overdue library materials. If you lose a book or other materials, you must notify the library to stop the accumulation of any fines. However, you will have to pay for lost materials. This rule also applies to books and materials you borrow from other libraries by using your NVCC student ID card.

A fine of five cents a day (with a maximum fine of \$3.00) will be charged for regular circulating material. Fines for reserved materials are fifty cents a day (with a \$5.00 maximum). In the event of loss, the charge will be the replacement cost of the lost item plus any fines.

Vehicle Parking Fee

If you wish to park a vehicle on campus, you must purchase a parking decal from the Campus Security Office or use parking meters where they are installed. A three-semester decal may be purchased for \$42. A two-semester decal may be purchased for \$31. Decals for a single semester may be obtained for \$20. Purchase of a decal entitles you to use any student parking lot. If all your courses are canceled by the College, your parking fee will be refunded if you so advise Campus Security. If you drop all courses during the add/drop period for those courses, you may request and receive a partial refund of your parking fee. You are encouraged to purchase your decal during the regular registration and add/drop periods. Student decals are required by 7 a.m. the first Monday after the add/drop period.

Some campuses have parking meters. No decal is required for meter parking. Displaying a valid parking decal while parked at a meter does not constitute payment of the meter fee.

Academic Information

Attendance

Education is a cooperative endeavor between a student and his or her instructor. Instructors plan a variety of learning activities to help their students master the course content. Your contribution is to participate in these activities within the framework established in the class syllabus. Faculty will identify specific class attendance policies in the class syllabus which is distributed at the beginning of each term. Successful learning requires good communication between students and instructors; therefore, in most cases, regular classroom attendance is essential.

It is your responsibility to inform your instructor prior to an absence from class if this is requested by the instructor in the class syllabus. You are responsible for making up all course work missed during an absence. In the event of unexplained absences, your instructor may administratively withdraw you from the course.

Credits

A credit at NVCC is equivalent to one college semester credit. One credit is awarded for each of the following:

1. One hour per week of lecture (15 hours per semester plus an exam period);
2. Two hours per week of laboratory with one hour of out-of-class practice (45 hours per semester plus an exam period);
3. Three hours per week of laboratory with no out-of-class practice (45 hours per semester plus an exam period).
4. Courses offered in a non-traditional format require an equivalent amount of time.

Grading System

- A = Excellent—4 grade points per credit
 B = Good—3 grade points per credit
 C = Average—2 grade points per credit
 D = Poor—1 grade point per credit
 F = Failure—0 grade points
 I = Incomplete—No grade point credit.

The "I" grade is used for verifiable unavoidable reasons. Since the "incomplete" extends enrollment in the course, requirements for satisfactory completion will be established through student/faculty consultation. Courses for which the grade of "I" (incomplete) has been awarded must be completed by the end of the subsequent semester or another grade ("A", "B", "C", "D", "F", "P", "R", "S", "U", or "W") must be awarded by the instructor based upon course work which has been completed. (Nursing courses must be completed within the first two weeks of the subsequent semester.) For "I" grades earned at the end of the spring semester, you will have through the end of the subsequent fall semester to complete the requirements. A "W" grade should be awarded only under mitigating circumstances which must be approved

and documented. A copy of this documentation is placed in your academic file.

- P = Pass—No grade point credit; applies to non-credit courses. May also apply to non-developmental courses approved by division chair. "P" grades are not included in grade point average calculations. Only seven credit hours of "P" grade may be applied toward graduation. This maximum may be extended to fifteen credit hours for an approved experiential learning program such as PLACE.
- R = Re-Enroll—No grade point credit. A grade of "R" means that you were making satisfactory progress but did not complete all the course objectives. You must re-enroll and pay the appropriate tuition to complete the course objectives. (The "R" grade applies to a limited number of courses.)
- S = Satisfactory—No grade point credit. Used only for satisfactory completion of a developmental studies course (numbered 01-09). "S" grades are not included in grade point average calculations.
- U = Unsatisfactory—No grade point credit; applies only to developmental studies, non-credit courses, and specialized courses and seminars at the discretion of the College.
- W = Withdrawal—No grade point credit. A grade of "W" is awarded if you withdraw or are withdrawn from a course after the add/drop period but prior to the completion of 60% of the session. After that time, you will receive a grade of "F" except under mitigating circumstances which must be documented on the NVCC 125-47 form. This documentation will be retained electronically. See "Withdrawal From a Course" section.
- X = Audit—No grade point credit. Permission of the instructor and the division chair is required to audit a course.

The grade point average (GPA) is determined by dividing the total number of grade points earned in courses by the total number of credits attempted. Courses which do not generate grade points are not included in credits attempted. The GPA is carried out to two digits past the decimal point (example 1.00). No rounding shall be done to arrive at the GPA. When a course is repeated, only the last grade will be used in the GPA computation for graduation. The table below illustrates a GPA of 2.00 obtained by dividing 30 by 15.

Course	Credit Hours Attempted	Grade	Grade Points	Credit Hours Comp'd	Total Grade Points
MTH 166	4	A	4	4	16
ENG 111	3	B	3	3	9
MUS 141	2	C	2	2	4
PED 101	1	D	1	1	1
CHM 113	5	F	0	0	0
PSY 100	0	W	0	0	0
	15			10	30

Students who think that a semester grade is in error may check by contacting the appropriate instructor through the instructional division within 20 working days after grades are mailed. If the grade is in error, the instructor will take the necessary steps to correct it. After the 20 working day period, the grade will stand, except in the case of "I" grades, which must be changed within one academic semester of their issuance.

Developmental Courses Grading

An "S" grade will be assigned to indicate satisfactory completion of the course objectives for each developmental course.

If you are making satisfactory progress but have not completed all of the instructional objectives for a developmental course (numbered 01-09), you will be assigned an "R" (re-enroll) and you must re-enroll and pay the appropriate tuition to complete course objectives.

If you are not making satisfactory progress in a developmental course (numbered 01-09), you will be assigned a "U" (unsatisfactory). You should meet with your counselor for possible re-evaluation of your goals and for determination of any subsequent academic work.

Credits earned for developmental courses are not counted in grade point computations toward graduation or in determining sophomore status. They are used in determining full-time or part-time status.

Examinations

You are expected to take tests at regularly scheduled times. In addition, every student is required to take a final examination, receive an appropriate evaluation instrument, or continue receiving instruction during the scheduled final examination period. Any deviation from the final examination schedule must be approved by the campus provost.

Posting of Grades

Final grades are usually posted by student identification number. If you do not want your grades posted, you should so advise each instructor prior to the end of the course.

Honor Roll and Dean's List

Your name will be placed on the Honor Roll for any semester in which your cumulative grade point average is 3.50 or higher and you have earned a minimum of 20 semester hours of credit at NVCC.

Your name will be placed on the Dean's List for any semester in which your cumulative grade point average is 3.20 or higher and you have earned a minimum of 15 semester hours of credit at NVCC.

Academic Standing

The College is responsible for letting you know when you are having academic difficulty. After you receive official notice, the College will assist in setting objectives, planning for improved study habits, and dealing with other factors that relate to your academic progress.

The College will send you official notification on your student grade report when you are having academic difficulty. You will be given an appropriate period of time to show improvement. The College may determine that you are best served by being prevented from further registration for a period of time if you show no academic improvement.

The College provides the following official indications of academic difficulty:

1. Academic Warning

If you fail to maintain a minimum grade point average of 2.00 for any semester or fail any course you will receive an academic warning.

2. Academic Probation

If you fail to maintain a minimum cumulative grade point average of 1.50, you will be placed on academic probation until your grade point average reaches 1.50 or better. The statement "Placed on Academic Probation" will be included on your permanent record. You will be ineligible for appointive or elective office in student organizations and usually will be required to carry less than a normal course load the following semester. While on academic probation you are required to consult a counselor. An average between 1.50 and 1.99 may not result in formal academic probation; nevertheless, a minimum of 2.00 in your curriculum is a prerequisite to the receipt of an associate degree. Part-time students will not be placed on academic probation until they have attempted 12 semester credit hours.

3. Academic Suspension

If you are on academic probation and fail to attain a minimum grade point average of 1.50 for the next semester, you will be placed on academic suspension. Academic suspension normally will be for one semester unless you reapply and are accepted for readmission to another curriculum of the College. The statement "Placed on Academic Suspension" will be included on your permanent record.

If informed that you are on academic suspension, you may submit an appeal in writing to the chair of the Admissions Committee for reconsideration of your case. A suspended student may be readmitted after termination of the suspension period and upon formal written petition to the chair of the Admissions Committee. Students will not be placed on suspension until 24 semester credit hours have been attempted.

Following your reinstatement after academic suspension, you must achieve a minimum 2.00 grade point average for the semester. You must maintain at least a 1.50 grade point average in each subsequent semester of attendance. You remain on probation until your overall grade point average is raised to a minimum of 1.50.

4. Academic Dismissal

If you do not maintain at least a 2.00 grade point average for the semester of reinstatement to the College when on academic suspension, you will be academically dismissed. If you have been placed on academic suspension and achieve a 2.00 grade point average for the semester of your reinstatement, you must maintain at least a cumulative 1.50 grade point average in each subsequent semester of attendance. You will remain on probation until your cumulative grade point average is raised to a minimum of 1.50. Failure to attain a cumulative

1.50 grade point average in each subsequent semester until cumulative GPA reaches 1.50 will result in academic dismissal.

Academic dismissal normally is permanent unless, with good cause, you reapply and are accepted under special consideration for readmission by the Admissions Committee of the College. The statement "Academic Dismissal" will be placed on your permanent record.

Academic Dishonesty

When College officials award credit, degrees and certificates, they must assume the absolute integrity of the work done by you; therefore, it is important that you maintain the highest standard of honor in your scholastic work.

Academic dishonesty cannot be condoned. When such misconduct is established as having occurred, it subjects you to possible disciplinary actions ranging from admonition to dismissal, along with any grade penalty the instructor might, in appropriate cases, impose. Procedural safeguards of due process and appeal are available to you in disciplinary matters.

Academic dishonesty, as a general rule, involves one of the following acts:

1. Cheating on an examination or quiz, including the giving, receiving or soliciting of information and the unauthorized use of notes or other materials during the examination or quiz.
2. Buying, selling, stealing or soliciting any material purported to be the unreleased contents of a forthcoming examination, or the use of such material.
3. Substituting for another person during an examination or allowing such substitution for one's self.
4. Plagiarism. This is the act of appropriating passages from the work of another individual, either word for word or in substance, and representing them as one's own work. This includes any submission of written work other than one's own.
5. Collusion with another person in the preparation or editing of assignments submitted for credit, unless such collaboration has been approved in advance by the instructor.
6. Knowingly furnishing false information to the College; forgery and alteration or use of College documents or instruments of identification with the intent to defraud.

Transfer Credit and Advanced Standing

NVCC has an advanced standing program which allows previous academic study, examination, or occupational experience to be evaluated for possible college credit. To be eligible to apply for advanced standing, you must be enrolled in a curriculum at NVCC through the established program placement procedure. Total credits possible through all forms of advanced standing must conform to the residency requirement as stated under "Graduation Requirements". However, the division chair responsible for the chosen curriculum will

determine if the courses in question will apply to the curriculum and/or if substitutions may be made within the curriculum.

Transfer credit or advanced standing is available to students for educational experiences which fall into five basic categories:

1. Transfer Credit From Other Colleges

When transferring from another college, consult the office of Admissions and Records at your home campus of NVCC for an assessment of credits earned. You may be advised to repeat courses if it is apparent that this will help you make satisfactory progress in your curriculum at NVCC.

Credit may be transferred from colleges and universities which are accredited by the Commission on Colleges or the Commission on Higher Education or the regional accreditation associations, such as the Southern Association of Colleges and Schools. A complete evaluation will be made of all potentially transferable credits which apply to your chosen curriculum after all official documents required for evaluation have been received by the office of Admissions and Records. All acceptable courses will be transferred as closely to the NVCC course equivalent as is possible. Generally, credit is awarded only for courses with a grade of "C" or above. If the course content is unlike any course at NVCC, elective credit may be granted. The curriculum division at NVCC will determine if and how transferred courses and credits may be used to meet specific degree requirements.

If you have completed an AA or AS degree or any 4-year degree or above at a regionally accredited U.S. institution of higher education, you will be considered to have met all general education requirements for degrees and certificates at NVCC. The exception to this policy is that you must achieve the level of mathematics specified in a curriculum.

The College accepts international transcript credit only after the student has an official transcript sent to the College that has been translated into English and evaluated for course-by-course credit by a private evaluation agency recognized by NVCC. Cost for this special pre-college service is to be borne by the student.

You may take courses at other institutions while attending NVCC. You should receive approval from the chair of the academic division at NVCC from which you expect to receive your degree to ensure that these courses are transferable to NVCC.

If you are considering transfer from another college or university to NVCC, you are encouraged to apply for admission to NVCC and request an evaluation of all transcripts as early as possible.

Official transcripts sent from other colleges and universities directly to the office of Admissions and Records will be considered for evaluation.

2. Military Service Courses

Credit will be granted for military service school courses if the awarding of credit is recommended in the current edition of the American Council on Education publication, *A Guide to the Evaluation of Educational Experiences in the Armed Services*, and approved by the division chair of your curriculum. The following information must be obtained:

- a. Full and correct title of course;
- b. Location of training;
- c. Length of course in weeks;
- d. Exact dates of attendance;
- e. Service which gave the course.

You must submit an official record* (original DD 214 or DD 295 certified by the Commanding Officer and mailed directly to NVCC from the Educational Office) and initiate the request by petitioning for credit. A certified copy of the DD 214 may be obtained from the veterans office.

* Students entering the Army on or after January 1984 must submit an AARTS (Army Ace Registry Transcript System) transcript in lieu of a DD 295 or DD 214.

The military service courses should be equivalent to NVCC courses and will be applied as the student's program determines. Military service credit in occupational/technical areas which is ten years old or older must be approved by appropriate division chairs. Army Primary Military Occupational Specialty Credit (MOS) and Navy Enlisted General Rates and Ratings (NER) can be awarded to active and inactive duty personnel.

3. Non-Traditional Courses

Transfer credit for non-traditional courses will be awarded only in accordance with the recommendations of the Northern Virginia Community College *Transfer Guide to Acceptance of Credit*.

4. Credit by Examination

Advanced standing may be granted to students who have successfully completed examinations in any of the following programs:

- a. College Level Examination Program (CLEP) examinations from Educational Testing Service (ETS) are approved for advanced standing. CLEP is a program of credit by examination which offers students the opportunity to earn college credit for knowledge acquired outside the conventional college classroom. If you want to participate in the CLEP program, contact the counseling office at your campus.
- b. NVCC will award specific course credit for acceptable scores on the United States Armed Forces Institute (USAFI) tests. As USAFI is no longer operative, arrangements have been made for the Defense Activity for Non-Traditional Education Support (DANTES) to administer and store standardized subject tests and General Educational Development Tests (GEDs) for military personnel.

To obtain results of USAFI courses and high school and college-level GEDs, follow these instructions:

- (1) For military personnel tested through USAFI prior to July 1, 1974, write to DANTES Contract Representative (Transcripts), Educational Testing Services, Box CN6605, Princeton, New Jersey, 08541-6605.
- (2) The scores of military personnel tested overseas after July 1, 1974, may be obtained from Educational Testing Services, Box CN6604, Princeton, New Jersey, 08541-6604.
- (3) Military personnel tested in the United States at official GED centers or by State Departments of Education

must request transcripts directly from the State Department of Education or the official GED center concerned.

c. Advanced Placement examinations of the College Entrance Examination Board may be used for advanced placement. Specific college course credits will be granted for scores of three, four or five on the Advanced Placement (AP) examinations. You must have official AP score reports forwarded from ETS to NVCC for inclusion in your permanent record in the Admissions and Records Office of your home campus in order to get appropriate evaluation.

d. Assessment by Local Examination (ABLE) is available at NVCC. ABLE examinations are constructed at NVCC where tests are not available from outside sources such as CLEP. The College grants specific course credit for acceptable performance on ABLE examinations. Credits earned through ABLE exams cannot be used to fulfill residency requirements.

5. Credit for Prior Learning

In addition to the Advanced Standing Program, NVCC has a program called PLACE (Prior Learning Activity for Credit Evaluation). PLACE is for adults who have gained college level experience through work, volunteer activities, participation in civic and community assignments, travel, independent study and similar "life experiences."

In order to convert these experiences into college credit, students must register for STD 298, Seminar and Project PLACE Workshop. This portfolio course assists students in assembling evidence of their accomplishments. Completed portfolios are assessed by designated faculty who may recommend the awarding of credits.

Up to 15 semester credits in degree programs or 10 semester credits in certificate programs may be awarded through the portfolio process. Credits earned through PLACE cannot be used to fulfill residency requirements.

Physical Education Credit for Military Basic Training

If you are a veteran or a servicemember who has served on active duty for at least 181 continuous days after 1979, you may request that credit be awarded for physical education based upon submission of appropriate forms to the Admission and Records Office. DD Form 214 is required for veterans and DD Form 295 is required for servicemembers on active duty. Physical education credit may be awarded based on the recommendation in the appropriate ACE *Guide to the Evaluation of Educational Experiences in the Armed Services*.

Persons with active duty prior to 1979 may have the physical education requirement waived, but no credit granted.

Graduation Requirements

Associate Degree Requirements

To be eligible for graduation with an associate degree (A.A.A., A.A.S., A.A. or A.S.) from the College, you must:

1. Have been program placed in the curriculum;
2. Have fulfilled all of the course work and credit hour requirements of the curriculum as outlined in the College *Catalog*. The catalog to be used to determine graduation requirements is the one in effect at the time of your initial program placement in the curriculum from which you are graduating, or any subsequent catalog of your choice. The catalog to be used in certifying your graduation shall have been in effect no more than seven years prior to the time of graduation;
3. Have been recommended for graduation by the appropriate instructional authority in your curriculum;
4. Have taken at least 15 semester hours in the curriculum at NVCC;
5. Have completed the general education requirements for an associate degree;
6. Have earned a grade point average of at least 2.00 on courses attempted which are applicable toward graduation in the curriculum;
7. Have applied for graduation in your Campus Office of Admissions and Records on or before the dates published in the *Schedule of Classes* for each semester.
8. Have resolved all financial obligations to the College and returned all materials, including library books.

Certificate Requirements

To be eligible for graduation with a certificate or a career studies certificate from the College you must:

1. Have been admitted to the curriculum;
2. Have fulfilled all of the course requirements of the curriculum as outlined in the College *Catalog*. This includes achieving a passing grade in each course in the curriculum. The catalog to be used to determine graduation requirements is the one in effect at the time of your initial program placement in the curriculum from which you are graduating, or any subsequent catalog of your choice. The catalog to be used in certifying your graduation shall have been in effect no more than seven years prior to the time of your graduation.
3. Have been recommended for graduation by the appropriate authority in the curriculum;
4. Have earned a grade point average of at least 2.0 in all courses attempted which are applicable toward graduation in the curriculum;

5. Have completed at least 25% of the credits for the certificate at NVCC;
6. Have applied for graduation in the Office of Admissions and Records on or before the dates published in the *Schedule of Classes* for each semester;
7. Have resolved all financial obligations to the College and returned all materials, including library books.

Certificate of Completion

If you successfully complete a program of instruction which does not lead to a certificate or an associate degree, you may be awarded a Certificate of Completion. These are also given for noncredit courses at the College.

Graduation Honors

Students attending NVCC for a minimum of 30 credit hours in degree programs are eligible for graduation honors. Those attending NVCC for a minimum of 50% of the credit hours in their certificate program are eligible for graduation honors. You must apply for graduation in the Office of Admissions and Records to be eligible for graduation honors. Graduation honors are determined by your cumulative grade point average at the completion of the semester for which you are certified for graduation.

Appropriate honors are based on scholastic achievements and recorded on the degree or certificate as follows:

Grade Point Average	Honor
3.20	Cum Laude (with honor)
3.50	Magna Cum Laude (with high honor)
3.80	Summa Cum Laude (with highest honor)

Extended Learning Institute Course Requirements

Textbooks

Textbooks for Extended Learning Institute (ELI) courses may not be the same as those used on campus. They may be purchased at any NVCC campus bookstore or ordered by mail. If the book is not available at one of the campuses, the bookstore will arrange to get it from another campus for you. Books ordered from the bookstore by mail are shipped within 72 hours.

Assignment Due Dates

Even though ELI courses are self-paced, you are required to submit some assignments by specific due dates. If you do not submit these assignments on time, you can be dropped from the course with a grade of "W."

Services Available to ELI Students

All college and campus services are available to ELI students. Some restrictions may exist in the case of financial aid and veterans benefits. Some services, such as bookstores, counseling, and learning laboratory/learning resource centers, are sometimes closed during breaks at the end of each term. Faculty members may also be on vacation at these times, so there may be some delay in returning written work that has been submitted to ELI. For more information on the availability of services, contact the campus nearest you or the Extended Learning Institute.

Examinations

Each course has several exams which you must take in person at a campus learning laboratory. These are proctored exams. To pass an ELI course, you must pass the proctored exams, regardless of how well you do on other course assignments. Proctored exams may be scheduled at your convenience (including evenings) by calling the learning laboratory at the campus nearest to you. If you cannot get to a campus learning laboratory, other arrangements for proctoring the exam can be made by contacting ELI.

Each campus provides a number of services designed to help with your education, career and personal development. Counseling, testing, faculty advising, financial aid, job referral, student activities, and information about the College are explained in this section. Other services such as admissions and records are explained elsewhere in this catalog.

The dean of student development on each campus is responsible for most of the student services. Contact the dean or members of the student development staff to take full advantage of these opportunities for assistance. If taking courses through the Extended Learning Institute, you can enroll through the student services on your home campus or contact ELI.

Student Rights and Responsibilities

As a member of the student body of the College, there are certain rights which you may expect to enjoy as well as obligations which you accept by your enrollment. The current edition of the *Student Handbook* contains a statement on student rights and responsibilities and the College's policies on academic dishonesty, illegal substances, and student conduct and discipline.

Counseling Services

Counselors are professionals who are available to assist you in your educational career and life planning. They can help you to make effective decisions and to deal with problems that you may be facing while in attendance at the College. Interviews with counselors are confidential. Referral information is available for persons requiring professional assistance beyond the scope and training of the counselors.

A counselor can help you explore and develop career goals and plan your education to help meet those goals. If you want to enroll in a degree or certificate curriculum, and if you did not indicate a choice of curriculum on your Application for Admission, it is suggested that you meet with a counselor for curriculum placement. This may mean planning a developmental program to gain the necessary skills in certain areas to meet the entrance requirements for a curriculum. It may mean planning a program to take the right courses for transfer to a four-year college or university when you leave NVCC. It may mean selecting the occupational/technical program best suited to your abilities.

During your first semester at NVCC, the counselor will refer you to a faculty advisor who will assist you in planning your second semester and the rest of your program.

Counseling services are open to you throughout your stay at the College. You are encouraged to continue to visit your counselor for whatever reason you may have. Any change of curriculum must be made through your counselor.

Counselors assist you with financial aid information, inventories, career information, volunteer service placement information, job counseling information, and personal information materials. Special group programs are also available in career planning seminars, personal exploration groups, and other skill building workshops.

Identification Cards

Student identification cards are issued without charge. They should be validated each semester upon registration. Lost cards will be replaced upon request to your home campus Office of Admissions and Records. ID cards may be required for registration, course changes, transcript requests, library material use, admissions to special student activities, etc.

Testing Services

The counseling service on each campus provides a testing program to help you better understand your abilities, interests, skills, and values. Tests and inventories are administered and interpreted at nominal charge to students.

Information is available about national testing programs such as the Test of English as a Foreign Language (TOEFL) and College Level Examination Program (CLEP).

Information Services

1. Orientation

An orientation program provides you with the opportunity to learn skills and information that will help you to be successful at NVCC. The orientation program may begin weeks before registration when you meet with a counselor for a program placement interview. In this interview, career interests and educational goals are explored. It will be determined at this time if there is a need for additional information or tests. Your application for admission to a specific curriculum will be evaluated, and the first semester's courses planned.

The orientation course, STD 100, is required for graduation in all degree curricula and many certificate curricula. It is best to take this credit course in your first semester at the College. The Extended Learning Institute also has an orientation course available for those who cannot attend a campus-based section.

2. Career, Educational and Personal Information

A variety of printed material is available in the Counseling Center and in the Learning Resource Center of each campus. Reference books and college catalogs providing information on colleges and professional schools are available. Other books and pamphlets describe the entrance requirements, working conditions and compensations of thousands of career and job opportunities. Specialized materials are there to help you learn more about how to plan for your education and personal development.

3. Student Handbook

The NVCC *Student Handbook* provides additional information about the College. Student activities and organizations are described. Food services, bookstores, parking regulations, the statement of student rights and responsibilities, and a listing of college and campus office locations and phone numbers are included. Copies of the *Student Handbook* may be obtained in the Student Activities Office.

Faculty Advising

For the first semester at the College, you should work with a counselor to plan a program for meeting your educational objectives. You will then be referred to a faculty advisor or

counselor for all subsequent terms. Your faculty advisor/counselor will assist you in planning the rest of your program.

To graduate, you must obtain certification by your faculty advisor that all course requirements for the degree or certificate have been met. All students are encouraged to seek information and assistance from faculty advisors in career and occupational planning in addition to curriculum planning.

Even if you are not enrolled in a specific curriculum major, you may seek assistance from faculty advisors and counselors to help select courses during registration.

Financial Aid Services

NVCC strives to assure that no one be denied the opportunity of attending the College for financial reasons. The financial aid program provides a variety of ways for you to get funds for college.

Financial aid counselors at each campus provide information about financial aid programs, application procedures and eligibility.

Jobs are available on campus through a work-study program. If you can show financial need, you may qualify for participation in this program.

Loans are available through the Perkins Direct Student Loan and the Stafford (Guaranteed) Student Loan Program. If you need a loan, contact the Financial Aid Office for information and a determination of eligibility for a loan.

Supplemental Educational Opportunity Grants (SEOG) are federally funded and available in conjunction with other types of financial aid.

The Pell Grant, which is federally funded, requires financial need and at least half-time enrollment.

The College Scholarship Assistance Program provides scholarships for students domiciled in Virginia. The program is provided through the State Council of Higher Education for Virginia to needy students attending Virginia colleges who are making satisfactory academic progress.

Applications for financial aid are available from the Financial Aid Office on campus. Application must be made on your home campus and should be made well in advance of the semester for which assistance is needed. Applicants for all aid programs, including loans, must file a Financial Aid Form (FAF) through the College Scholarship Service. Completed applications received by April 1, 1992 will receive priority consideration.

The NVCC Student Financial Aid Committee is composed of representatives of the administration, student body, Financial Aid Offices, and faculty as appointed by the president. The Committee reviews and recommends policy on administering financial aid programs.

Extended Learning Institute courses will not be included in any calculation used to determine a student's eligibility for any financial aid funds or loan deferments.

Additional information on scholarships, grants, loans, and on-campus employment may be found in the 1992-93 *Student Financial Aid Services* brochure.

Satisfactory Progress

To be eligible for financial aid, you must maintain satisfactory academic progress for all periods of enrollment. If you are a degree-seeking student, you may be eligible for financial aid for no more than the equivalent of six full-time semesters of enrollment. If you are a certificate-seeking student, you may be eligible for financial aid for no more than the equivalent of three full-time semesters of enrollment. If you are required to take developmental studies, you are limited to receiving financial aid for 30 credits of developmental studies and 30 credits of ESL courses.

You must demonstrate satisfactory academic progress by completing the minimum number of required credits and achieving the minimum required GPA as measured by the Credit Completion Schedule. Completed credits are those for which a grade of "A", "B", "C", "D", "P", "R", or "S" was earned. You may receive financial aid for up to seven (7) credits of pass/fail coursework. The schedule is prorated if you are a part-time student. An evaluation of satisfactory academic progress will be done at the end of each summer session for degree-seeking students and at the end of each fall semester and summer session for students enrolled in certificate programs.

CREDIT COMPLETION SCHEDULE

Total Full-Time Semester Equivalent	Required Credits Completed	Required Cumulative GPA
1	12	—
2	24	1.75
3	36	1.75
4	48	2.00
5	60	2.00
6	72	2.00

* 13-23 credits requires a 1.50 GPA

If your academic standing is "Suspension", you will be immediately ineligible for aid until you have achieved a cumulative GPA of at least 1.50, and made up any other deficiencies under this policy.

You may apply to the Financial Aid Office for probationary eligibility when unusual and mitigating circumstances have prevented you from meeting the terms of this policy. You may appeal your status under this policy through the NVCC Student Grievance Procedures.

If you withdraw from or fail to attend classes, you are subject to repaying financial aid. Additional information is available in your Financial Aid Office.

Scholarships

Private citizens, businesses, non-profit institutions, and associations have generously donated scholarship funds for students. Recipients are selected by the Student Financial Aid Committee, the donor, or the campus. Most scholarships require that you provide a statement of financial need, and some are curriculum or career related. The Financial Aid Office on each campus can provide information about the current availability of individual scholarships as well as application materials.

The following scholarships are generally available each year:

- Armed Forces Communication Electronic Association Scholarship
- Kathy Ahern Memorial Scholarship
- Air Force Officers' Wives Club Scholarship
- Robert Altomare Endowed Scholarship
- Alumni Federation Scholarship
- American Association of University Women Scholarship
- The American Physical Society Scholarship
- American Society of Women Accountants Scholarship
- County of Fairfax Dept. of Animal Control Scholarship
- Annandale Music Scholarship
- Apple Federal Credit Union Scholarship
- Arlington Optimist Club Scholarship
- Philip Arnow Purchase Award in Art Aviation Technology Scholarship
- Berkley Ball Photo Scholarship
- Eleanor Becci Memorial Scholarship
- William Brian Beha Endowed Scholarship
- Biology Student Recognition Scholarship Fund
- Marilyn S. Blois Emergency Fund
- Joseph E. Boneta Physical Security Endowed Scholarship
- Book Publishers Scholarship
- Deanna Bronder Endowed Scholarship
- Mary M. Brown Scholarship
- George L. Buc Memorial Award (Endowed)
- Business and Professional Association Scholarship
- Campbell Scholarship
- Jeff Carroll Memorial Fund Scholarship Endowment
- Clifton Community Women's Club Scholarship
- Commonwealth Republican Women's Club Scholarship
- Computer Science Scholarship
- Jim Cote Memorial Scholarship
- Deca Foundation Scholarship
- Judy Mann DiStefano Memorial Scholarship
- Paul Douglas Teachers Scholarship
- Early Childhood Education Scholarship
- Elks National Foundation Vocational Scholarship
- Extended Learning Institute Scholarship
- Emergency Nursing Scholarship
- Fairfax County Home Economists in Home-making Scholarship
- Fairfax Medical Society Auxiliary Scholarship
- Falls Church Garden Club Scholarship
- Falls Church Women's Club Nursing Scholarship
- The Fashion Group, Inc. Scholarship
- F.B.I. Scholarship
- Fellowship Scholarship
- Leslie V. Forte Minority Student Endowed Scholarship
- James Freimuth Memorial Book Scholarship Endowment Fund
- Barry M. Goldwater Scholarship
- Goose Creek Herb Guild Horticulture Award Scholarship
- Mary Wallace Gouveia Scholarship
- Christopher Guerrero Memorial Scholarship
- Paula Hickey Nursing Endowed Scholarship
- Honor Award Program Scholarship
- HRIM Scholarship
- Industrial Education Foundation Scholarship
- International Studies Association Scholarship
- Interstate Van Lines Endowed Scholarship
- Clifford Alan James Memorial Endowed Scholarship
- James L. Jones, Jr. Endowed Scholarship
- Merriam A. Jones Scholar Award
- Dr. Barnard D. Joy Memorial Scholarship Endowment
- Junior League of Northern Virginia Scholarship
- Kaiser Permanente Health Sciences Endowed Scholarship
- Langley Kennel Club, Inc. Scholarship
- Lee Jackson Foundation Scholarship
- Liberty Savings Bank Scholarship
- Lido Civic Club Scholarship
- George F. Lowerre Memorial Scholarship Endowment
- Marketing Scholarship
- Martin Luther King Memorial Tuition Assistance Fund
- Herbert Earl McCartney Automotive Technology Scholarship
- James McKenna Scholarship
- Granville P. Meade Scholarship
- Media General Cable Scholarship
- Mobil Oil Honors Scholarship
- Charles S. Monroe & Jean M. Porter Endowed Scholarship
- Murphy/Lyceum Accounting Scholarship
- Music Benefit Scholarship Fund
- William B. Nafey Memorial Scholarship
- Navy Technical Scholarship Program
- Nissan "PROCAP" Scholarship
- Northern Virginia Board of Realtors, Inc. Scholarship
- Northern Virginia Community College Educational Foundation Endowed Scholarship
- Northern Virginia Community Foundation Endowed Scholarship
- NVDS Dental Lab Technology Scholarship
- David T. Oliver Memorial Scholarship Endowment
- Omicron Chi Omega Book Scholarship
- Opera Workshop Scholarship
- Patton Harris Rust & Association Scholarship
- Carl D. Perkins Scholarship
- Purchasing Management Assoc. of Washington Scholarship
- Orville Redenbacher's Second Start Program
- John H. Ryan/Hopper Scholarship
- L. G. Sheldon Scholarship
- Soroptimist Club—Fairfax Scholarship
- Soroptimist International of Arlington Scholarship
- Theta Rho Lambda's Rhonda A. Gilliam Memorial Scholarship
- NVCC Travel and Tourism Alumni Assoc. Scholarship
- Harry S. Truman Scholarship Program
- TRW Scholarship in Computer Science
- Tutorial Services Scholarship
- Veteran's Memorial Scholarship Fund
- Virginia Association of Broadcasters Scholarship
- Virginia Scholars Program Scholarship
- Visual/Performing Arts Scholarship
- Evelyn Amuedo Wade Literary Scholarship
- Washington Forrest Foundation Endowed Scholarship
- Earl C. Williams—Endowment Scholarship
- Women's Club of McLean Continuing Education Scholarship
- Women's Club of McLean Art Scholarship
- Zonta Club of Alexandria Scholarship
- Zonta Club of Fairfax Scholarship

Career Planning and Job Counseling

The College maintains a job referral service for off-campus jobs. Employment opportunities may be available while attending NVCC, during vacations, and even after graduation.

Local businesses cooperate with the College to provide part-time employment for students. An effort is made to refer you to a job in a field related to your College program. If you work more than 20 hours per week, you should adjust your course load accordingly. Referral information is available from the Career Planning and Job Counseling Office on each campus.

Student Accident and Sickness Insurance

A student accident and sickness insurance policy is available. You are encouraged to consider the coverage provided by this policy if you do not have other accident and sickness insurance.

Services for Students with Disabilities

NVCC is committed to serving persons with physical and learning disabilities. A goal of NVCC is that each qualified student have an equal opportunity to pursue a college education regardless of the presence or absence of a disability. To reach that goal, NVCC will provide the course, program and building modifications and auxiliary services which are necessary to assure equal access. NVCC assumes that if you are a disabled student, you will assist the College in identifying needed resources and possible agency sources.

Campus resources provide the direct services to students and some of the administrative support with the additional administrative support provided by college staff. Questions of compliance with section 504 of the Rehabilitation Act of 1973, as amended, should be addressed to the Coordinator of Affirmative Action and Minority Affairs.

Each campus and the Extended Learning Institute has identified one or more staff members to assist you. Areas of assistance include counseling, registration, special academic needs and liaison with area rehabilitative service agencies. Information regarding special parking permits can be obtained in the Security Office.

If you require any of these special services, you should contact the special services counselor at least two weeks prior to the beginning of classes. Early requests for special services enable the College to better assist you with your individual needs.

Student Activities

A variety of educational, cultural and social experiences are open to you at NVCC. Many of these learning opportunities are available outside of the classroom.

A counselor/coordinator of student activities on campus assists in planning extracurricular events and with the development of student organizations. The Student Government Association provides support for student groups who are promoting activities on campus. Student activities and organizations are open to all interested students, faculty and staff.

Student organizations which are recognized by the College include:

Academic Association of Vietnamese Students
Administration of Justice Club
Alexandria Campus Historical Association
Alexandria Campus Music Club
Alexandria Honors Association
All-Afrikan Student Union
American Institute of Architecture Students
Animal Science Club
Anthropology Club
Arabic Club
Aristos Xenia Tourismos
Art Students League
Association for Cooperative Education Students
Auto Association
Baptist Student Union
Basketball Club
Black Student Alliance
Chinese Students Association
Cooperative Education Association
Dancers, Etc.
Data Processing Management Association
Dental Assistants Association
Dental Hygienists Association
Deutscher Klub
Deutscher Verein
Free Speech Society
Friends of Pakistan
Horticulture Club
International Club
International Student Council
Korean Christian Student Fellowship
Korean Student Organization
Le Cercle Francais
Medieval Society
Model United Nations Club
Musica NOVA
Muslim Students Association
Newman Student Association
NOVA Art Association
NOVA Jazz Club
NOVAN Theatre Players
Nurses Christian Fellowship
Omega Engineering Students
Outdoor Adventure Club
Phi Beta Lambda (National Business Organization)
Phi Theta Kappa Alumni Association
Phi Theta Kappa Fraternity (National Junior College Honorary Scholastic Society)
Physical Therapist Assistants Club
Psychology Club
Radiography Association
Recreation and Parks Society
Science Club
Shoes of the Fisherman
Society for Minority Concerns
Society of Hosteurs
Spanish-American Latin Student Association
Spanish Club
Special Olympics Advocate Program Club
Student Activities Board
Student Government Association
Student Nurses Association
Student Photography Association
Students for Drug Education and Addiction Prevention
Thespians of Northern Virginia
Virginia Air Conditioning and Refrigeration Association
Woodbridge Honors Organization

Vocational Rehabilitation

The College cooperates with the Virginia State Department of Vocational Rehabilitation in providing education and training for persons who are handicapped.

Virginia Army National Guard Educational Benefits

The College participates in the Virginia Army National Guard Tuition Assistance Program. If you are a member of the Virginia Army National Guard, you may be eligible for educational benefits. You should contact your VaARNG Education Officer or the campus Veterans Office for details.

Veterans Affairs Office

The College participates in the Veterans Education Outreach Program. This federal program is designed to assist veterans in becoming students and supporting educational endeavors while enrolled. The Office of Veterans Affairs coordinates all veterans activities for the College. Veterans benefits, information, and counseling services for veterans are available at each campus.

Veterans Benefits

All degree and certificate programs of the College are approved for training eligible servicepersons, veterans, and dependents. Additional information is available from the Veterans Office on each campus.

If you are a veteran or a veteran's dependent, you may be eligible for educational benefits from the Department of Veterans Affairs. You should contact your campus Veterans Office each semester to complete the necessary forms to establish and maintain your eligibility for benefits. Full-time educational benefits are available to you if you are registering for and maintaining 12 or more credits in degree program courses. Three-quarter-time benefits are paid for 9 to 11 credits and half-time benefits are paid for 6 to 8 credits per semester. Active duty servicepersons and those registered for less than 6 credits are entitled to tuition reimbursement only. Certificate programs are measured differently for payment. Courses taken through the Extended Learning Institute (ELI) and accelerated courses are also measured differently. Certification for ELI courses will be done when the course is completed. See your campus Veterans Office for details.

You may have earned credits at another college, vocational school, or technical school. Credits may have also been earned by taking CLEP, ABLE, DANTES, or USAFI exams. You must insure that an official transcript is sent to the Admissions and Records Office during your first semester of enrollment. You must have your military training evaluated along with your transcripts from non-military schools. DD Form 214s (Certificate of Release or Discharge from Active Duty) originals or copy #4 should be copied by Admissions and Records for evaluation and returned to you. Generally, repeating courses which have been previously passed will not be certified to the Department of Veterans Affairs for payment.

If you receive educational benefits, you must report your enrollment each semester to the Vet-

erans Office on your home campus. The information will then be certified and reported to the Department of Veterans Affairs Regional Office. Any changes to your registration must also be reported to the Veterans Office. Changes include: canceled classes, dropped classes, withdrawing from classes, adding classes, or any other type of change that may affect your eligibility to receive benefits from the Department of Veterans Affairs. Excessive absences may result in the dismissal from the course and adjustment of benefits from the Department of Veterans Affairs. Any change in status must be reported to the Department of Veterans Affairs as soon as possible, but no more than 30 days after the change has been officially completed at the College.

Satisfactory Progress Policy for Recipients of Veterans Benefits

To be eligible for veterans educational benefits, you must maintain satisfactory academic progress in accordance with Northern Virginia Community College standards. The following standards must be met:

1. You will be reported to the Department of Veterans Affairs as making unsatisfactory progress if your cumulative GPA falls below the required level based on the following schedule:

Regular Credits Attempted (Grades A, B, C, D, F)	Minimum Cumulative GPA Requirement
13-23 credits	1.50
24-47 credits	1.75
48 or more credits	2.00

This standard will be applied each term. However, if you do not achieve the above minimum cumulative GPA requirement, but you do achieve a GPA of at least a 2.0 for the term being evaluated, you may be certified for that term as making satisfactory progress.

2. When your academic record does not meet the above standards, you will be notified in writing by the veterans advisor that your next term will be "probationary." You will be required to meet with a counselor or faculty advisor to develop a written plan to indicate how you will successfully complete your edu-

ational objective and how you will satisfy the GPA requirement for satisfactory progress toward graduation. This plan will be kept on file in the Veterans Office.

3. If you do not meet the minimum cumulative GPA requirement or do not earn a minimum GPA of 2.0 for your probationary term, you will be reported to the Department of Veterans Affairs as making unsatisfactory progress. You may be certified on a retroactive basis for the following term if you receive a minimum GPA of 2.0 for that semester. When your cumulative GPA meets or exceeds the minimum requirement, educational benefits will be restored on a regular basis.
4. If you are subject to academic suspension, you must be reported to the Department of Veterans Affairs as making unsatisfactory progress. Benefits will not be resumed until you are making satisfactory progress.
5. Questions regarding this policy should be addressed to the campus veterans advisor.

Virginia War Orphans Education Program

The Virginia War Orphans Education Program provides educational assistance for children, or surviving children, of certain veterans or service personnel. To be eligible for assistance under this program, an applicant must meet some basic eligibility requirements. For more information or applications, contact the Veterans Office on your campus.

Tuition Benefits for Survivors of Deceased Public Safety Officers of Virginia

The *Code of Virginia* (Sec. 23-7.1:01) provides tuition benefits for certain children and spouses of deceased public safety officers. You may be eligible for free tuition at the College if your parent or spouse was killed in the line of duty as a Virginia law enforcement officer, fire fighter, rescue squad member, or agent of the Department of Alcoholic Beverage Control while employed in Virginia. Children must be between the ages of 16 and 25. For more information on eligibility requirements and application procedures, you should contact your campus Office of Admissions and Records.

Servicemembers Opportunity College

NVCC has been designated as an institutional member of Servicemembers Opportunity Colleges (SOC), a group of over 700 colleges and universities providing voluntary postsecondary education to members of the military throughout the world. As a SOC member, NVCC recognizes the unique nature of the military lifestyle and has committed itself to easing the transfer of relevant course credits, providing flexible academic residency requirements, and crediting learning from appropriate military training and experiences. SOC has been developed jointly by educational representatives of each of the Armed Services, the Office of the Secretary of Defense and a consortium of thirteen leading national higher education associations; it is sponsored by the American Association of State Colleges and Universities (AASCU) and the American Association of Community and Junior Colleges (AACJC).

In addition to its SOC membership, NVCC is one of approximately 50 institutions providing occupational and flexible Servicemembers Opportunity Colleges Associate Degree programs on over 200 Army installations worldwide. These programs lead to associate degrees and most of them correspond to enlisted and warrant officer job specialties. Through prior agreement, students in SOCAD programs:

1. have residency credit limited to 1/4 of total degree requirements taken at any time;
2. are awarded credit for experience in their military occupational specialty (MOS) and service schools as appropriate to their program;
3. are awarded credit for non-traditional learning based on results of national tests, such as CLEP and SSTs, as appropriate to their program;
4. have a SOCAD Student Agreement completed as their official evaluation stating remaining degree requirements and eliminating the need for reevaluation of previous credit;
5. are guaranteed that courses listed in transferability charts in the SOCAD Handbook will be accepted for degree requirements within each curriculum area.

Northern Virginia Community College offers many types of credit and non-credit programs. This section of the College *Catalog* will help you understand what these programs are.

This section contains a description of each of the one-year and two-year curricula of the College. Special courses are available to help you upgrade your skills in specific subjects. Cooperative Education courses allow you to work and earn college credits at the same time. The credit programs of the College are outlined and explained in this section.

Community Service

The Office of Continuing Education on each campus helps to plan and provide many types of credit and non-credit programs to meet special interests within the community. Various community education programs and seminars focus attention on social issues. Business, industry and professional organizations provide special courses at NVCC for their employees. These programs can be set up at the College or where you work.

Many non-credit programs are offered each semester to serve special community needs. A listing of community service courses is included in each *Schedule of Classes*.

Courses and workshops often result from requests by individuals or groups within the community. The topics vary from job skills to personal enrichment interests. The programs pay for themselves through fees charged to participants. State funds are not used for setting up or offering a course, or paying the instructor. Fees for community service courses vary depending upon the actual cost of each course. Community service course information and registration instructions are available at each campus Office of Continuing Education.

Cultural affairs are available through short courses, special lectures, music presentations and art festivals. Community groups and organizations may also make special arrangements to use facilities of the College for their own programs or meetings.

Continuing Education Units for Non-Credit Courses

The College awards Continuing Education Units (CEU) upon completion of most non-credit courses. One CEU represents ten hours of participation in community service courses which meet the following standards:

1. The non-credit activity is planned in response to an assessment of educational needs for a specific target population.
2. There is a statement of objectives and rationale.
3. Content is selected and organized in a sequential manner.
4. There is evidence of pre-planning.
5. The activity is instructional and is approved by an academic or administrative unit of the institution best qualified to affect the quality of the program content and to approve the resource personnel utilized.
6. There is provision for registration for individual participants.
7. Evaluation procedures are utilized.
8. Criteria are established for awarding Continuing Education Units to individual students prior to the beginning of the activity.

Developmental Studies

If you are coming to the College without some high school courses or prerequisites needed for admission to a curriculum, or if you wish to upgrade your skills, the developmental studies program may be the place for you to begin your course of study at NVCC.

Once you are accepted by the College (see Administrative Information section), you may take developmental courses until you are ready to go into the program of your choice. Developmental courses are offered at all campuses of the College. These courses (numbered 001 through 009) are available in biology, chemistry, English composition, spelling, English as a second language, reading and mathematics (arithmetic through trigonometry).

Counselors will help you determine the areas in which your skills and knowledge are below college entry level. In some cases you must complete your developmental courses before enrolling in certain courses or being admitted to a curriculum. In other cases, you can take college level courses along with developmental courses. The approval of a counselor or faculty advisor in the curriculum would be required.

Developmental courses carry credits, but these are primarily for administrative purposes such as calculating tuition and student course loads. The credits do not apply toward graduation and are not counted in your grade point average.

There is a wide variety of instructional methods and materials used at the College for developmental courses. In some courses there is a choice of either the classroom type of lecture/discussion or individualized (programmed) instruction in which you can work at your own rate of learning. Also, with some of these courses you can sign up during the semester and complete the work at a pace suited to your needs. Some developmental courses are offered through the Extended Learning Institute. If you have any questions, please check with a counselor or faculty advisor.

Cooperative Education

Cooperative Education courses are designed to provide you with practical on-the-job learning experience in your career field. You earn college credit and a grade while working in an approved job.

Cooperative Education bridges the gap between theory and practice by providing the opportunity for you to apply the concepts and skills learned in the classroom to a job situation. The professional and technical experience you gain through Cooperative Education establishes a record of performance in your career field and eases your entry into a permanent career position. Over 80% of the Cooperative Education graduates remain with their Co-op employers upon graduation. If you Co-op with a federal government agency, you can be retained *non-competitively* in a permanent position upon graduation.

To be eligible to participate in Cooperative Education courses, you must:

1. Be program placed in a degree or certificate program which offers co-op experience.
2. Have completed 15 semester hours of college work or the equivalent, including transfer credit.

3. Have completed a minimum of two courses in your major area of study.
4. Have a 2.00 or better grade point average.
5. Obtain divisional approval after a review of your academic/employment record and a determination of your potential for success in a Co-op position.

Before registering for Co-op, you must have written approval from a faculty member in your curriculum and be hired by an approved Co-op employer.

Credit earned in Cooperative Education courses may be used to substitute for up to 10 credits of course work in selected degree programs with the approval of your faculty advisor, may be used for elective credit, or earned as additive credit.

Types of Degrees and Certificates

Northern Virginia Community College offers two-year associate degrees, one-year certificates and short career studies certificates. The requirements for these awards for completion of curricula are determined by the faculty of the College and are intended to meet the requirements specified by the Commonwealth of Virginia, the Southern Association of Colleges and Schools, and certain specialized accrediting agencies.

Associate in Applied Arts Degree (A.A.A.)

This degree is awarded for completion of two-year curricula which are primarily designed to prepare a student for employment in jobs in fine arts, music, and photography. The general education requirement for A.A.A. degrees is less than for A.A. and A.S. degrees. In some cases, the A.A.A. degree may also transfer to four-year degree-granting institutions for the completion of the Bachelor of Fine Arts (BFA) degree.

Associate in Applied Science Degree (A.A.S.)

This degree is awarded for completion of two-year curricula which are designed to prepare the student for employment immediately following graduation. In some A.A.S. degree programs one or more summer terms may be required. The general education requirement for A.A.S. degrees is less than for A.A. and A.S. degrees. In some programs, transfer arrangements may be available for A.A.S. degree graduates.

Associate in Arts Degree (A.A.)

This degree is awarded for the completion of two-year curricula in Fine Arts, Liberal Arts, and Music. The A.A. degree is designed for those who plan to transfer to a four-year degree-granting institution for the completion of a Bachelor of Arts (B.A.) degree. A significant portion of the A.A. degree is in general education designed to meet the majority of the requirements in the first two years of most four-year B.A. degrees.

Associate in Science Degree (A.S.)

This degree is awarded for the completion of two-year curricula in a variety of pre-professional programs. The A.S. degree is designed for those who plan to transfer to a four-year degree-granting institution for the

completion of a Bachelor of Science (B.S.) degree. A significant portion of the A.S. degree is in general education designed to meet the majority of the requirements in the first two years of most four-year B.S. degrees.

Certificate

A certificate is awarded for the completion of various one-year occupational/technical curricula. Most certificates prepare the student for a specific job or aspect of a job. Some certificates are part of an associate degree program, in which case the credit earned in the certificate may be used toward the degree.

Career Studies Certificate

The career studies certificate is a response to the short-term training needs of many individuals, and can be completed in less time than conventional certificates or degrees. The career studies programs are designed for expansion of job and life skills, retraining for career change, and investigating new career possibilities. Credit earned in a career studies certificate curriculum may be used to meet the requirements in other certificates and degrees which require similar courses.

Multiple Degrees

You may earn more than one degree or certificate at NVCC. All of the graduation requirements for each individual curriculum must be completed prior to the award of the degree or certificate for that program. When the Associate in Science degree in General Studies is one of the multiple degrees to be awarded, the A.S. degree in General Studies shall include a minimum of 9 semester hours beyond the requirements of any other degree awarded to you by the College.

Degree Requirements

	Degrees			
	A.A.	A.S.	A.A.A.	A.A.S.
Written & Oral Communication ¹	9	9	6	6
Humanities ²	3	—	—	—
Foreign Language ³	6	—	—	—
American or Western History	6	3	—	—
Social Sciences ⁴	6	6	6	6
Mathematics ⁵	6	6	3	3
Natural Sciences ⁶	8	8	—	—
STD 100 ⁷	1	1	1	1
Physical Education/Wellness ⁸	2	2	2	2
General Elective ⁹	0-3	0-3	0-3	0-3
Major Area Requirements	15-18	27-30	44-47	44-47
Total Minimum Credits Required	65	65	65	65

¹Written and Oral Communication

For A.A. and A.S. degrees, ENG 111-ENG 112, College Composition I-II are required. A 3-credit speech course is also required.

For A.A.A and A.A.S degrees, 3 credits in English composition (ENG 111, College Composition or ENG 131, Technical Report Writing) and a speech course are required.

²Humanities

Humanities requirements in A.A. degrees may be met by courses in art (ART), literature (ENG), humanities (HUM), music (MUS), philosophy (PHI), religion (REL), speech and drama (SPD), or foreign languages.

³Foreign Language

If you are in an A.A. program, you must demonstrate proficiency in a foreign language through the intermediate (201-202) level, which is consistent with the lower division requirements for most B.A. degrees. Waivers or credit by exam (through CLEP) for previous experience may be available for some languages.

⁴Social Sciences

The social science requirement may be met by courses in economics (ECO), geography (GEO), history (HIS), political science (PLS), psychology (PSY), and sociology (SOC). Where the social science is listed as an elective in a curriculum, you may select from courses in any of these areas.

⁵Mathematics

A.A. and A.S.: a minimum of 6 credits in mathematics at or above the 100 level is required. Majors in Computer Science, Engineering, Engineering with a specialization in Electrical Engineering, Science, and Science with a specialization in Mathematics should take one of the following sequences:

- MTH 166 College Algebra and Trigonometry and MTH 271 Applied Calculus I
 - MTH 173-174 Calculus with Analytical Geometry I-II
 - MTH 277 Multi-variable Calculus and MTH 285 Linear Algebra and MTH 291 Ordinary Differential Equations
- Other majors should take one of the following sequences:
- MTH 151-152 Mathematics for the Liberal Arts I-II
 - MTH 165 College Algebra and MTH 241 Statistics I
 - MTH 181-182 Finite Mathematics I-II

A.A.A. and A.A.S: each degree must include at least one mathematics course numbered at or above 100. A minimum of 3 credits must be earned in mathematics/natural sciences. In degrees which have a science requirement, the mathematics course may be fewer than 3 credits.

⁶Natural Sciences

A.A. and A.S. degrees require 8 credits in courses in the natural sciences which include laboratories. Courses may be chosen from biology (BIO), chemistry (CHM), geology (GOL), and physics (PHY).

A.A.A. and A.A.S. degrees may or may not require a natural science depending on the curriculum.

⁷STD 100—Orientation

STD 100 is a one-credit course which is designed to help you succeed in college. A variety of topics may be covered including study skills, test-taking skills, and college learning resources. You should take STD 100 during your first semester at NVCC.

⁸Physical Education/Wellness

The 2-credit physical education/wellness requirement may be met by one of the following options:

- PED 101, 1 credit, and a PED activities course, 1 credit
- PED 101, 2 credits
- PED 101, 1 credit, and an RPK activities course, 1 credit

⁹General Elective

One course from outside the major area is required in each degree program. In programs where at least one of the social science requirements is left as an elective, the social science elective may also be used to meet the requirement for a general elective.

Certificate Requirements

1. The minimum number of credits required for certificates is 30 credits. The total number of credits required for a given certificate is specified for each curriculum.
2. All major courses and possible substitutions are given with each curriculum.
3. The required general education component is incorporated in each curriculum listing.

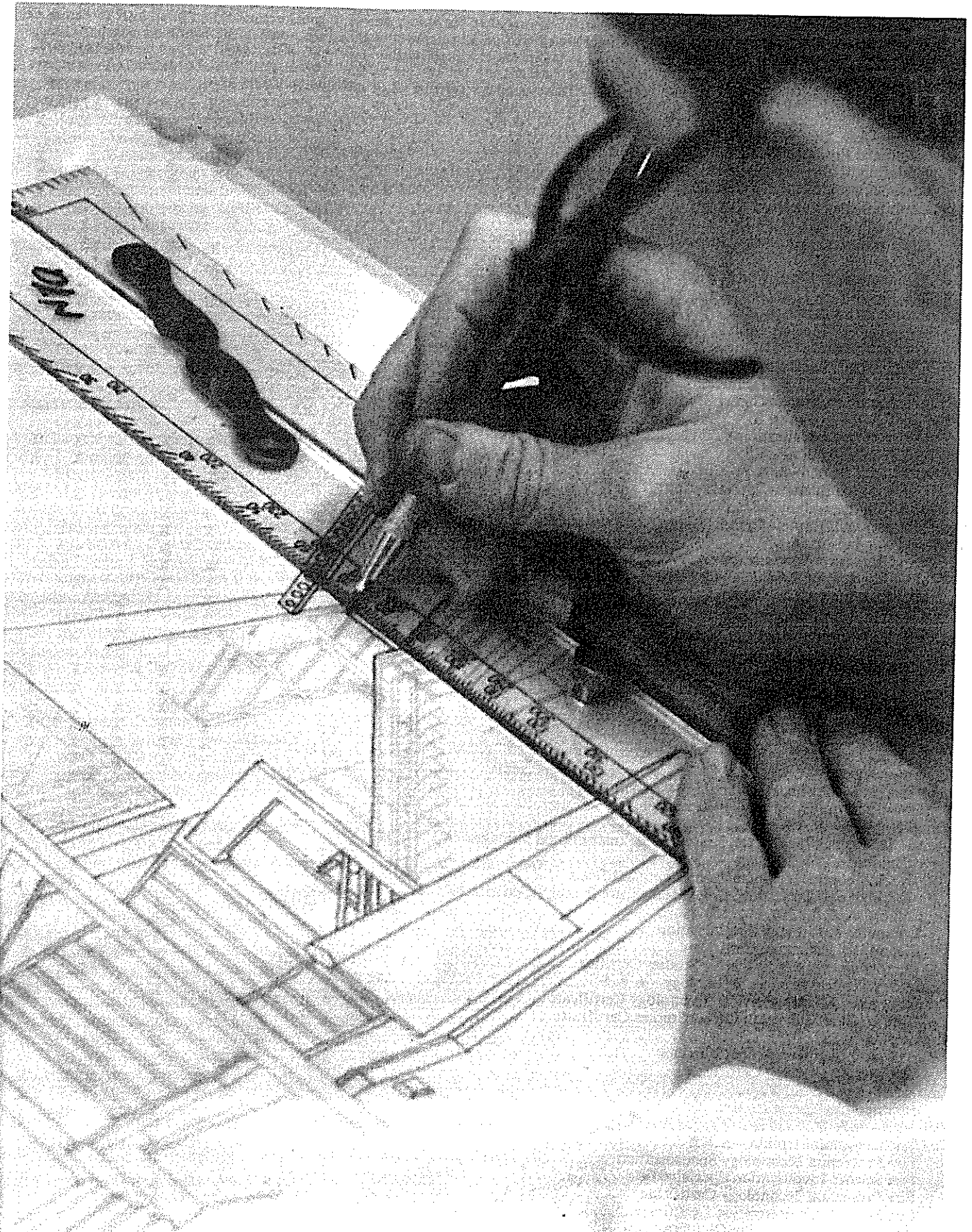
Career Studies Certificate Requirements

A minimum of 9 credits is required to complete a career studies certificate. The total number of credits required for a given career studies certificate is specified for each curriculum.

General Information

In the following section, the degree and certificate curricula are listed. They are arranged in alphabetical order according to title of the major or special area of study. Immediately following each major will be any specializations or related certificates of the major. The Nursing and Health Technologies curricula are listed after other areas of study. Each curricular listing:

1. States the purpose of the program, including information concerning occupational or transfer objectives;
2. States recommended preparation or special curriculum admission requirements, if any, beyond those for acceptance by the College;
3. Specifies the required courses and minimum number of credit hours for completion;
4. Suggests a sequence for taking courses; and
5. Provides an outline to follow for completion of the curriculum with full-time study.



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Budding architect has designs on future.

Curricula

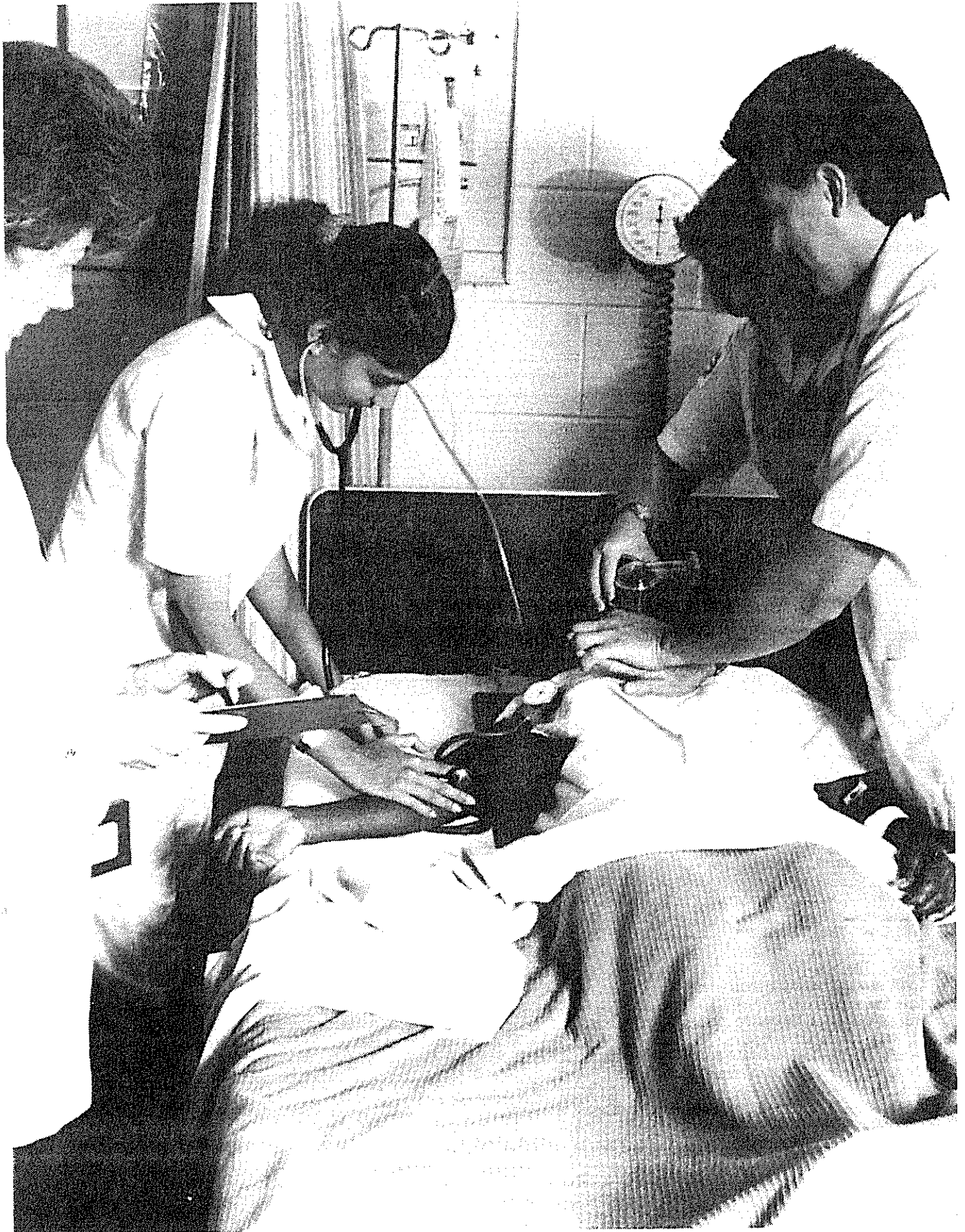
The list on these two pages shows the curricula offered by the College. All general education, orientation, and physical education

courses which are required for the degree or certificate are offered on all campuses of the College. Specialized major courses required for some degree curricula are not offered on all campuses. Those campuses offering all of the

courses required for a given degree or certificate are noted in the right-hand column. Campus symbols are: AL—Alexandria, AN—Annandale, LO—Loudoun, MA—Manassas, WO—Woodbridge.

	AL	AN	LO	MA	WO
Accounting—A.A.S.	X	X	X	X	X
Acquisition and Procurement—A.A.S.	X				
Administration of Justice—A.A.S.	X	X			X
Administration of Justice Certificate	X	X			X
Air Conditioning and Refrigeration—A.A.S.					X
Air Conditioning and Refrigeration Certificate					X
Air Conditioning and Refrigeration Career Studies Certificate					X
Architecture—A.A.S.	X	X		X	
Architectural Drafting Certificate	X	X		X	
Art Education—A.S.	X	X	X	X	X
Automotive Technology—A.A.S.	X			X	
Diagnostician Specialization	X			X	
Automotive Body Technology Certificate	X				
Automotive Driveability Certificate	X			X	
Automotive Electrical Technician Certificate	X			X	
Automotive Machinist Career Studies Certificate	X				
Aviation Technology—A.A.S.				X	
Career Pilot Specialization				X	
Business Administration—A.S.	X	X	X	X	X
Business Management—A.A.S.	X	X	X	X	X
International Business Specialization	X	X	X		
Small Business Management Certificate	X	X	X	X	X
International Business Career Studies Certificate	X	X	X		
Civil Engineering—A.A.S.	X	X			
Land Surveying Specialization	X	X			
Civil Engineering Technician Certificate	X	X			
Site Management Certificate	X	X		X	
Communication Design—A.A.S.	X		X		
Computer Graphics Design Specialization	X		X		
Illustration Specialization	X		X		
Computer Information Systems—A.A.S.					
Microcomputer Usage Specialization	X	X	X	X	X
Programming Specialization	X	X	X	X	X
System Analyst Specialization	X	X	X	X	X
Technical Support Specialization	X	X	X	X	X
Microcomputer Usage Career Studies Certificate	X	X	X	X	X
Computer Science—A.S.	X	X	X	X	X
Construction Management Technology—A.A.S.	X			X	
Construction Inspection Certificate	X			X	
Dental Hygiene—A.A.S.		X			
Dietetic Technology (See Hotel, Restaurant & Institutional Management)					
Early Childhood Development—A.A.S.	X				
Early Childhood Development Assistant Certificate	X				
Early Childhood Education: Child Home Care (Nanny) Certificate	X				
Electronics—A.A.S.		X			X
Computer Technology Specialization		X			X
Electronics Technician Certificate		X			X
Microcomputer Repair Career Studies Certificate		X			X
Emergency Medical Services Technology—A.A.S.		X			
Emergency Medical Services Technology Certificate		X			
Cardiac Care Technician Career Studies Certificate		X			
Engineering—A.S.	X	X			
Electrical Engineering Specialization		X			
Engineering Drafting Certificate	X	X		X	
Fine Arts—A.A.A.	X	X	X	X	X
Photography Specialization	X	X	X	X	X
Fine Arts—A.A.		X			
Fire Science Administration—A.A.S.		X			
Fire Protection Technology Specialization		X			
Fire Science Investigation Specialization		X			
Fire Protection Technology Certificate		X			
Fire Science Administration Certificate		X			
Fire Science Investigation Certificate		X			
Fitness Instructor Career Studies Certificate	X	X	X	X	X
General Studies—A.S.	X	X	X	X	X
Gerontology—A.A.S.	X				

	AL	AN	LO	MA	WO
Horticulture Technology—A.A.S.			X		
Floriculture Specialization			X		
Landscape Technician Career Studies Certificate			X		
Turf and Grounds Management Career Studies Certificate			X		
Hotel, Restaurant & Institutional Management—A.A.S.		X			
Dietetic Technology Specialization		X			
Food Service Management Specialization		X			
Hotel Management Specialization		X			
Hotel, Restaurant and Institutional Management:					
Food Service Management Certificate		X			
Hotel, Restaurant and Institutional Management:					
Hotel Management Certificate		X			
Human Services Associate—A.A.S.	X				
Interior Design—A.A.S.			X		
Legal Assisting—A.A.S.	X				
Liberal Arts—A.A.	X	X	X	X	X
Art History Specialization	X	X	X	X	X
International Studies Specialization	X	X	X		X
Music Specialization	X	X	X		
Philosophy Specialization	X	X			X
Religion Specialization	X	X			X
Speech Communication Specialization	X	X	X	X	X
Marketing—A.A.S.	X	X			X
Fashion Specialization	X	X			X
Mechanical Engineering—A.A.S.		X			
Computer-Aided Drafting and Manufacturing Specialization		X			
Electro-Mechanical Technology Specialization		X			
Machine Tool Operation Certificate		X			
Medical Laboratory Technology—A.A.S.		X			
Histotechnology Career Studies Certificate		X			
Phlebotomy Career Studies Certificate		X			
Medical Record Technology—A.A.S.		X			
Medical Office Assisting Career Studies Certificate		X			
Music—A.A.A.	X	X	X		
Jazz/Popular Music Specialization	X	X	X		
Sacred Music Specialization	X	X	X		
Music—A.A.	X	X	X		
Music Recording Technology Certificate			X		
Nursing—A.A.S.		X			
Office Administration & Management—A.A.S.	X				X
Office Systems Technology—A.A.S.	X				X
Executive Secretary Specialization	X				X
Word Processing Specialization	X				X
Office Systems Technology Certificate	X				X
Desktop Publishing Career Studies Certificate	X				X
Photography—A.A.S.	X		X		
Studio Photography Specialization	X		X		
Physical Therapist Assistant—A.A.S.		X			
Professional Writing for Business, Government, and Industry Certificate	X	X			X
Radiography—A.A.S.		X			
Real Estate—A.A.S.	X	X		X	
Real Estate Certificate	X	X		X	
Recreation and Parks—A.A.S.		X			
Respiratory Therapy—A.A.S.		X			
Respiratory Therapy Certificate		X			
Science—A.S.	X	X	X	X	X
Mathematics Specialization	X	X	X	X	X
Security Administration—A.A.S.	X	X			X
Industrial and Commercial Security Career Studies Certificate		X			X
Physical Security Career Studies Certificate	X	X			X
Substance Abuse Rehabilitation—A.A.S.	X				
Substance Abuse Rehabilitation Counselor Certificate	X				
Travel and Tourism—A.A.S.		X			
Travel and Tourism Certificate		X			
Veterinary Technology—A.A.S.			X		
Welding Certificate				X	
Welding: Advanced Techniques Career Studies Certificate				X	
Welding: Basic Techniques Career Studies Certificate				X	



Nursing students help patient and each other.

ACCOUNTING

**Associate in Applied Science Degree
Business Management Degree Program**

Purpose: The curriculum is designed for persons who seek employment in the accounting field or for those presently in accounting who desire to increase their knowledge and update their skills. The occupational objectives include: accounting trainee, accounting technician, junior accountant, accountant.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic.

First Year	Credits	
	1st Semester	2nd Semester
ACC 211 Principles of Accounting I	3	
BUS 100 Introduction to Business	3	
CIS 150 Intro. to Microcomputer Software	3	
¹ ENG 111 College Composition I	3	
MTH 120 Introduction to Mathematics	3	
PED 101 Fund. of Physical Activity	1	
STD 100 Orientation	1	
ACC 212 Principles of Accounting II		3
BUS 125 Applied Business Mathematics or BUS 121 Business Mathematics I		3
BUS 150 Principles of Management		3
ECO 120 Survey of Economics		3
¹ ENG 112 College Composition II		3
PED Elective		1
Total Credits	17	16

Second Year	Credits	
	1st Semester	2nd Semester
ACC 221 Intermediate Accounting I	3	
ACC 231 Cost Accounting I	3	
ACC 261 Prin. of Federal Taxation I	3	
BUS 241 Business Law I	3	
² Social science elective	3	
SPD 110 Intro. to Speech Communication	3	
ACC 222 Intermediate Accounting II		3
ACC 241 Auditing I		3
³ ACC Elective		3
³ ACC Elective		3
BUS 225 Applied Business Statistics		3
FIN 215 Financial Management		3
Total Credits	18	18

Total minimum credits for the Accounting major (A.A.S. degree) = 69.

¹ ENG 115 or ENG 116 may be substituted for ENG 112.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

³ ACC 215, ACC 219, ACC 232, ACC 242, and ACC 262 are acceptable electives.

ACQUISITION AND PROCUREMENT

**Associate in Applied Science Degree
Business Management Degree Program**

Purpose: The curriculum is designed for persons who plan to seek employment in acquisition and procurement positions and for those presently in acquisition and procurement positions who seek career advancement.

Occupational Objectives: Project manager, procurement analyst, contract administrator, contract specialist, contract negotiator, contract price analyst, contract termination specialist.

Admission Requirements: In addition to the general admission requirements of the College, entry into the program requires proficiency in high school English and mathematics. Students with deficiencies will require developmental studies.

Program Description: The first two semesters of the curriculum are similar to other curricula in business. However, in the second year students will pursue an individual specialty in acquisition and procurement. The curriculum includes technical courses in acquisition and procurement, courses in related areas, and courses in general education. Instruction will include both the theoretical concepts and the practical applications needed for future success in the acquisition and procurement field.

First Year	Credits	
	1st Semester	2nd Semester
ACQ 121 Intro. to Procurement & Acquisition Management I	3	
CIS 150 Intro. to Microcomputer Software	3	
ECO 120 Survey of Economics	3	
ENG 111 College Composition I	3	
MTH 120 Intro. to Mathematics	3	
STD 100 Orientation	1	
ACQ 122 Intro. to Procurement & Acquisition Management II		3
BUS 125 Applied Business Math. or BUS 121 Business Math. I		3
ENG 112 College Composition II		3
PED 101 Fundamentals of Physical Activity		1
¹ Social science elective		3
SPD 110 Intro. to Speech Communication		3
Total Credits	16	16

Second Year	Credits	
	1st Semester	2nd Semester
ACC 211 Principles of Accounting I	3	
ACQ 216 Cost and Price Analysis	3	
ACQ 221 Adv. Procurement & Acquisition Management I	3	
BUS 150 Principles of Management	3	
BUS 225 Applied Business Statistics	3	
BUS 241 Business Law I	3	
ACC 212 Principles of Accounting II		3
ACQ 215 Contract Law		3
ACQ 218 Negotiations of Contracts & Contract Modification		3
ACQ 222 Adv. Procure. & Acq. Mgmt. II		3
ACQ 297 Coop. Ed. in Acquisition & Procurement or ACQ elective		3
PED Elective		1
Total Credits	18	16

Total minimum credits for the Acquisition and Procurement major (A.A.S. degree) = 66.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology). PLS 211 U. S. Government I is recommended.

ADMINISTRATION OF JUSTICE

**Associate in Applied Science Degree
Protective Services Degree Program**

Purpose: The curriculum is designed to provide a broad foundation which will prepare the student to enter any of the varied fields in the criminal justice system or to prepare for professional advancement. The occupational objectives include: local, state and federal enforcement officers, police officers, private or government investigators, adult/juvenile corrections officers, probation/parole officers and counselors.

Transfer Program to George Mason University: All credits awarded in this degree program will transfer to George Mason University under the "2 + 2" curricula agreement. Exceptions are STD 100 (Orientation) and PED courses (Physical Education). The program is designed to accommodate those students who plan to transfer to George Mason University to complete a Bachelor of Science degree in Law Enforcement.

Special Curriculum Admission Requirements: Students are advised that many criminal justice agencies require excellent moral character and a written record of conduct prior to consideration for employment. Adjustments in curriculum may be made with faculty approval to enable a student to transfer to a four-year criminal justice program. This program is included under the Safe Streets Act of 1968 for S.L.E.O.E.P. grants and loans. See a financial aid counselor for details.

First Year		Credits	
		1st Semester	2nd Semester
ADJ	100 Survey of Criminal Justice	3	
ADJ	107 Survey of Criminology	3	
ADJ	111 Law Enf. Organ. & Admin. I or ADJ 140 Intro. to Corrections	3	
ENG	111 College Composition I	3	
PED	101 Fundamentals of Physical Activity	1	
¹ —	Social science elective	3	
STD	100 Orientation	1	
ADJ	105 The Juvenile Justice System		3
ADJ	112 Law Enf. Organ. & Admin. II or ADJ 241 Correctional Law I		3
—	General elective		3
² MTH	Elective		3
PED	Elective		1
¹ —	Social science elective		3
Total Credits		17	16

Second Year		Credits	
		1st Semester	2nd Semester
ADJ	211 Criminal Law, Evid. & Proc. I	3	
ADJ	216 Organized Crime & Corruption	3	
ADJ	236 Principles of Criminal Invest.	3	
ADJ	Elective	3	
³ CIS	100 Intro. to Information Systems	3	
SPD	110 Intro. to Speech Communication	3	
ADJ	212 Criminal Law, Evid. & Proc. II		3
ADJ	215 Report Writing		3
ADJ	237 Adv. Criminal Investigation or ADJ 248 Probation, Parole & Treatment		3
ADJ	Elective		3
PLS	135 American National Politics or PLS 211 U.S. Government I		3
Total Credits		18	15

Total minimum credits for the Administration of Justice major (A.A.S. degree) = 66.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology). PSY 201-202 or SOC 201-202 are recommended.

² MTH elective approved by faculty advisor.

³ Or CIS elective approved by faculty advisor.

ADMINISTRATION OF JUSTICE

Certificate

Purpose: The certificate curriculum in Administration of Justice is designed for those students who wish to take only those courses which relate directly to the law enforcement field. Courses taken in the certificate program can be applied to the A.A.S. degree.

Special Curriculum Admission Requirements: The same requirements apply as stated for the A.A.S. curriculum.

		Credits	
		1st Semester	2nd Semester
ADJ	100 Survey of Criminal Justice	3	
ADJ	211 Criminal Law, Evid. & Proc. I	3	
ADJ	Elective	3	
ENG	111 College Composition I	3	
¹ —	Social science elective	3	
STD	100 Orientation	1	
ADJ	105 The Juvenile Justice System		3
ADJ	212 Criminal Law, Evid. & Proc. II		3
ADJ	215 Report Writing		3
ADJ	Elective		3
² CIS	100 Intro. to Information Systems		3
¹ —	Social science elective		3
Total Credits		16	18

Total minimum credits for the Administration of Justice certificate = 34.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology). PSY 201-202 or SOC 201-202 are recommended.

² Or CIS elective approved by faculty advisor.

AIR CONDITIONING AND REFRIGERATION

**Associate in Applied Science Degree
Environmental Control Degree Program**

Purpose: This curriculum is designed to prepare students for jobs in the refrigeration and air conditioning field. The occupational objectives include: service, maintenance, repair and installation of refrigeration and air conditioning equipment.

First Year		Credits	
		1st Semester	2nd Semester
AIR	101 Principles of Refrigeration I	4	
AIR	111 Air Cond. & Ref. Controls I	3	
ENG	111 College Composition I	3	
MTH	103 Basic Tech. Math I	3	
PED	101 Fundamentals of Physical Activity	1	
¹ —	Social science elective	3	
STD	100 Orientation	1	
AIR	102 Principles of Refrigeration II		4
AIR	110 Principles of Air Conditioning		3
AIR	134 Circuits & Controls I		3
AIR	155 Heating Systems		4
MTH	104 Basic Tech. Math II		3
PED	Elective		1
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
AIR	205 Hydronics & Zoning	4	
AIR	211 Air Conditioning Controls	4	
AIR	251 Air Cond. Systems I	4	
—	Social science elective	3	
SPD	110 Intro. to Speech Communication ..	3	
AIR	199 Supervised Study		1
AIR	218 Heat Load Estimation		3
AIR	238 Advanced Troubleshooting & Service		3
AIR	245 Electric Heat & Heat Pumps		4
AIR	252 Air Cond. Systems II		4
—	Technical elective		3
Total Credits		18	18

Total minimum credits for the Air Conditioning and Refrigeration major (A.A.S. degree) = 72.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

AIR CONDITIONING AND REFRIGERATION

Certificate

Purpose: The certificate program is intended to prepare students for jobs in the refrigeration and air conditioning field. Upon successful completion of the program, the student is enabled to take full-time employment. The occupational objectives include: service, maintenance, repair and installation of refrigeration and air conditioning equipment.

		Credits	
		1st Semester	2nd Semester
AIR	101 Prin. of Refrigeration I	4	
AIR	111 Air Cond. & Ref. Controls I	3	
AIR	155 Heating Systems	4	
MTH	103 Basic Technical Math I	3	
—	Social science elective	3	
AIR	102 Prin. of Refrigeration II		4
AIR	134 Circuits & Controls I		3
AIR	199 Supervised Study		1
AIR	211 Air Conditioning Controls I		4
ENG	111 College Composition I		3
MTH	104 Basic Technical Math II		3
Total Credits		17	18

Total minimum credits for the Air Conditioning and Refrigeration certificate = 35.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

AIR CONDITIONING AND REFRIGERATION

Career Studies Certificate

Purpose: The Air Conditioning and Refrigeration career studies certificate is designed to prepare the student for entry-level positions in the air conditioning and refrigeration industry. The occupational objectives include instruction in basic principles, service, maintenance, repair and installation procedures of air conditioning refrigeration and heating equipment.

		Credits	
		1st Semester	2nd Semester
AIR	101 Prin. of Refrigeration I	4	
AIR	111 Air Conditioning & Refrigeration Controls I	3	
AIR	155 Heating Systems	4	
AIR	102 Prin. of Refrigeration II		4
AIR	134 Circuits and Controls I		3
AIR	199 Supervised Study		1
ENG	/SPD elective		3
Total Credits		11	11

Total minimum credits for the Air Conditioning and Refrigeration career studies certificate = 22.

ARCHITECTURE

Associate in Applied Science Degree Architectural and Construction Technology Degree Program

Purpose: This curriculum is designed to prepare students for employment in an architectural firm or a construction office. This program is also transferable to selected four-year colleges. Occupational objectives include: architectural draftsman, design assistant, specifications assistant, junior architect, urban planning assistant.

Recommended Preparation: Two years of high school algebra and geometry.

First Year		Credits	
		1st Semester	2nd Semester
ARC	121 Architectural Drafting I	3	
ARC	133 Materials/Meth. of Constr. I	3	
ARC	200 History of Architecture	4	
ENG	111 College Composition I	3	
MTH	115 Technical Math I	3	
STD	100 Orientation	1	
ARC	122 Architectural Drafting II		3
ARC	134 Materials/Meth. of Constr. II		3
DRF	231 Computer Aided Drafting I		3
ENG	115 Technical Writing		3
MTH	116 Technical Math II		3
PED	101 Fund. of Physical Activity		1
PED	Elective		1
SPD	127 Workshop in Interpersonal Skills ..		1
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
ARC	225 Site Planning and Technology	3	
ARC	231 Adv. Architectural Drafting I	4	
DRF	232 Computer Aided Drafting II	3	
EGR	130 Statics & Strength of Materials for Engineering Tech. or Tech. elect. ..	5	
—	Social science elective	3	
ARC	232 Adv. Architectural Drafting II		4
ARC	243 Environmental Systems		4
CIV	210 Structural Systems or Tech. elect. ..		5
—	Social science elective		3
—	Technical elective		2-3
Total Credits		18	18-19

Total minimum credits for the Architecture major (A.A.S. degree) = 71.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

ARCHITECTURAL DRAFTING

Certificate

Purpose: This program is designed to prepare the student for entry-level employment in an architectural firm or a construction office. The student who completes the certificate may continue study toward the A.A.S. degree in Architecture. Occupational objectives include: architectural draftsman, engineering aide.

Recommended Preparation: Two years of high school algebra and geometry.

		Credits	
		1st Semester	2nd Semester
ARC	121 Architectural Drafting I	3	
ARC	133 Materials & Meth. of Constr. I	3	
ENG	111 College Composition I	3	
MTH	115 Technical Math. I	3	
¹ —	Social science elective	3	
STD	100 Orientation	1	
ARC	122 Architectural Drafting II		3
ARC	134 Materials and Meth. of Constr. II		3
ARC	225 Site Planning and Technology		3
DRF	231 Computer Aided Drafting I		3
ENG	115 Technical Writing		3
—	Technical elective		3
Total Credits		16	18

Total minimum credits for the Architectural Drafting certificate = 34.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

ART EDUCATION

Associate in Science Degree Education Degree Program

Purpose: The Associate in Science in Art Education major curriculum is designed for students who plan to transfer to a four-year program in a professional art school or to a college or university baccalaureate degree program in Art Education.

Recommended Preparation: A satisfactory aptitude in visual art.

		Credits	
		1st Semester	2nd Semester
ART	101 Hist. & Appreciation of Art I	3	
ART	121 Drawing I	4	
ART	131 Fund. of Design I	4	
ENG	111 College Composition I	3	
¹ —	Social science elective	3	
STD	100 Orientation	1	
ART	102 Hist. & Appreciation of Art II		3
ART	122 Drawing II		4
ART	132 Fund. of Design II		4
ENG	112 College Composition II		3
PED	101 Fundamentals of Physical Activity		1
¹ —	Social science elective		3
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
² ART	253 Design III	4	
³ ENG	Elective	3	
MTH	151 Math for the Liberal Arts I	3	
⁴ —	Science/lab elective	4	
⁵ —	Studio/general elective	4	
³ ENG	Elective		3
—	General elective		1
HIS	121 U. S. History I		3
MTH	152 Math for the Liberal Arts II		3
PED	Elective		1
⁴ —	Science/lab elective		4
SPD	110 Intro. to Speech Communication		3
Total Credits		18	18

Total minimum credits for the Art Education major (A.S. degree) = 72.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

² Or approved studio elective

³ 200-level literature course

⁴ Science courses may be selected from biology, chemistry, geology, or physics.

⁵ Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated.

AUTOMOTIVE TECHNOLOGY

Associate in Applied Science Degree Vehicle and Equipment Degree Program

Purpose: This curriculum is designed to train technicians for the automotive field. Students completing this program will be ready for full-time employment as automotive technicians. The occupational objectives include: line technician, new car make-ready, and customer service representative.

		Credits	
		1st Semester	2nd Semester
AUT	100 Intro. to Automotive Shop Practices	2	
AUT	111 Automotive Engines I	4	
AUT	241 Automotive Electricity I	4	
ENG	111 College Composition I or ENG 131 Technical Report Writing I	3	
MTH	103 Basic Technical Math I	3	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation	1	
AUT	112 Automotive Engines II		4
AUT	121 Automotive Fuel Systems I		4
AUT	242 Automotive Electricity II		4
¹ —	Social science elective		3
SPD	110 Intro. to Speech Communication or ENG 132 Technical Report Writing II plus SPD 127 Workshop in Interpersonal Skills		3
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
AUT	122 Automotive Fuel Systems II	4	
AUT	141 Auto Power Trains I	4	
AUT	245 Automotive Electronics	4	
AUT	267 Auto. Susp. & Braking Systems	4	
PED	Elective	1	
AUT	142 Auto Power Trains II		4
AUT	215 Emissions Sys. Diag. & Repair		2
AUT	236 Automotive Climate Control		4
AUT	266 Auto. Align., Susp. & Steering		4
¹ —	Social science elective		3
Total Credits		17	17

Total minimum credits for the Automotive Technology major (A.A.S. degree) = 70.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Diagnostician Specialization

Purpose: This curriculum is designed to train technicians for the automotive field. Students completing this program will be ready for full-time employment as automotive technicians. The occupational objectives include: line technician, new car make-ready, and customer service representative.

First Year		Credits	
		1st Semester	2nd Semester
AUT	100 Intro. to Auto. Shop Practices....	2	
AUT	111 Automotive Engines I.....	4	
AUT	241 Automotive Electricity I.....	4	
ENG	111 College Composition I.....	3	
MTH	103 Basic Technical Math I.....	3	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation.....	1	
AUT	121 Automotive Fuel Systems I.....		4
AUT	215 Emissions Syst. Diag. & Repair...		2
AUT	242 Automotive Electricity II.....		4
AUT	267 Automotive Suspension & Braking Syst.....		4
SPD	110 Intro. to Speech Communication		3
Total Credits		18	17

Second Year		Credits	
		1st Semester	2nd Semester
AUT	122 Automotive Fuel Systems II.....	4	
AUT	141 Auto Power Trains I.....	4	
AUT	266 Auto. Align., Suspension & Steering.....	4	
AUT	273 Automotive Driveability I.....	3	
1	Social science elective.....	3	
AUT	142 Auto Power Trains II.....		4
AUT	236 Automotive Climate Control.....		4
AUT	274 Auto. Driveability & Tune-Up II..		3
PED	Elective.....		1
1	Social science elective.....		3
Total Credits		18	15

Total minimum credits for the Automotive Technology major/Diagnostician specialization (A.A.S. degree) = 68.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

AUTOMOTIVE BODY TECHNOLOGY

Certificate

Purpose: The curriculum is intended to prepare people for immediate employment in automotive body repair work. The curriculum provides experience in evaluation, repair and refinishing of automotive body damage. Occupational objectives include: automotive body refinisher, automotive sheet metal repairman, automotive frame repairman, damage estimator, auto body analyst.

		Credits	
		1st Semester	2nd Semester
AUB	106 Basic Sheet Metal Operations....	4	
AUB	117 Automotive Frame Repair.....	4	
AUB	125 Auto Body Welding.....	4	
AUT	195 Topics In: Shop Operations & Procedures.....	3	
MTH	103 Basic Technical Math.....	3	
AUB	116 Auto Body Repair.....		4
AUB	118 Automotive Paint Preparation...		4
AUB	119 Automotive Painting.....		4
ENG	/Speech elective.....		3
PSY	120 Human Relations.....		3
Total Credits		18	18

Total minimum credits for the Automotive Body Technology certificate = 36.

AUTOMOTIVE DRIVEABILITY

Certificate

Purpose: This curriculum is designed to provide current theory, experience and development for those who desire careers as diagnosticians. Also includes recent technical innovations in electronics, automatic engine controls, fuel management and emission controls. Occupational objectives include: diagnostician specialists, emission control technicians, and service technicians.

		Credits	
		1st Semester	2nd Semester
AUT	100 Intro. to Auto. Shop Practices....	2	
AUT	111 Automotive Engines I.....	4	
AUT	121 Automotive Fuel Systems I.....	4	
AUT	241 Automotive Electricity I.....	4	
ENG	111 College Composition or ENG 131 Technical Report Writing I..	3	
AUT	122 Automotive Fuel Systems II.....		4
AUT	215 Emissions Syst. Diag. & Repair...		2
AUT	242 Automotive Electricity II.....		4
AUT	273 Automotive Driveability & Tune-Up I or AUT 142 Auto Power Trains II.....		3-4
1	Social science elective.....		3
Total Credits		17	16-17

Total minimum credits for the Automotive Driveability certificate = 33.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

AUTOMOTIVE ELECTRICAL TECHNICIAN

Certificate

Purpose: This curriculum is designed for persons who seek full-time employment as entry-level automotive service technicians. The curriculum includes electrical theory and application to advance the student as an automotive electrical technician. Occupational objectives include: diagnostician specialist, emission control technicians, and service technicians.

		Credits	
		1st Semester	2nd Semester
AUT	100 Intro. to Automotive Shop Practices.....	2	
AUT	111 Automotive Engines I.....	4	
AUT	241 Auto. Electricity I.....	4	
ENG	111 College Composition I or ENG 131 Technical Report Writing I..	3	
MTH	103 Basic Tech. Math. I.....	3	
AUT	122 Automotive Fuel Systems II.....		4
AUT	215 Emissions Systems Diagnosis & Repair.....		2
AUT	242 Auto. Electricity II.....		4
AUT	245 Automotive Electronics.....		4
1	Social science elective.....		3
Total Credits		16	17

Total minimum credits for the Automotive Electrical Technician certificate = 33.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

AUTOMOTIVE MACHINIST

Career Studies Certificate

Purpose: This curriculum is designed for persons who seek full-time employment as an entry-level automotive machinist. The curriculum includes theory and application to advance the student as an automotive machinist.

		Credits	
		1st Semester	2nd Semester
AUT	111 Automotive Engines I	4	
AUT	112 Automotive Engines II	4	
AUT	120 Intro. to Auto. Machine Shop	3	
AUT	113 Cylinder Block Service		3
—	ENG/Speech elective		3
MTH	103 Basic Technical Math I		3
Total Credits		11	9

Total minimum credits for the Automotive Machinist career studies certificate = 20.

AVIATION TECHNOLOGY

Associate in Applied Science Degree Transportation Degree Program

Purpose: The curriculum is designed to prepare the graduate to enter the field of aviation with a broad base of aeronautical knowledge upon which to build a career. The occupational objectives include: transportation agent, reservation sales agent, station agent, passenger service agent, assistant airport manager, operations agent, airline dispatcher, airline office manager, airport security specialist, and other related jobs. Graduates will also have an advantage in taking the Civil Service examinations for appointment to positions with the Federal Aviation Administration as: air traffic controllers, flight service specialists, and tower operators.

		Credits	
		1st Semester	2nd Semester
ARO	100 Aviation in the U. S.	3	
ARO	195 Topics In: Intro. to Air Traffic Control	3	
CIS	100 Intro. to Information Systems	3	
ENG ^{sw}	111 College Composition I	3	
PED	101 Fund. of Physical Activity	1	
PSY	201 Intro. to Psychology I	3	
STD	100 Orientation	1	
ARO	130 History of Air Transportation		3
ARO	220 Meteorology		3
ENG	112 College Composition II		3
MTH	150 Topics in Geometry		3
PED	Elective		1
PSY	202 Intro. to Psychology II		3
Total Credits		17	16

		Credits	
		1st Semester	2nd Semester
ARO	240 Aircraft Support Operations	3	
BUS	100 Intro. to Business	3	
—	General elective	3	
MTH	151 Math for the Liberal Arts I	3	
SPD	110 Intro. to Speech Communication	3	
ARO	140 Aviation Safety		3
ARO	210 Aviation Law		3
ARO	245 Airport Operations & Mgmt.		3
BUS	111 Principles of Supervision I		3
GEO	Elective		3
MTH	152 Math for the Liberal Arts II		3
Total Credits		15	18

Total minimum credits for the Aviation Technology major (A.A.S. degree) = 66.

Career Pilot Specialization

Purpose: This curriculum is designed to prepare the graduate to enter the aviation profession with commercial and instrument pilot ratings. This specialization will facilitate entry into all pilot related careers, including the field of air traffic control.

		Credits	
		1st Semester	2nd Semester
ARO	100 Aviation in the U.S.	3	
ARO	121 Private Pilot Ground School	4	
ARO	195 Topics In: Private Pilot Flight Training	2	
ENG	111 College Composition I	3	
MTH	150 Topics in Geometry	3	
PED	101 Fund. of Physical Activity	1	
STD	100 Orientation	1	
ARO	122 Instrument Pilot Ground School		4
ARO	130 History of Air Transportation		3
ARO	195 Topics In: Instr. Pilot Flight Training		2
ARO	220 Meteorology		3
ENG	112 College Composition II		3
GEO	Elective		3
Total Credits		17	18

		Credits	
		1st Semester	2nd Semester
ARO	123 Comm. Pilot Ground School	3	
ARO	195 Topics In: Commercial Pilot Flight Training	2	
ARO	230 Air Navigation	3	
MTH	151 Math. for the Liberal Arts I	3	
PED	Elective	1	
PSY	201 Introduction to Psychology I	3	
SPD	110 Intro. to Speech Communication	3	
ARO	140 Aviation Safety		3
ARO	210 Aviation Law		3
ARO	257 Certified Flight Instructor— Airplane		5
MTH	152 Math. for the Liberal Arts II		3
PSY	202 Introduction to Psychology II		3
Total Credits		18	17

Total minimum credits for the Aviation Technology major/Career Pilot specialization (A.A.S. degree) = 70.

BUSINESS ADMINISTRATION

Associate in Science Degree Business Administration Degree Program

Purpose: The Associate in Science degree curriculum in Business Administration is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Business Administration.

Recommended Preparation: Satisfactory completion of the following high school units or equivalent: 4 units of English; 2 units of mathematics (algebra and geometry); 1 unit of laboratory science; 1 unit of social studies.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
¹ HIS	Elective	3	
² MTH	Elective	3-5	
³ —	Natural science/lab elective	4	
—	Speech and Drama elective	3	
STD	100 Orientation	1	
ENG	112 College Composition II		3
⁴ —	General elective		3
¹ HIS	Elective		3
² MTH	Elective		3-5
³ —	Natural science/lab elective		4
PED	101 Fund. of Physical Activity I		1
Total Credits		17-19	17-19

Second Year		Credits	
		1st Semester	2nd Semester
ACC	211 Prin. of Accounting I	3	
ECO	201 Prin. of Economics I	3	
³ ENG	Elective	3	
⁴ —	General elective	3	
⁴ —	General elective	3	
PED	Elective	1	
ACC	212 Prin. of Accounting II		3
ECO	202 Prin. of Economics II		3
³ ENG	Elective		3
⁴ —	General elective		3
⁴ —	General elective		3
Total Credits		16	15

Total minimum credits for the Business Administration major (A.S. degree) = 65.

¹ HIS 101-102 or HIS 121-122.

² MTH 165 and 271, or MTH 173-174. For transfer to GMU, MTH 166 and 271 are required.

³ Science courses may be selected from biology, chemistry, physics, geology or the natural science 100 series courses, excluding NAS 161-162.

⁴ Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated.

⁵ ENG 241-242, ENG 243-244, ENG 251-252, humanities (6 credits), or philosophy (6 credits).

BUSINESS MANAGEMENT

Associate in Applied Science Degree Business Management Degree Program

Purpose: The curriculum is designed for persons who seek employment in business management or for those presently in management who are seeking promotion. The occupational objectives include: administrative assistant, management trainee, department head, branch manager, office manager, manager of small business, supervisor.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

First Year		Credits	
		1st Semester	2nd Semester
ACC	211 Prin. of Accounting I	3	
BUS	100 Intro. to Business	3	
ENG	111 College Composition I	3	
MTH	120 Introduction to Math	3	
PED	101 Fund. of Physical Activity	1	
¹ —	Social science elective	3	
STD	100 Orientation	1	
ACC	212 Prin. of Accounting II		3
BUS	125 Applied Business Mathematics or BUS 121 Business Math. I		3
BUS	150 Prin. of Management		3
CIS	100 Intro. to Information Systems		3
ENG	112 College Composition II		3
MKT	100 Principles of Marketing		3
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
BUS	115 Organizational Behavior	3	
BUS	155 Applied Management Principles	3	
BUS	241 Business Law I	3	
ECO	120 Survey of Economics	3	
SPD	110 Intro. to Speech Communication	3	
BUS	205 Human Resource Management		3
BUS	225 Applied Business Statistics		3
² BUS	226 Microcomputer Appl. in Business		3
² BUS	242 Business Law II		3
FIN	215 Financial Management		3
PED	Elective		1
Total Credits		15	16

Total minimum credits for the Business Management major (A.A.S. degree) = 66.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

² A BUS elective may be substituted for BUS 242 Business Law II and/or BUS 226 Microcomputer Application in Business.

International Business Specialization

Purpose: This specialization provides knowledge and skills in international business and is designed to prepare students for initial full-time employment or advancement in present employment. The occupational objectives include: administrative assistant, branch manager, supervisor, or office manager in an international firm. Careers exist in import-export management for small business and as an international marketing specialist.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

First Year		Credits	
		1st Semester	2nd Semester
ACC	211 Prin. of Accounting I	3	
BUS	100 Intro. to Business	3	
ENG	111 College Composition I	3	
MTH	120 Introduction to Mathematics	3	
PED	101 Fund. of Physical Activity	1	
¹ —	Social science elective	3	
STD	100 Orientation	1	
ACC	212 Prin. of Accounting II		3
BUS	125 Applied Business Math		3
BUS	150 Principles of Management		3
CIS	100 Intro. to Information Systems		3
ENG	112 College Composition II		3
MKT	100 Principles of Marketing		3
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
BUS	155 Applied Management Principles	3	
BUS	241 Business Law I	3	
BUS	280 Intro. to International Business	3	
ECO	120 Survey of Economics	3	
² —	Foreign language	3	
SPD	Elective	1	
BUS	225 Applied Business Statistics		3
FIN	215 Financial Management		3
FIN	275 International Banking		3
² —	Foreign language		3
MKT	275 International Marketing		3
PED	Elective		1
Total Credits		16	16

Total minimum credits for the Business Management major/International Business specialization (A.A.S. degree) = 67.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

² Foreign language — 103-104 or equivalent.

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SMALL BUSINESS MANAGEMENT

Certificate

Purpose: The one-year certificate program is designed to acquaint present and potential small business owners and employees with the business fundamentals essential to starting a small business.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I	3	
BUS	125 Applied Business Math	3	
BUS	241 Business Law I	3	
ECO	120 Survey of Economics	3	
ENG	111 College Composition I	3	
MKT	100 Prin. of Marketing or MKT 115 Retail Organization & Management ...	3	
BUS	111 Principles of Supervision I		3
BUS	165 Small Business Management		3
BUS	226 Microcomputer Application in Business		3
FIN	215 Financial Management		3
MKT	110 Principles of Selling		3
STD	100 Orientation		1
Total Credits		18	16

Total minimum credits for the Small Business Management certificate = 34.

INTERNATIONAL BUSINESS

Career Studies Certificate

Purpose: To provide in-depth information about a country or a region for persons who are presently in management and who wish to do business with that country or region. To provide information about international business that can be adapted to an administrative staff or line job.

		Credits	
		1st Semester	2nd Semester
BUS	280 Intro. to International Business ...	3	
¹ ENG	111 College Composition I or English elective	3	
² —	Foreign language	3-5	
³ —	Social science elective	3	
FIN	275 International Banking		3
² —	Foreign language		3-5
MKT	275 International Marketing		3
³ —	Social science elective		3
Total Credits		12-14	12-14

Total minimum credits for the International Business career studies certificate = 24.

¹ English elective related to country or region.

² Foreign language — 103-104 or equivalent.

³ Social science electives related to country, regional specialization or world economics.

CARDIAC CARE TECHNICIAN

Career Studies Certificate

(See "Health Technologies" at the end of these curricular listings.)

CIVIL ENGINEERING

**Associate in Applied Science Degree
Civil Engineering Degree Program**

Purpose: This curriculum is designed to prepare the student for employment in the construction industry as an engineering technician or for those individuals already employed who seek to expand their knowledge or skills. Occupational objectives include: structural draftsman, construction supervisor or foreman, soils technician, civil engineering technician.

Recommended Preparation: Two years of high school algebra and geometry.

Related Certificates: Civil Engineering Technician and Site Management

		Credits	
		1st Semester	2nd Semester
First Year			
ARC	133 Materials & Meth. of Constr. I.	3	
CIV	171 Surveying I	3	
DRF	151 Engineering Drawing Fund. I or ARC 121 Arch. Drafting I	3	
MEC	127 Computer Prog. for Engr. Tech. ...	3	
MTH	115 Technical Math. I	3	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation	1	
ARC	134 Materials & Meth. of Constr. II. ...		3
CIV	172 Surveying II		3
DRF	152 Engineering Drawing Fund. II or ARC 122 Arch. Drafting II		3
DRF	231 Computer Aided Drafting I		3
ENG	111 College Composition I		3
MTH	116 Technical Math. II		3
Total Credits		17	18

		Credits	
		1st Semester	2nd Semester
Second Year			
CIV	217 Structural Drafting	2	
CIV	225 Soil Mechanics	2	
CIV	226 Soil Mechanics Lab.	1	
DRF	232 Computer Aided Drafting II	3	
EGR	130 Statics & Strength of Materials ...	5	
PED	Elective	1	
—	Social science elective	3	
CIV	210 Structural Systems		5
CIV	228 Concrete Technology		2
CIV	229 Concrete Lab.		1
CIV	297 Cooperative Education/Tech. elec.		3
ENG	115 Technical Writing		3
—	Social science elective		3
SPD	127 Workshop in Interpersonal Skills ..		1
Total Credits		17	18

Total minimum credits for the Civil Engineering major (A.A.S. degree) = 70.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Land Surveying Specialization

Purpose: The Land Surveying specialization is designed to prepare students for employment as a civil engineering technician. Occupational objectives include: highway or building inspector, surveyor, civil engineering draftsman.

Recommended Preparation: High school algebra and geometry.

First Year		Credits	
		1st Semester	2nd Semester
CIV	171 Surveying I	3	
DRF	151 Engr. Drawing Fund. I	3	
ENG	111 College Composition I	3	
MEC	127 Computer Programming for Engr. Tech.	3	
MTH	115 Technical Math. I	3	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation	1	
CIV	172 Surveying II		3
DRF	152 Engr. Drawing Fund. II		3
DRF	231 Computer Aided Drafting I		3
ENG	115 Technical Writing		3
MTH	116 Technical Math. II		3
PED	Elective		1
—	Technical elective/Cooperative Ed.		2
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
CIV	201 Suburban Development I	3	
CIV	261 Advanced Surveying I	3	
DRF	232 Computer Aided Drafting II or CIV 115 Civil Engineering Drafting	3	
EGR	130 Statics/Strength of Materials	5	
—	Social science elective	3	
CIV	202 Suburban Development II		3
CIV	217 Structural Drafting or CIV 116 Topographic Drafting		2-3
CIV	225-226 Soil Mechanics/Soils Lab or CIV 241 Appl. Hydraulics/Drainage I		3
CIV	262 Advanced Surveying II		3
CIV	298/297 Sem. & Project/Coop. Educ.		2
—	Social science elective		3
SPD	127 Workshop in Interpersonal Skills		1
Total Credits		17	17-18

Total minimum credits for the Civil Engineering major/Land Surveying specialization (A.A.S. degree) = 69.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

CIVIL ENGINEERING TECHNICIAN

Certificate

Purpose: This program is designed to prepare drafting and technical professionals to serve in the building construction and civil engineering industries. Employment opportunities include: highway draftsman, surveyor, engineering aide. Transfer to the A.A.S. programs in Civil Engineering is also possible.

Recommended Preparation: High school algebra.

		Credits	
		1st Semester	2nd Semester
ARC	133 Materials & Methods of Construction		3
CIV	171 Surveying I		3
DRF	151 Engineering Drawing Fund. I or ARC 121 Architectural Drafting I		3
ENG	111 College Composition I		3
MEC	127 Comp. Programming for Engr. Tech.		3
¹ MTH	103 Basic Technical Math I or MTH 115 Technical Math I		3
CIV	115 Civil Engineering Drafting		3
CIV	145 Applied Soil Erosion/Sediment Control		2
CIV	172 Surveying II		3
CIV	201 Suburban Development I		3
DRF	231 Computer Aided Drafting I		3
¹ MTH	104 Basic Technical Math II or MTH 116 Technical Math II		3
STD	100 Orientation		1
Total Credits		18	18

Total minimum credits for the Civil Engineering Technician certificate = 36.

¹ Students intending to pursue an A.A.S. degree are encouraged to take MTH 115-116.

SITE MANAGEMENT

Certificate

Purpose: This curriculum is designed to prepare employees of public agencies and firms, and other individuals for employment or further training as building inspectors and supervisors in the site development industry.

		Credits	
		1st Semester	2nd Semester
ARC	140 Principles of Construction Safety	2	
CIV	145 Applied Soil Erosion & Sediment Control		2
CIV	171 Surveying I		3
CIV	225 Soil Mechanics		2
CIV	226 Soil Mechanics Laboratory		1
ENG	111 College Composition I		3
MTH	103 Basic Technical Math. I or MTH 115 Technical Math. I		3
SPD	127 Workshop in Interpersonal Skills		1
ARC	225 Site Planning & Technology		3
BUS	115 Organizational Behavior		3
CIV	228 Concrete Technology		2
CIV	229 Concrete Laboratory		1
CIV	241 Applied Hydraulics & Drainage I		3
ENG	115 Technical Writing		3
MTH	104 Basic Technical Math. II or MTH 116 Technical Math. II		3
Total Credits		17	18

Total minimum credits for the Site Management certificate = 35.

COMMUNICATION DESIGN

**Associate in Applied Science Degree
Graphic Communications Degree Program**

Purpose: The curriculum is designed for persons who seek full-time employment in the communication design field. The occupational objectives include graphic designer in the communication design marketplace.

Recommended Preparation: Proficiency in high school English and a satisfactory aptitude for drawing.

Equipment and Supplies: Communication Design students are required to purchase certain basic equipment and materials necessary to achieve professionally-oriented objectives. Most of the equipment is purchased in the beginning class (Introduction to Graphic Skills) and can be used throughout the two-year program.

Completion Requirements: After completion of the first year, the student's work will be reviewed to ascertain that development is sufficient to enter the communication design field. If satisfactory, the student will be permitted to complete the requirements for this degree program.

First Year		Credits	
		1st Semester	2nd Semester
ART	121 Drawing I	4	
ART	131 Fund. of Design I	4	
ART	135 Visual Communications	4	
ART	140 Intro. to Graphic Skills	4	
PED	101 Fund. of Physical Activity	1	
STD	100 Orientation	1	
ART	122 Drawing II		4
ART	132 Fund. of Design II		4
ART	141 Typography I or ART 247 Painting Techniques for Illustrators		4
ENG	111 College Composition I		3
¹ MTH	151 Math for the Liberal Arts I		3
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
ART	142 Typography II	4	
ART	250 History of Design	3	
ART	251 Communication Design I or ART 261 Illustration I	4	
ART	265 Graphic Techniques	4	
² ---	² Social science elective	3	
ART	252 Communication Design II or ART 262 Illustration II		4
ART	288 Thesis: Illustration or ART 289 Thesis: Communication Design		3-4
---	General elective		1
PED	Elective		1
PHT	101 Photography I		3
² ---	² Social science elective		3
SPD	110 Intro. to Speech Communication		3
Total Credits		18	18-19

Total minimum credits for the Communication Design major (A.A.S. degree) = 72.

¹ Or MTH 120. Departmental approval required.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Computer Graphics Design Specialization

Purpose: The curriculum is designed for persons who seek full-time employment in the communication design field. The occupational objectives include graphic designer with applied computer skills in the communication design marketplace.

Recommended Preparation: Proficiency in high school English and a satisfactory aptitude for drawing.

Equipment and Supplies: Communication Design students are required to purchase certain basic equipment and materials necessary to achieve professionally-oriented objectives. Most of the equipment is purchased in the beginning class (Introduction to Graphic Skills) and can be used throughout the two-year program.

Completion Requirements: After completion of the first year, the student's work will be reviewed to ascertain that development is sufficient to enter the communication design field. If satisfactory, the student will be permitted to complete the requirements for this degree program.

First Year		Credits	
		1st Semester	2nd Semester
ART	121 Drawing I	4	
ART	131 Fundamentals of Design I	4	
ART	135 Visual Communications	4	
ART	140 Introduction to Graphic Skills	4	
PED	101 Fund. of Physical Activity	1	
STD	100 Orientation	1	
ART	122 Drawing II		4
ART	132 Fundamentals of Design II		4
ART	141 Typography I or ART 247 Painting Techniques for Illustrators		4
ENG	111 College Composition I		3
¹ MTH	151 Math for the Liberal Arts I		3
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
ART	142 Typography II	4	
ART	250 History of Design	3	
ART	265 Graphic Techniques	4	
ART	283 Computer Graphics I	4	
² ---	² Social science elective	3	
ART	284 Computer Graphics II		4
ART	288 Thesis: Illustration or ART 289 Thesis: Communication Design		3-4
---	General elective		1
PED	Elective		1
PHT	101 Photography I		3
² ---	² Social science elective		3
SPD	110 Intro. to Speech Communication		3
Total Credits		18	18-19

Total minimum credits for the Communication Design major/Computer Graphics Design specialization (A.A.S. degree) = 72.

¹ Or MTH 120. Departmental approval required.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Illustration Specialization

Purpose: The curriculum is designed for persons who seek full-time employment in the communication design field. The occupational objectives include commercial illustrator in the communication design marketplace.

Recommended Preparation: Proficiency in high school English and a satisfactory aptitude for drawing.

Equipment and Supplies: Communication Design students are required to purchase certain basic equipment and materials necessary to achieve professionally-oriented objectives. Most of the equipment is purchased in the beginning class (Introduction to Graphic Skills) and can be used throughout the two-year program.

Completion Requirements: After completion of the first year, the student's work will be reviewed to ascertain that development is sufficient to enter the communication design field. If satisfactory, the student will be permitted to complete the requirements for this degree program.

First Year	Credits	
	1st Semester	2nd Semester
ART 121 Drawing I	4	
ART 131 Fund. of Design I	4	
ART 135 Visual Communications	4	
ART 140 Intro. to Graphic Skills	4	
PED 101 Fund. of Physical Activity	1	
STD 100 Orientation	1	
ART 122 Drawing II		4
ART 132 Fund. of Design II		4
ART 141 Typography I or ART 247 Painting Techniques for Illustrators		4
ENG 111 College Composition I		3
¹ MTH 151 Math for the Liberal Arts I		3
Total Credits	18	18

Second Year	Credits	
	1st Semester	2nd Semester
ART 221 Drawing III	4	
ART 250 History of Design	3	
ART 261 Illustration I or ART 251 Communication Design I	4	
² ART 265 Graphic Techniques	4	
² Social science elective	3	
ART 262 Illustration II or ART 252 Communication Design II		4
ART 288 Thesis: Illustration or ART 289 Thesis: Communication Design		3-4
³ General elective		3
² PED Elective		1
² Social science elective		3
SPD 110 Intro. to Speech Communication		3
Total Credits	18	17-18

Total minimum credits for the Communication Design major/Illustration specialization (A.A.S. degree) = 71.

¹ Or MTH 120. Departmental approval required.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

³ Drawing IV is recommended.

COMPUTER INFORMATION SYSTEMS

Associate in Applied Science Degree Computer Information Systems Degree Program

Purpose: This curriculum is designed for persons who seek employment in the field of business computer information systems, for those who are presently in that field and who desire to increase their knowledge and update their skills, and for those who must augment their abilities in other fields with knowledge and skills regarding computer information systems. Occupational objectives include: computer programmer, information systems analyst, technical support specialist, and microcomputer user.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

First Year	Credits	
	1st Semester	2nd Semester
BUS 100 Introduction to Business	3	
CIS 100 Intro. to Information Systems	3	
CIS 125 Computer Program Design	3	
ENG 111 College Composition I	3	
MTH 120 Introduction to Mathematics	3	
STD 100 Orientation	1	
BUS 150 Principles of Management		3
CIS Programming elective		4
CIS 150 Intro. To Microcomputer Software		3
ENG 115 Technical Writing or ENG 116 Writing for Business		3
PED 101 Fundamentals of Physical Activity		1
¹ Social science elective		3
Total Credits	16	17

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

In order to qualify for this degree, students must complete one of the four specializations.

Microcomputer Usage Specialization

Purpose: This specialization provides knowledge and skills regarding hardware, software, and application of microcomputers. Occupational objectives include: careers as information center microcomputer specialist, microcomputer training specialist, and microcomputer sales; and augmentation of non-computer careers which require the use and knowledge of microcomputers.

Second Year	Credits	
	1st Semester	2nd Semester
ACC 211 Principles of Accounting I	3	
CIS 157 Microcomputer Spreadsheet Sftwr.	3	
CIS 228 Microcomputers: Op. Sys. Arch. and Hardware	3	
PED Elective	1	
¹ Social science elective	3	
SPD 110 Intro. to Speech Communication	3	
CIS 158 Microcomputer Database Mgmt. Sftwr.		3
CIS 225 Computer Info. System Development		3
CIS 230 Intro. to Telecommunications		3
CIS Elective		3
General elective		4
Total Credits	16	16

Total minimum credits for the Computer Information Systems major/Microcomputer Usage specialization (A.A.S. degree) = 65.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

In order to qualify for this specialization, students must complete the first year curriculum, common to all specializations.

Programming Specialization

Purpose: This specialization provides knowledge and skills in computer programming. Occupational objectives include: computer programmer, microcomputer programmer, applications programmer, and programmer/analyst.

Second Year		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I	3	
¹ CIS	Programming elective	4	
CIS	228 Microcomputers: Op. Sys. Arch., & Hardware or CIS 229 Mainframes: Op. Sys. Arch. & Hardware	3	
PED	Elective	1	
² ---	Social science elective	3	
SPD	110 Intro. to Speech Communication	3	
³ CIS	Programming elective		4
CIS	225 Computer Info. System Develop.		3
CIS	245 Database Management		3
CIS	Elective		3
---	General elective		3
Total Credits		17	16

Total minimum credits for the Computer Information Systems major/Programming specialization (A.A.S. degree) = 66.

¹ Programming elective must be chosen from advanced level programming courses: CIS 231, 241, 251, 261, 275, and 276.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

³ Any additional programming courses may be chosen.

In order to qualify for this specialization, students must complete the first year curriculum, common to all specializations.

System Analyst Specialization

Purpose: This specialization provides knowledge and skills regarding the analysis and design of information systems, and the selection of hardware and software. Occupational objectives include: information systems analyst, programmer/analyst, hardware analyst, and hardware systems selection analyst.

Second Year		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I	3	
CIS ¹	225 Computer Info. System Develop.	3	
CIS	230 Intro. to Telecommunications	3	
PED	Elective	1	
¹ ---	Social science elective	3	
SPD	110 Intro. to Speech Communication	3	
CIS	227 Computer Systems Selection and Acquisition		3
CIS	245 Database Management		3
CIS	287 System Development Project		3
CIS	Elective		3
---	General elective		4
Total Credits		16	16

Total minimum credits for the Computer Information Systems major/System Analyst specialization (A.A.S. degree) = 65.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

In order to qualify for this specialization, students must complete the first year curriculum, common to all specializations.

Technical Support Specialization

Purpose: This specialization provides technical knowledge and skills regarding computer system components, functions, and capabilities. Occupational objectives include: information center specialist, database specialist, system programmer, and teleprocessing specialist.

Second Year		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I	3	
CIS	161 Comp. Prog: Assembler I or CIS 265 Comp. Prog: Micro Assembler	4	
CIS	228 Microcomputers: Op. Sys. Arch. & Hardware or CIS 229 Mainframes: Op. Sys. Arch. and Hardware	3	
PED	Elective	1	
¹ ---	Social science elective	3	
SPD	110 Intro. to Speech Communication	3	
CIS	225 Computer Info. System Develop.		3
CIS	230 Intro. to Telecommunications		3
CIS	245 Database Management		3
CIS	Elective		3
---	General elective		3
Total Credits		17	15

Total minimum credits for the Computer Information Systems major/Technical Support specialization (A.A.S. degree) = 65.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

In order to qualify for this specialization, students must complete the first year curriculum, common to all specializations.

MICROCOMPUTER USAGE

Career Studies Certificate

Purpose: The Microcomputer Usage career studies certificate provides those students already employed with the necessary microcomputer background needed to adapt to their field's increasing use of and dependency on microcomputers.

		Credits	
		1st Semester	2nd Semester
CIS	125 Computer Program Design	3	
CIS	150 Intro. to Microcomputer Software	3	
ENG	111 College Composition I	3	
CIS	228 Microcomputers: Op. Sys., Arch. and Hardware		3
¹ ---	Elective		3-4
¹ ---	Elective		3-4
Total Credits		9	9-11

Total minimum credits for the Microcomputer Usage career studies certificate = 18.

¹ Electives may be chosen from CIS 157, 158, 159, 166, 259, ACC 215, ART 283, or OFT 231.

COMPUTER SCIENCE

Associate in Science Degree Computer and Information Sciences Degree Program

Purpose: The curriculum is designed primarily for students who wish to transfer to a four-year college or university to complete the baccalaureate degree in Computer Science. The curriculum emphasizes the study of the science of computing and the use of computing in a scientific setting.

Recommended Preparation: Satisfactory completion of the following high school units or equivalent: 4 units of English/4 units of college preparatory mathematics.

First Year		Credits	
		1st Semester	2nd Semester
CSC	100 Intro. to Computer Usage	1	
CSC	201 Computer Science I	4	
ENG	111 College Composition I	3	
MTH	173 Calculus with Analytic Geom. I. . . .	5	
1	Social science elective	3	
STD	100 Orientation	1	
CSC	202 Computer Science II		4
ENG	112 College Composition II.		3
MTH	174 Calculus with Analytic Geom. II. . .		5
PED	101 Fundamentals of Physical Activity ..		1
1	Social science elective		3
Total Credits		17	16

Second Year		Credits	
		1st Semester	2nd Semester
2	General elective	4	
HIS	101 History of Western Civilization I or HIS 121 United States History I ...	3	
3	Math/computer science elective	3-4	
4	Natural science with lab	3-4	
SPD	110 Intro. to Speech Communication . .	3	
2	General electives		6
5	Humanities/Fine Arts elective		3
3	Math/computer science elective		3-4
4	Natural science with lab		3-4
PED	Elective		1
Total Credits		16-18	16-18

Total minimum credits for the Computer Science major (A.S. degree) = 65.

¹ Two-semester social science course sequence may be selected from one of the disciplines of ECO, GEO, HIS, PLS, PSY, or SOC. Social science electives should be selected in conjunction with an advisor and after examining the requirements at the transfer institution.

² General electives should be selected in conjunction with an advisor and after examining the requirements at the transfer institution.

³ Math/computer science electives should constitute 2 semester courses chosen from the following categories:

- a. Computer science courses numbered above 202.
- b. MTH 277 Multivariate Calculus and/or MTH 285 Linear Algebra
 - MTH 286 Discrete Mathematics
 - MTH 291 Ordinary Differential Equations
 - MTH 292 Topics in Differential Equations
- c. Mathematical Statistics (MTH 241, 242, 243, 244)

Math/computer science electives should be selected in conjunction with an advisor and after examining the requirements at the transfer institution.

⁴ Natural science with laboratory numbered 100 or above may be chosen from BIO, CHM (except 101-102), PHY (101 or above), or GOL.

⁵ Humanities/fine arts elective should be selected in conjunction with an advisor and after examining the requirements at the transfer institution.

CONSTRUCTION INSPECTION

Certificate (See "Construction Management Technology.")

CONSTRUCTION MANAGEMENT TECHNOLOGY

Associate in Applied Science Degree Architectural and Construction Technology Degree Program

Purpose: The curriculum is designed to qualify personnel in both engineering technology and management for employment in all areas of a construction firm. Occupational objectives include: engineering aide, construction project manager, construction supervisor, estimator, building maintenance supervisor.

First Year		Credits	
		1st Semester	2nd Semester
ARC	121 Architectural Drafting I	3	
ARC	133 Mat. & Meth. of Const. I	3	
BLD	101 Construction Management I	3	
BLD	165 Construction Field Operations. . . .	2	
ENG	111 College Composition I	3	
MTH	115 Technical Mathematics I	3	
ARC	122 Architectural Drafting II		3
ARC	134 Mat. & Meth. of Const. II		3
BLD	102 Construction Management II.		3
BLD	231 Construction Estimating I		3
ENG	115 Technical Writing		3
1	Social science elective		3
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
ARC	243 Environmental Systems	4	
BLD	232 Construction Estimating II.	3	
BLD	241 Construction Management I	3	
CIV	171 Surveying I	3	
SPD	110 Intro. to Speech Communication . .	3	
STD	100 Orientation	1	
ARC	225 Site Planning and Technology		3
BLD	242 Construction Management II.		3
BLD	247 Construction Planning & Sched. . .		3
PED	101 Fundamentals of Physical Activity ..		1
PED	Elective		1
1	Social science elective		3
Total Credits		17	14

Total minimum credits for the Construction Management Technology major (A.A.S. degree) = 66.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

CONSTRUCTION INSPECTION

Certificate

Purpose: The curriculum is designed for persons who seek full-time employment in areas of construction inspection or for those presently employed who are seeking advancement and further training in construction inspection.

		Credits	
		1st Semester	2nd Semester
BLD	100 Const. Inspec., Plan Rev. & Codes		4
BLD	103 Prin. of Res. Building Const. Insp.		3
BLD	165 Construction Field Operations....		2
ENG	111 College Composition I		3
FIR	117 Industrial Fire Protection		3
MTH	115 Technical Mathematics I		3
BLD	104 Prin. of Concrete & Steel Frame Insp.	4	
BLD	112 Prin. of Electrical Inspection	3	
BLD	113 Prin. of Mechanical & Plumbing Insp.	4	
ENG	115 Technical Writing	3	
FIR	221 Building Construction & Codes ...	4	
Total Credits		18	18

Total minimum credits for the Construction Inspection certificate = 36.

DENTAL HYGIENE

Associate in Applied Science Degree
(See "Health Technologies" at the end of these curricular listings.)

DESKTOP PUBLISHING

Career Studies Certificate
(See "Office Systems Technology.")

DIETETIC TECHNOLOGY

Specialization
(See "Hotel, Restaurant, & Institutional Management.")

EARLY CHILDHOOD DEVELOPMENT

Associate in Applied Science Degree
Educational Services Degree Program

Purpose: The curriculum is designed for persons who seek full-time employment involving the care and direction of young children, or for those persons presently employed in these situations who wish to update and enhance their competencies. Occupational objectives include: assistants, managers, and/or directors in day care and child development facilities.

		Credits	
		1st Semester	2nd Semester
First Year			
CHD	118 Methods & Materials in the Language Arts for Children	3	
CHD	121 Childhood Educational Dev. I....	3	
EDU	100 Introduction to Education	1	
EDU	155 Parent Education	3	
ENG	111 College Composition I	3	
PSY	231 Life Span Human Development I ..	3	
STD	100 Orientation	1	
CHD	109 Methods in Movement and Music Education for Children.....		3
CHD	122 Childhood Educational Dev. II ...		3
CHD	125 Creative Activities for Children...		3
CHD	126 Meth. & Mat. for Dev. Science & Math Concepts in Children		3
ENG	112 College Composition II		3
Total Credits		17	15

		Credits	
		1st Semester	2nd Semester
Second Year			
CHD	166 Infant and Toddler Programs	3	
CHD	205 Guiding the Behavior of Children ..	3	
CHD	210 Introduction to Exceptional Children	3	
CHD	215 Models of Early Childhood Education Programs.....	3	
HLT	110 Concepts of Personal & Community Health	3	
PSY	232 Life Span Human Development II ..	3	
CHD	298 Seminar and Project		3
EDU	235 Health, Safety and Nutrition Education		3
HLT	100 First Aid and CPR		3
MTH	151 Math for the Liberal Arts I		3
PED	101 Fundamentals of Physical Activity ..		1
PED	Elective		1
SPD	110 Introduction to Speech Communication.....		3
Total Credits		18	17

Total minimum credits for the Early Childhood Development major (A.A.S. degree) = 67.

EARLY CHILDHOOD DEVELOPMENT ASSISTANT

Certificate

Purpose: The curriculum is designed to prepare individuals for employment in situations wherein care and maintenance of young children is the primary object. Occupational objectives include: aides in child development centers, day care centers, nursery school, residential facilities, family day care homes.

		Credits	
		1st Semester	2nd Semester
CHD	118 Methods & Materials in the Language Arts for Children	3	
CHD	121 Childhood Educational Dev. I.	3	
EDU	100 Introduction to Education	1	
EDU	160 Techniques of Observation in Early Education	3	
HLT	135 Child Health and Nutrition	3	
SOC	216 Child-Parent Comm. Relations ...	3	
STD	100 Orientation	1	
CHD	125 Creative Activities for Children ...		3
CHD	298 Seminar and Project		3
EDU	156 Single Parent Families		3
ENG	111 College Composition		3
PSY	231 Life Span Human Development I .		3
Total Credits		17	15

Total minimum credits for the Early Childhood Development Assistant certificate = 32.

EARLY CHILDHOOD EDUCATION: CHILD HOME CARE (NANNY)

Certificate

Purpose: The Nanny Program trains the candidate for a career in private home settings to provide care and supervision of children of that family. A foundation in the theoretical bases of development and learning is provided. Because the Nanny is often a parent surrogate, the sociology/psychology of family, school and community are covered, as well as nutrition, physical and social development, learning skills and appropriate aspects of handicapped education, and perceptual motor development. Supervised practicum is required.

The Nanny Program awards a certificate and requires 34 credit hours plus a Red Cross First Aid Card, dated within one year of graduation.

		Credits	
		1st Semester	2nd Semester
CHD	118 Meth. & Mat. in Lang. Arts for Children	3	
CHD	121 Childhood Educational Development I.	3	
EDU	100 Introduction to Education	1	
EDU	160 Techniques of Observation in Early Education	3	
ENG	111 College Composition I	3	
PSY	231 Life Span Human Development I .	3	
STD	100 Orientation	1	
CHD	105 Interpersonal Skills for Nannies ..		4
CHD	106 Health Education for Nannies		4
CHD	205 Guiding the Behavior of Children .		3
CHD	298 Seminar & Project		3
ECO	120 Survey of Economics		3
Total Credits		17	17

Total minimum credits for the Early Childhood Education: Child Home Care (Nanny) certificate = 34.

ELECTRONICS

Associate in Applied Science Degree Electrical/Electronics Engineering Degree Program

Purpose: This curriculum is designed to prepare persons for employment in the electronics industry. In addition, the student who completes the program may choose to transfer to a four-year institution to pursue a bachelor's degree in Electronics Technology. Occupational objectives include: electronics technician, computer technician, telecommunications technician, radio and television technician, metrology technician, research and development technician, industrial control technician.

Recommended Preparation: Successful completion of high school algebra and geometry.

		Credits	
		1st Semester	2nd Semester
First Year			
ENG	111 College Composition I	3	
ETR	113 D.C. and A.C. Fundamentals I ...	4	
MEC	126 Computer Prog. for Technologists	2	
MTH	115 Technical Math I.	3	
PED	101 Fundamentals of Physical Activity	1	
PHY	111 Technical Physics I.	4	
STD	100 Orientation	1	
ENG	115 Technical Writing		3
ETR	114 D.C. and A.C. Fundamentals II ..		4
ETR	144 Devices and Applications II		4
ETR	167 Logic Circuits and Systems I		4
MTH	116 Technical Math II.		3
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
Second Year			
ETR	241 Electronic Comm. I	4	
ETR	250 Intermediate Electronics	4	
ETR	261 Microprocessor Appl. I.	4	
MTH	213 Advanced Engineering Tech. Math I.	3	
	¹ Social science elective	3	
ETR	221 Electronic Controls I.		4
ETR	242 Electronic Comm. II		4
ETR	284 Digital Communication or ETR 247 Display Systems		4-3
PED	Elective		1
	¹ Social science elective		3
SPD	127 Workshop in Interpersonal Skills..		1
Total Credits		18	17-16

Total minimum credits for the Electronics major (A.A.S. degree) = 70.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

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Computer Technology Specialization

Purpose: This program is designed for students seeking to enter the field of computer technology as a maintenance and repair technician, or to receive additional training or expand skills already obtained if presently employed. Occupational objectives include: computer technician, microcomputer technician, bench technician, industrial electronics technician.

Recommended Preparation: High school algebra and geometry.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I	3	
ETR 113 D.C. and A.C. Fundamentals I	4	
MEC 126 Computer Programming for Tech.	2	
MTH 115 Technical Math I	3	
PED 101 Fundamentals of Physical Activity	1	
PHY 111 Technical Physics I	4	
STD 100 Orientation	1	
ENG 115 Technical Writing		3
ETR 114 D.C. and A.C. Fundamentals II		4
ETR 144 Devices and Applications II		4
ETR 167 Logic Circuits & Systems I		4
MTH 116 Technical Math II		3
Total Credits	18	18

Second Year	Credits	
	1st Semester	2nd Semester
ETR 250 Intermediate Electronics	4	
ETR 261 Microprocessor Application I	4	
ETR 298 Seminar and Project	2	
MTH 213 Advanced Engineering Tech. Math I	3	
PED Elective	1	
Social science elective	3	
SPD 127 Workshop in Interpersonal Skills	1	
ETR 221 Electronic Controls I		4
ETR 262 Microprocessor Application II		4
ETR 277 Computer Interfacing		3
ETR 284 Digital Communication		4
Social science elective		3
Total Credits	18	18

Total minimum credits for the Electronics major/Computer Technology specialization (A.A.S. degree) = 72.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

ELECTRONICS TECHNICIAN

Certificate

Purpose: The purpose of this certificate is to prepare graduates for entry-level employment in the field of electronics. Occupational objectives include: test technician, assembler, prototype fabricator, electronics draftsman. Students completing the certificate may continue their education toward the A.A.S. degree in Electronics. Persons with experience in the field who are seeking formal training, or who might wish to explore a career in electronics, may enroll in this certificate program.

Recommended Preparation: Successful completion of high school algebra and geometry.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
ETR	113 D.C. and A.C. Fundamentals I	4	
MEC	126 Computer Prog. for Technologists	2	
MTH	115 Technical Math I	3	
PHY	111 Technical Physics I	4	
STD	100 Orientation	1	
DRF	245 Electronic Drafting		2
ETR	114 D.C. & A.C. Fundamentals II		4
ETR	144 Devices and Applications		4
ETR	167 Logic Circuits and Systems		4
MTH	116 Technical Math II		3
Total Credits		17	17

Total minimum credits for the Electronics Technician certificate = 34.

MICROCOMPUTER REPAIR

Career Studies Certificate

Purpose: This certificate is designed to prepare students for employment in the electronics industry as microcomputer repair maintenance and repair technicians. Jobs for which students are eligible include field service technician, test technician, computer repair technician. Individuals already employed in industry who would benefit from formal education, as well as high school graduates, or anyone interested in exploring a career in electronics, are encouraged to investigate this program.

Recommended Preparation: High school algebra.

		Credits	
		1st Semester	2nd Semester
ETR	158 Electronic Circuits for Computers	4	
ETR	229 Digital Logic and Microprocessor Fundamentals	4	
MEC	126 Computer Programming for Technologists	2	
ENG	/SPD elective		3
ETR	159 Computer Peripherals		4
ETR	285 Fund. of Microcomputer Repair		4
Total Credits		10	11

Total minimum credits for the Microcomputer Repair career studies certificate = 21.

EMERGENCY MEDICAL SERVICES TECHNOLOGY

Associate in Applied Science Degree
(See "Health Technologies" at the end of these curricular listings.)

EMERGENCY MEDICAL SERVICES TECHNOLOGY

Certificate
(See "Health Technologies" at the end of these curricular listings.)

ENGINEERING

**Associate in Science Degree
Engineering Degree Program**

Purpose: The curriculum is designed to prepare the student to transfer into a baccalaureate degree program in engineering fields such as: mechanical engineering, civil engineering, chemical engineering, aeronautical engineering and naval architecture/marine engineering.

Recommended Preparation: High school courses: 4 units of English, 2 units of algebra, 1 unit of geometry, 1 unit of trigonometry, 1 unit of laboratory science (chemistry or physics).

Completion Requirements: Grades of "C" and above are required in those courses in the program that are intended to be transferred for credit to a baccalaureate degree-granting college/university.

First Year		Credits	
		1st Semester	2nd Semester
CHM	111 College Chemistry I	4	
EGR	115 Engineering Graphics	2	
EGR	120 Introduction to Engineering	2	
ENG	111 College Composition I	3	
MTH	173 Calculus with Analytic Geom. I	5	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation	1	
CHM	112 College Chemistry II		4
EGR	126 Computer Programming for Engineers		3
ENG	112 College Composition II		3
MTH	174 Calculus with Analytic Geom. II		5
—	Social science elective		3
Total Credits		18	18

Second Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
EGR	140 Engineering Mechanics - Statics	3		
MTH	277 Multivariable Calculus	4		
PED	Elective	1		
PHY	241 University Physics I	4		
—	Social science elective	3		
SPD	Elective	3		
EGR	245 Engineering Mechanics - Dynamics		3	
² EGR	Elective		2-3	
MTH	291 Ordinary Differential Equations		3	
PHY	242 University Physics II		4	
—	Technical elective		3-5	
² EGR	Elective			2-3*
MTH	285 Linear Algebra			3*
MTH	292 Topics in Differential Equations			3*
³ —	Technical elective			3-5*
Total Credits		18	15-18	11-14

Total minimum credits for the Engineering major (A.S. degree) = 69.

¹ Must include one semester of history (American or Western Civilization) plus a second semester of history, economics, psychology or sociology. A two semester sequence of courses is optimum for transfer.

² EGR 206 (2 credits) required at VPI and desirable elsewhere; EGR 246 (3 credits) required for ME and CE students; EGR 248 (3 credits) desirable for ME students; EGR 225 (3 credits) required at UMCP; EGR 250 (3 credits) and EGR 255 (1 credit) desirable for all non-EE students.

³ CIV 171 (3 credits) and CIV 172 (3 credits) desirable for CE students transferring to VPI; CHM 241 (3 credits) plus CHM 245 (2 credits), CHM 242 (3 credits) plus CHM 246 (2 credits) desirable for all CHEME students.

* These courses are not required for the A.S. degree; however, completion of them is desirable for transfer as a junior in Engineering.

Electrical Engineering Specialization

Purpose: The curriculum is designed to permit the student to transfer into a baccalaureate degree program in Electrical Engineering. All B.S. (EE) degree-granting colleges/universities require specific preparation in the sophomore year for EE majors.

Recommended Preparation: High school courses: 4 units of English, 2 units of algebra, 1 unit of geometry, 1 unit of trigonometry, 1 unit of laboratory science (chemistry or physics).

Completion Requirements: Grades of "C" and above are required in those courses in the program that are intended to be transferred for credit to a baccalaureate degree-granting college/university.

First Year		Credits	
		1st Semester	2nd Semester
CHM	111 College Chemistry I	4	
EGR	115 Engineering Graphics	2	
EGR	120 Introduction to Engineering	2	
ENG	111 College Composition I	3	
MTH	173 Calculus with Analytic Geometry I	5	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation	1	
CHM	112 College Chemistry II		4
EGR	126 Computer Programming for Engineers		3
ENG	112 College Composition II		3
MTH	174 Calculus with Analytic Geometry II		5
—	Social science elective		3
Total Credits		18	18

Second Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
EGR	140 Engineering Mechanics - Statics	3		
MTH	277 Multivariable Calculus	4		
PHY	241 University Physics I	4		
—	Social science elective	3		
SPD	Elective	3		
EGR	245 Engineering Mechanics - Dynamics		3	
EGR	251 Basic Electric Circuits I		3	
¹ —	Elective		2-3	
MTH	291 Ordinary Differential Equations		3	
PED	Elective		1	
PHY	242 University Physics II		4	
² EGR	Elective			2-3*
EGR	252 Basic Electric Circuits II			3*
EGR	255 Electric Circuits Laboratory			1*
EGR	265 Digital Elec. & Logic Design			4*
MTH	285 Linear Algebra			3*
MTH	292 Topics in Differential Equations			3*
Total Credits		17	16-17	16-17

Total minimum credits for the Engineering major/Electrical Engineering specialization (A.S. degree) = 69.

¹ Must include one semester of history (American or Western Civilization) plus a second semester of history, economics, psychology or sociology. A two semester sequence of courses is optimum for transfer.

² EGR 206 (2 credits) required at VPI and desirable elsewhere; EGR 248 (3 credits) desirable for those transferring to UVA and UMCP; EGR 225 (3 credits) required at UMCP.

* These courses are not required for the A.S. degree; however, completion of them is desirable for transfer as a junior in Electrical Engineering.

ENGINEERING DRAFTING

Certificate

Purpose: This program is designed to provide the student with the skills to obtain employment as a draftsman in any of the many engineering firms and other organizations requiring drafting and design professionals. This program will also transfer to the associate degree program in Mechanical Engineering. Occupational objectives include: mechanical draftsman, electronics draftsman, engineering aide, electromechanical draftsman, CAD operator.

		Credits	
		1st Semester	2nd Semester
DRF	151 Engr. Drawing Fund. I	3	
ENG	111 College Composition I	3	
MEC	120 Principles of Machine Technology	3	
MEC	127 Computer Prog. for Engr. Tech.	3	
MTH	103 Basic Technical Math I or MTH 115 Technical Math I	3	
STD	100 Orientation	1	
DRF	152 Engr. Drawing Fund. II		3
DRF	231 Computer Aided Drafting I		3
DRF	245 Electronic Drafting or Tech. Elec.		2
MEC	112 Processes of Industry		3
MTH	104 Basic Technical Math II or MTH 116 Technical Math II		3
1	Social science elective		3
Total Credits		16	17

Total minimum credits for the Engineering Drafting certificate = 33.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

FINE ARTS

**Associate in Applied Arts Degree
Visual and Performing Arts Degree Program**

Purpose: The Associate in Applied Arts degree with a major in Fine Arts is designed for students who seek employment in the applied arts field.

Recommended Preparation: Satisfactory aptitude in visual art.

		Credits	
		1st Semester	2nd Semester
ART	101 Hist. & Appreciation of Art I	3	
ART	121 Drawing I	4	
ART	131 Fund. of Design I	4	
ENG	111 College Composition I	3	
1	Social science elective	3	
STD	100 Orientation	1	
ART	102 Hist. & Appreciation of Art II		3
ART	122 Drawing II		4
ART	132 Fund. of Design II		4
ENG	112 College Composition II		3
PED	101 Fund. of Physical Activity		1
1	Social science elective		3
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
2	Art studio or general elective	4	
² ENG	Elective	3	
	General elective	4	
MTH	151 Math for the Liberal Arts I	3	
PHT	101 Photography I or ART 221 Drawing III	3-4	
2	Art studio or general elective		4
² ENG	Elective		3
PED	Elective		1
PHT	102 Photography II or ART 222 Drawing IV		3-4
SPD	110 Intro. to Speech Communication		3
Total Credits		17-18	14-15

Total minimum credits for the Fine Arts major (A.A.A. degree) = 67.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

² Recommended studio electives: painting, sculpture, printmaking, ceramics.

³ 200-level literature class.

Photography Specialization

Purpose: The Photography specialization is designed for students who seek employment in the applied arts field.

Recommended Preparation: Satisfactory aptitude in visual art.

		Credits	
		1st Semester	2nd Semester
ART	101 Hist. & Appreciation of Art I	3	
ART	121 Drawing I	4	
ART	131 Fund. of Design I	4	
ENG	111 College Composition I	3	
PHT	101 Photography I	3	
STD	100 Orientation	1	
ART	102 Hist. & Appreciation of Art II		3
ART	122 Drawing II		4
ART	132 Fund. of Design II		4
ENG	112 College Composition II		3
PED	101 Fund. of Physical Activity		1
PHT	102 Photography II		3
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
¹ ENG	Elective	3	
	General elective	4	
PHT	110 History of Photography	3	
PHT	Elective	3	
2	Social science elective	3	
¹ ENG	Elective		3
MTH	151 Math for the Liberal Arts I		3
PED	Elective		1
PHT	Elective		3
2	Social science elective		3
SPD	110 Intro. to Speech Communication		3
Total Credits		16	16

Total minimum credits for the Fine Arts major/Photography specialization (A.A.A. degree) = 68.

¹ 200-level literature class.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

FINE ARTS

**Associate in Arts Degree
Visual and Performing Arts Degree Program**

Purpose: The Associate in Arts degree with a major in Fine Arts is designed for students who plan to transfer to a four-year program in a professional school or to a college or university baccalaureate degree program in Fine Arts.

Recommended Preparation: Satisfactory aptitude in visual art.

First Year	Credits	
	1st Semester	2nd Semester
ART 101 Hist. & Appreciation of Art I.....	3	
ART 121 Drawing I or ART 131 Fund. of Design I	4	
ENG 111 College Composition I	3	
¹ Natural science/lab elective.....	4	
² Social science elective	3	
STD 100 Orientation	1	
ART 102 Hist. & Appreciation of Art II.....		3
ART 122 Drawing II or ART 132 Fund. of Design II		4
ENG 112 College Composition II.....		3
¹ Natural science/lab elective.....		4
PED 101 Fund. of Physical Activity		1
² Social science elective		3
Total Credits	18	18

Second Year	Credits	
	1st Semester	2nd Semester
ART 221 Drawing III	4	
³ Foreign language	3	
General elective	3	
⁴ HIS Elective	3	
MTH 151 Math for the Liberal Arts I.....	3	
ART Elective		3
³ Foreign language.....		3
⁴ HIS Elective		3
MTH 152 Math for the Liberal Arts II.....		3
PED Elective		1
SPD 110 Intro. to Speech Communication ..		3
Total Credits	16	16

Total minimum credits for the Fine Arts major (A.A. degree) = 68.

¹ Science courses may be selected from biology, chemistry, geology, or physics.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

³ Intermediate level (201-202) proficiency in a foreign language is required. These courses require a 101-102 sequence in the language or equivalent proficiency. Waivers or credit by exam (through CLEP) for previous experience may be available for *some* languages.

⁴ HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II.

FIRE SCIENCE ADMINISTRATION

**Associate in Applied Science Degree
Protective Services Degree Program**

Purpose: This curriculum is designed for persons seeking or currently holding employment in the fire protection field who desire to specialize in administration and management. The occupational objectives include national standards (NFPA 1021) for the position of fire officer, as well as insurance investigation/sales and service.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I	3	
FIR 100 Introduction to Fire Science.....	3	
FIR 111 Hazardous Materials I.....	3	
FIR 125 Fire Service Administration	3	
⁴ MTH Elective	3	
PED 101 Fundamentals of Physical Activity ..	1	
STD 100 Orientation	1	
ENG 112 College Composition II.....		3
FIR 106 Fire Suppression Methods & Oper.		3
FIR 112 Hazardous Materials II.....		3
FIR 116 Fire Prevention Fundamentals....		3
PED Elective		1
RPK 200 Microcomputers in Public Service Agencies		3
Total Credits	17	16

Second Year	Credits	
	1st Semester	2nd Semester
BUS 205 Human Resource Management ...	3	
FIR 205 Fire Hydraulics and Distribution Sys.	4	
² Science elective	3-4	
³ Social science elective	3	
SPD 110 Intro. to Speech Communication ..	3	
FIR 221 Building Construction & Codes ...		4
FIR 237 Emergency Service Supervision ...		3
FIR 245 Urban Fire and Risk Analysis		3
General elective		3
³ Social science elective		3
Total Credits	16-17	16

Total minimum credits for the Fire Science Administration major (A.A.S. degree) = 65.

¹ Please consult your program head or faculty advisor before selecting your MTH course.

² Science elective may be selected from: CHM 101, CHM 111, PHY 101, PHY 102, PHY 201 or PHY 221.

³ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Fire Protection Technology Specialization

Purpose: This curriculum is designed for persons seeking employment in the broad field of fire protection systems design. The occupational objectives include: design of automatic fire detection and suppression systems, fire prevention and insurance service, equipment sales, service and installation.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
FIR	100 Introduction to Fire Science	3	
FIR	111 Hazardous Materials I	3	
FIR	125 Fire Service Administration	3	
¹ MTH	Elective	3	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation	1	
FIR	112 Hazardous Materials II		3
FIR	116 Fire Prevention Fundamentals		3
¹ MTH	Elective		3
PED	Elective		1
RPK	200 Microcomputers in Public Service Agencies		3
SPD	110 Intro. to Speech Communication		3
Total Credits		17	16

Second Year		Credits	
		1st Semester	2nd Semester
FIR	205 Fire Hydraulics and Distr. System	4	
FIR	211 Auto. Sprinkler System Design I	3	
FIR	215 Fire Suppression & Detection Sys.	3	
² ---	Science elective	3-4	
³ ---	Social science elective	3	
FIR	212 Auto. Sprinkler System Design II		3
FIR	221 Building Construction & Codes		4
FIR	245 Urban Fire & Risk Analysis		3
² ---	General elective		3
³ ---	Social science elective		3
Total Credits		16-17	16

Total minimum credits for the Fire Science Administration major/Fire Protection Technology specialization (A.A.S. degree) = 65.

¹ Please consult your program head or faculty advisor before selecting your MTH courses.

² Science elective may be selected from: CHM 101, CHM 111, PHY 101, PHY 102, PHY 201 or PHY 221.

³ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Fire Science Investigation Specialization

Purpose: This curriculum is designed for persons seeking employment or currently employed in the fire service, desiring to specialize in the areas of fire prevention and/or fire investigation. Course objectives include national standards for fire prevention and investigation officers, insurance investigation, and public education on fire safety.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
FIR	100 Introduction to Fire Science	3	
FIR	111 Hazardous Materials I	3	
FIR	125 Fire Service Administration	3	
¹ MTH	Elective	3	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation	1	
FIR	112 Hazardous Materials II		3
FIR	116 Fire Prevention Fundamentals		3
¹ MTH	Elective		3
PED	Elective		1
RPK	200 Microcomputers in Public Service Agencies		3
SPD	110 Intro. to Speech Communication		3
Total Credits		17	16

Second Year		Credits	
		1st Semester	2nd Semester
ADJ	211 Criminal Law, Evid. & Proc. I	3	
FIR	230 Investigation Procedures	3	
---	General elective	3	
² ---	Science elective	4	
³ ---	Social science elective	3	
ADJ	212 Criminal Law, Evid. & Proc. II		3
FIR	221 Building Construction & Codes		4
FIR	245 Urban Fire and Risk Analysis		3
² ---	Science elective		4
³ ---	Social science elective		3
Total Credits		16	17

Total minimum credits for the Fire Science Administration major/Fire Science Investigation specialization (A.A.S. degree) = 66.

¹ Please consult your program head or faculty advisor before selecting your MTH electives.

² Science requirements may be selected from: CHM 101-102, or 111-112.

³ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

FIRE PROTECTION TECHNOLOGY

Certificate

Purpose: The certificate curriculum is designed for those students who wish to take principal courses which relate directly to the fire protection technology field. Courses taken in the certificate program can be applied to the A.A.S. degree.

		Credits	
		1st Semester	2nd Semester
FIR	100 Introduction to Fire Science	3	
FIR	111 Hazardous Materials I	3	
FIR	205 Fire Hydraulics & Dist. Systems . . .	4	
FIR	211 Auto. Sprinkler System Design I . .	3	
¹ MTH	Elective	3	
STD	100 Orientation	1	
ENG	111 College Composition I		3
FIR	116 Fire Prevention Fundamentals		3
FIR	212 Auto. Sprinkler System Design II . .		3
FIR	215 Fire Suppression & Det. Systems Design		3
—	Science elective		4
Total Credits		17	16

Total minimum credits for the Fire Protection Technology certificate = 33.

¹ Please consult your program head or faculty advisor before selecting your MTH course.

FIRE SCIENCE ADMINISTRATION

Certificate

Purpose: The certificate curriculum is designed for those students who wish to take principal courses which relate directly to the fire service administration field. Courses taken in the certificate program can be applied to the A.A.S. degree.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
FIR	100 Introduction to Fire Science	3	
FIR	111 Hazardous Materials I	3	
FIR	125 Fire Service Administration	3	
¹ MTH	Elective	3	
SPD	110 Intro. to Speech Communication . .	3	
FIR	106 Fire Supp. Methods & Operations . .		3
FIR	116 Fire Prevention Fundamentals		3
FIR	221 Building Construction and Codes . .		4
FIR	237 Emergency Service Supervision . . .		3
RPK	200 Microcomputers in Public Service Agencies		3
STD	100 Orientation		1
Total Credits		18	17

Total minimum credits for the Fire Science Administration certificate = 35.

¹ Please consult your program head or faculty advisor before selecting your MTH course.

FIRE SCIENCE INVESTIGATION

Certificate

Purpose: The certificate curriculum is designed for those students who wish to take principal courses which relate directly to the fire service investigation field. Courses in the certificate program can be applied to the A.A.S. degree.

		Credits	
		1st Semester	2nd Semester
ADJ	211 Criminal Law Evidence & Proced. I . .	3	
ENG	111 College Composition	3	
FIR	100 Introduction to Fire Science	3	
FIR	111 Hazardous Materials I	3	
FIR	125 Fire Service Administration	3	
FIR	230 Investigation Procedures	3	
FIR	116 Fire Prevention Fundamentals		3
FIR	221 Building Construction and Codes . .		4
¹ MTH	Elective		3
RPK	200 Microcomputers in Public Service Agencies		3
—	Science elective		4
STD	100 Orientation		1
Total Credits		18	18

Total minimum credits for the Fire Science Investigation certificate = 36.

¹ Please consult your program head or faculty advisor before selecting your MTH course.

FITNESS INSTRUCTOR

Career Studies Certificate

Purpose: This curriculum is designed to train students to become knowledgeable fitness instructors in health clubs, recreation departments, and fitness facilities in business and industry.

Recommended Preparation: Students are expected to attain high levels of fitness during this program and, consequently, should be in good health to participate in vigorous workouts.

		Credits	
		1st Semester	2nd Semester
HLT	105 Cardiopulmonary Resuscitation . . .	1	
PED	101 Fundamentals of Physical Activity . .	1	
PED	103 Aerobic Fitness I	1	
PED	111 Weight Training I	1	
PED	105 Aerobic Dance I		1
PED	107 Slimnastics I		1
PED	190 Internship		1-2
SPD	110 Intro. to Speech Communication . . .		3
Total Credits		4	6-7

Total minimum credits for the Fitness Instructor career studies certificate = 10.

GENERAL STUDIES

**Associate in Science Degree
General Studies Degree Program**

Purpose: The curriculum is designed for students who have accumulated credits through a variety of formal and experiential sources and wish to structure a program to suit their needs. It is also for students who wish to tailor a degree to fit the requirements of the institution to which the student is transferring. It is recommended that students pursuing the General Studies degree seek counseling during the first semester of their enrollment to plan their program carefully.

First Year	Credits	
	1st Semester	2nd Semester
¹ CIS /CSC elective	3	
ENG 111 College Composition I	3	
HIS Elective	3	
² Natural science/lab elective	4	
SPD Elective	3	
STD 100 Orientation	1	
ENG 112 College Composition II		3
General electives		4
MTH Elective		3
² Natural science/lab elective		4
PED 101 Fund. of Physical Activity		1
PED or RPK elective		1
Total Credits	17	16

Second Year	Credits	
	1st Semester	2nd Semester
³ General electives	13	13
Social science electives	3	3
Total Credits	16	16

Total minimum credits for the General Studies major (A.S. degree) = 65.

¹ This requirement may also be met by substituting a course which utilizes the computer in a specific discipline.

² Natural science courses may be selected from biology, chemistry, geology, natural science, or physics.

³ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

GERONTOLOGY

**Associate in Applied Science Degree
Human Services Degree Program**

Purpose: The curriculum is designed to provide a broad base of knowledge, methods and skills which underlie comprehensive delivery of human services with options or specialties in the gerontology field. The occupational objectives include: gerontology assistant.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
HMS	109 Struc. Career Plan. in Hum. Serv.	3	
HMS	121 Basic Counseling Skills I	3	
HMS	237 Health/Well-Being of the Elderly	3	
PED	101 Fundamentals of Physical Activity	1	
PED	Elective	1	
PSY	231 Life Span Human Dev. I	3	
STD	100 Orientation	1	
ENG	112 College Composition II		3
HMS	122 Basic Counseling Skills II		3
HMS	238 Selected Topics in Aging		3
HMS	239 Community Serv. for the Elderly		3
PSY	232 Life Span Human Dev. II		3
SOC	246 Death and Society		3
Total Credits		18	18

Second Year		Credits	
		1st Semester	2nd Semester
HMS	141 Group Dynamics I	3	
HMS	225 Functional Family Intervention	3	
HMS	231 Gerontology I	3	
HMS	297 Coop. Ed. or HMS 290 Coord. Internship	3	
MTH	151 Math for the Liberal Arts I	3	
SPD	110 Intro. to Speech Communication	3	
HMS	142 Group Dynamics II		3
HMS	227 The Helper as a Change Agent		3
HMS	228 Productive Problem-Solving		3
HMS	232 Gerontology II		3
HMS	266 Counseling Psychology		3
HMS	297 Coop. Ed. or HMS 290 Coord. Internship		3
Total Credits		18	18

Total minimum credits for the Gerontology major (A.A.S. degree) = 72.

HISTOTECHNOLOGY

Career Studies Certificate
(See "Health Technologies" at the end of these curricular listings.)

HORTICULTURE TECHNOLOGY

**Associate in Applied Science Degree
Agricultural Business Degree Program**

Purpose: The curriculum is designed to prepare students for full-time employment within the field of commercial horticulture as well as for those presently working who seek further knowledge and advancement.

Graduates of the program are prepared for managerial/supervisory level positions in areas which include: landscape design and installation, grounds maintenance, floristry, greenhouse and nursery management, garden center operation, and sales and marketing in related industries.

Related Certificates: Landscape Technician career studies certificate and Turf and Grounds Management career studies certificate.

		Credits	
		1st Semester	2nd Semester
CHM	135 Horticultural Chemistry	3	
ENG	111 College Composition I	3	
HRT	100 Introduction to Horticulture	3	
HRT	115 Plant Propagation	3	
—	Social science elective	3	
STD	100 Orientation	1	
CIS	150 Intro. to Microcomputer Software		3
ENG	115 Technical Writing		3
HRT	127 Horticultural Botany		3
HRT	245 Woody Plants		2
MTH	120 Introduction to Mathematics		3
PED	101 Fundamentals of Physical Activity		1
—	Social science elective		3
Total Credits		16	18

		Credits	
		1st Semester	2nd Semester
BUS	165 Small Business Management	3	
HRT	205 Soils	3	
HRT	207 Plant Pest Management	3	
HRT	231 Planting Design I	3	
MKT	100 Principles of Marketing	3	
PED	Elective	1	
SPD	127 Workshop in Interpersonal Skills	1	
HRT	246 Herbaceous Plants		2
HRT	269 Professional Turf Care		3
HRT	275 Landscape Construction & Maintenance		3
HRT	285 Management of a Horticultural Business		3
HRT	290 Internship or HRT 297 Cooperative Educ.		1-2
HRT	Elective		2
MKT	110 Principles of Selling		3
Total Credits		17	17-18

Total minimum credits for the Horticulture Technology major (A.A.S. degree) = 68.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Floriculture Specialization

		Credits	
		1st Semester	2nd Semester
CHM	135 Horticultural Chemistry	3	
ENG	111 College Composition I	3	
HRT	100 Introduction to Horticulture	3	
HRT	115 Plant Propagation	3	
—	Social science elective	3	
STD	100 Orientation	1	
CIS	150 Intro. to Microcomputer Software		3
ENG	115 Technical Writing		3
HRT	127 Horticultural Botany		3
HRT	247 Indoor Plants		2
MTH	120 Introduction to Mathematics		3
PED	101 Fund. of Physical Activity		1
—	Social science elective		3
Total Credits		16	18

		Credits	
		1st Semester	2nd Semester
BUS	165 Small Business Management	3	
HRT	205 Soils	3	
HRT	207 Plant Pest Management	3	
HRT	260 Intro. to Floral Design	3	
MKT	100 Principles of Marketing	3	
PED	Elective	1	
SPD	127 Workshop in Interpersonal Skills	1	
HRT	121 Greenhouse Crop Production I		3
HRT	246 Herbaceous Plants		2
HRT	266 Advanced Floral Design		3
HRT	285 Mgmt. of a Horticultural Business		3
HRT	290 Internship or HRT 297 Coop. Ed.		1-2
HRT	Elective		2
MKT	110 Principles of Selling		3
Total Credits		17	17-18

Total minimum credits for the Horticulture Technology major/Floriculture specialization (A.A.S. degree) = 68.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

LANDSCAPE TECHNICIAN

Career Studies Certificate

Purpose: This curriculum prepares the student for entry-level landscape technician positions.

		Credits	
		1st Semester	2nd Semester
ENG	100 Basic Occupational Comm.	3	
HRT	108 Plant Identification	2	
HRT	128 Landscape Tools and Methods	2	
HRT	138 Landscape Planting Methods	2	
HRT	197 Cooperative Education	3	
Total Credits		12	

Total minimum credits for the Landscape Technician career studies certificate = 12.

TURF AND GROUNDS MANAGEMENT

Career Studies Certificate

Purpose: This curriculum prepares the student for employment in the turf care industry. Theory is combined with laboratory and field experience to prepare graduates for entry level or supervisory positions with golf courses, lawn services, athletic fields, parks, and companies that install and maintain irrigation systems.

Recommended Preparation: An interview with the program head.

		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
HRT	118 Turf Pests	2		
HRT	269 Professional Turf Care	3		
HRT	117 Tools and Equipment		2	
HRT	119 Irrigation Systems for Turf & Ornamentals		3	
HRT	206 Pesticides in Horticulture		2	
ENG	111 College Composition I or SPD 110 Intro. to Speech Communication			3
HRT	197 Cooperative Education			3
Total Credits		5	7	6

Total minimum credits for the Turf and Grounds Management career studies certificate = 18.

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT

Associate in Applied Science Degree Business Management Degree Program

Purpose: The curriculum is designed to enable the student to enter executive training and management positions in the hospitality industry, and for those presently employed who desire updating in the field.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
HRI	101 Hotel Restaurant Organization and Management I	3	
¹ HRI	120 Principles of Food Preparation	4	
HRI	158 Sanitation and Safety	3	
² MTH	Elective	3	
STD	100 Orientation	1	
ACC	211 Principles of Accounting I		3
HRI	102 Hotel Restaurant Organization and Management II		3
HRI	125 Prin. of Commercial Food Prep.		3
³ HRI	Elective		4
PED	101 Fund. of Physical Activity I		1
SPD	110 Intro. to Speech Communication		3
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
HRI	245 Labor Cost Control	3	
HRI	251 Food and Beverage Cost Control I	3	
HRI	255 Human Resources Management & Training for Hospitality & Tourism	3	
³ HRI	Elective	3	
PED	Elective	1	
⁴ —	Social science elective	3	
¹ HRI	256 Princ. & Applications of Catering		3
HRI	275 Hospitality Law		3
³ HRI	Electives		6
⁴ —	Social science elective		3
Total Credits		16	15

Total minimum credits for the Hotel, Restaurant and Institutional Management major (A.A.S. degree) = 65.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² If you are planning to transfer to another college or university, select a math course which is equivalent to the other school's requirement.

³ Preapproved electives can be selected from any course offered with the HRI, TRV, and DIT prefix. See your faculty advisor for alternative procedures.

⁴ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Dietetic Technology Specialization

Purpose: The curriculum is designed to provide upward career mobility in dietetics. The technician is the middle management and service person, working with a registered dietitian in a health care facility, nursing home, school, restaurant or other food service facility.

Recommended Preparation: A personal interview with a faculty member or counselor and good health.

Special Accreditation Status: The Dietetic Technology program is accredited by the American Dietetics Association.

First Year		Credits	
		1st Semester	2nd Semester
DIT	121 Nutrition I	3	
ENG	111 College Composition I	3	
¹ HRI	120 Principles of Food Preparation	4	
HRI	158 Sanitation and Safety	3	
² MTH	Elective	3	
STD	100 Orientation	1	
ACC	211 Principles of Accounting I		3
DIT	122 Nutrition II		3
HRI	125 Principles of Commercial Food Prep.		3
³ HRI	Elective		4
PED	101 Fund. of Physical Activity I		1
SPD	110 Intro. to Speech Communication		3
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
DIT	190 Coordinated Internship	3	
HRI	251 Food and Beverage Cost Control I	3	
HRI	255 Human Resources Mgmt. & Training for Hospitality & Tourism	3	
³ HRI	Elective	3	
PED	Elective	1	
⁴ —	Social science elective	3	
DIT	221 Therapeutic Nutrition		4
DIT	290 Coordinated Internship		3
³ HRI	Elective		3
³ HRI	Elective		3
⁴ —	Social science elective		3
Total Credits		16	16

Total minimum credits for the Hotel, Restaurant, and Institutional Management major/ Dietetic Technology specialization (A.A.S. degree) = 66.

¹ Special requirements for Food Laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² If you are planning to transfer to another college or university, select a math course which is equivalent to the other school's requirement.

³ Preapproved electives can be selected from any course offered with the HRI and DIT prefix. See your faculty advisor for alternative procedures.

⁴ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Food Service Management Specialization

Purpose: The curriculum is designed to enable the student to enter executive training and management positions in restaurants and food service operations in institutions, hotels, resorts, or private clubs. The curriculum specializes in the food service management phase of the hospitality industry.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
HRI	101 Hotel-Restaurant Organization and Management I	3	
¹ HRI	120 Principles of Food Preparation	4	
HRI	158 Sanitation and Safety	3	
² MTH	Elective	3	
STD	100 Orientation	1	
ACC	211 Principles of Accounting I		3
HRI	102 Hotel-Restaurant Organization and Management II		3
HRI	125 Principles of Commercial Food Prep.		3
¹ HRI	157 Advanced Principles of Food Prep.		4
PED	101 Fundamentals of Physical Activity		1
SPD	110 Intro. to Speech Communication		3
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
HRI	225 Menu Planning & Dining Room Service	3	
HRI	245 Labor Cost Control	3	
HRI	251 Food & Beverage Cost Control I	3	
HRI	255 Human Resources Management & Training for Hospitality & Tourism	3	
PED	Elective	1	
³ —	Social science elective	3	
HRI	217 Equipment Layout & Design		3
¹ HRI	256 Princ. & Applications of Catering		3
HRI	275 Hospitality Law		3
⁴ HRI	Elective		3
³ —	Social science elective		3
Total Credits		16	15

Total minimum credits for the Hotel, Restaurant and Institutional Management major/Food Service Management specialization (A.A.S. degree) = 65.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² If you are planning to transfer to another college or university, select a math course which is equivalent to the other school's requirement.

³ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

⁴ Preapproved electives can be selected from any course offered with the HRI, TRV, and DIT prefix. See your faculty advisor for alternative procedures.

Hotel Management Specialization

Purpose: The curriculum is designed to enable the student to enter executive training and management positions in hotels, motor inns, and clubs. The curriculum specializes in the hotel management phase of the hospitality industry.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
HRI	101 Hotel-Restaurant Organization and Management I	3	
¹ HRI	120 Principles of Food Preparation	4	
HRI	158 Sanitation and Safety	3	
² MTH	Elective	3	
STD	100 Orientation	1	
ACC	211 Principles of Accounting I		3
HRI	102 Hotel-Restaurant Organization and Management II		3
HRI	125 Principles of Commercial Food Prep.		3
HRI	165 Hotel Housekeeping & Engineering Mgt.		4
PED	101 Fundamentals of Physical Activity		1
SPD	110 Intro. to Speech Communication		3
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
HRI	245 Labor Cost Control	3	
HRI	251 Food and Beverage Cost Control I	3	
HRI	255 Human Resources Management & Training for Hospitality & Tourism	3	
HRI	265 Hotel Front Office Operations	3	
PED	Elective	1	
³ —	Social science elective	3	
HRI	235 Marketing of Hospitality Services		3
¹ HRI	256 Princ. & Applications of Catering		3
HRI	275 Hospitality Law		3
⁴ HRI	Elective		3
³ —	Social science elective		3
Total Credits		16	15

Total minimum credits for the Hotel, Restaurant and Institutional Management major/Hotel Management specialization (A.A.S. degree) = 65.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² If you are planning to transfer to another college or university, select a math course which is equivalent to the other school's requirement.

³ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

⁴ Preapproved electives can be selected from any course offered with the HRI, TRV, and DIT prefix. See your faculty advisor for alternative procedures.

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT: FOOD SERVICE MANAGEMENT

Certificate

Purpose: The curriculum is designed for persons seeking employment in the food service industry and for those presently employed who desire updating in the food service industry.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
HRI	101 Hotel-Restaurant Organization and Management I	3	
¹ HRI	120 Principles of Food Preparation ...	4	
HRI	158 Sanitation and Safety	3	
STD	100 Orientation	1	
HRI	102 Hotel-Restaurant Organization and Management II		3
HRI	125 Principles of Commercial Food Prep.	3	
¹ HRI	157 Advanced Principles of Food Prep.	4	
HRI	255 Human Resources Management & Training for Hospitality & Tourism ...	3	
²	Social science elective		3
Total Credits		14	16

Total minimum credits for the Hotel, Restaurant and Institutional Management: Food Service Management certificate = 30.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT: HOTEL MANAGEMENT

Certificate

Purpose: The curriculum is designed for persons seeking employment in the hospitality industry and for those presently employed who desire updating in the lodging industry.

		Credits	
		1st Semester	2nd Semester
HRI	101 Hotel-Restaurant Organization and Management I	3	
¹ HRI	120 Principles of Food Preparation ...	4	
HRI	255 Human Resources Management & Training for Hospitality & Tourism ...	3	
HRI	265 Hotel Front Office Operations.	3	
STD	100 Orientation	1	
ENG	111 College Composition I		3
HRI	102 Hotel-Restaurant Organization and Management II		3
HRI	165 Hotel Housekeeping & Engineering Mgt.		4
HRI	235 Marketing of Hospitality Services.		3
²	Social science elective		3
Total Credits		14	16

Total minimum credits for the Hotel, Restaurant & Institutional Management: Hotel Management certificate = 30.

¹ Special requirements for food laboratories: A current TB skin test or x-ray, and a white uniform are the financial responsibility of the student.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

HUMAN SERVICES ASSOCIATE

Associate in Applied Science Degree Human Services Degree Program

Purpose: The curriculum is designed to provide a broad base of knowledge, methods and skills which underlie comprehensive delivery of human services. The occupational objectives include: mental health technicians and other associate professional positions in the helping field.

Cooperative Education: Students in this curriculum will participate in at least 3 semester hours of Cooperative Education unless they already have equivalent experience. For further information, contact the Cooperative Education Office.

		Credits	
		1st Semester	2nd Semester
First Year			
ENG	111 College Composition I	3	
HMS	109 Struct. Career Plan. in Hum. Serv.	3	
HMS	121 Basic Counseling Skills I	3	
HMS	251 Substance Abuse I	3	
PED	101 Fundamentals of Physical Activity	1	
PED	Elective	1	
PSY	231 Life Span Human Dev. I	3	
STD	100 Orientation	1	
ENG	112 College Composition II		3
HMS	122 Basic Counseling Skills II		3
HMS	145 Effects of Psychoactive Drugs ...		3
HMS	226 Helping Across Cultures		3
HMS	252 Substance Abuse II		3
PSY	232 Life Span Human Dev. II		3
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
Second Year			
HMS	141 Group Dynamics I	3	
HMS	225 Functional Family Intervention ...	3	
HMS	231 Gerontology I	3	
HMS	265 Personality Theory	3	
MTH	151 Math for the Liberal Arts I	3	
SPD	110 Intro. to Speech Communication .	3	
HMS	142 Group Dynamics II		3
HMS	227 The Helper as a Change Agent ...		3
HMS	228 Productive Problem-Solving ...		3
HMS	232 Gerontology II		3
HMS	266 Counseling Psychology		3
HMS	297 Coop. Educ. or HMS 290 Intern..		3
Total Credits		18	18

Total minimum credits for the Human Services Associate major (A.A.S. degree) = 72.

INDUSTRIAL AND COMMERCIAL SECURITY

Career Studies Certificate (See "Security Administration.")

INTERIOR DESIGN

**Associate in Applied Science Degree
Interior Design Degree Program**

Purpose: The Interior Design program is intended to prepare the graduate to enter the interior design field at the technician's level. The program is designed to give the student a basic foundation in: (1) the visual presentation skills (2) a knowledge of elements of formal and special design and color coordination (3) a knowledge of the evolution of furniture and interior styles, and (4) a basic knowledge of the business procedures in the profession. A personal interview with the head of the Interior Design department is helpful to a new student.

After completing two years (4 semesters) of the program, the graduate will earn an Associate in Applied Science degree. Electives within the program enable the student to specialize in areas of interest and future potential employment. Career opportunities exist in the retail market, furniture, fabric or interior accessories, and in interior space planning and drafting with architectural firms.

Coordinated Internship/Cooperative Education: Each student, when he/she reaches the end of the curriculum, is required to spend 24 hours per week under the direct supervision of an interior designer, interior design firm or architectural design firm, for one semester. The student will apply for the internship as if he/she were applying for a full-time job. This program is most beneficial to the student in learning the practical side of the interior design business.

First Year	Credits	
	1st Semester	2nd Semester
ART 101 Hist. & Apprec. of Art I.....	3	
ART 131 Fund. of Design I.....	4	
ENG 111 College Composition I.....	3	
IDS 100 Theory & Tech. of Int. Design....	3	
IDS 109 Styles of Furniture & Interiors....	3	
PED 101 Fund. of Physical Activity.....	1	
STD 100 Orientation.....	1	
ART 102 Hist. & Apprec. of Art II.....		3
ART 132 Fund. of Design II.....		4
IDS 105 Arch. Drft. for Int. Design.....		3
PED Elective.....		1
PSY 100 Prin. of Applied Psychology.....		3
SPD 110 Intro. to Speech Communication .		3
Total Credits	18	17

Second Year	Credits	
	1st Semester	2nd Semester
IDS 106 Three Dimen. Drawing & Rendering.....	3	
IDS 206 Lighting & Furnishings.....	3	
IDS 225 Business Procedures.....	3	
¹ IDS Elective.....	3	
MTH 151 Math for the Liberal Arts I.....	3	
² Social science elective.....	3	
HRT 107 Plantscaping for Interior Des.		2
IDS 205 Materials and Sources.....		3
IDS 215 Theory/Research in Comm. Des. .		3
IDS 221 Design. Comm. Interiors.....		4
³ IDS 290 Coord. Internship.....		3
¹ IDS Elective.....		3
Total Credits	18	18

Total minimum credits for the Interior Design major (A.A.S. degree) = 71.

¹ Areas of electives may also be selected from the following curricula which offer complimentary areas to Interior Design: Architecture, Communication Design, Art History, Business Administration, Horticulture Technology/Floriculture, Hotel Management, Marketing.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

³ For those students interested in transfer, an IDS elective may be substituted (with divisional approval) for the internship.

INTERNATIONAL BUSINESS

Career Studies Certificate
(See "Business Management.")

LANDSCAPE TECHNICIAN

Career Studies Certificate
(See "Horticulture Technology.")

LEGAL ASSISTING

**Associate in Applied Science Degree
Business and Office Degree Program**

Purpose: The curriculum is designed to provide an individual with a sufficient level of knowledge, understanding and proficiency to perform the tasks in meeting a client's needs which can be performed by a trained, non-lawyer assistant working under the direction and supervision of a lawyer. A legal assistant will have a basic understanding of the general processes of American law, and will have the knowledge and proficiency to perform specific tasks under the supervision of a lawyer in the fields of civil and criminal law. The occupational objectives include: employment in public and in private, both individual and corporate, law-related activities, organizations and agencies.

Recommended Preparation: Proficiency in high school English.

Completion Requirements: To remain in the program, students must complete each of the legal courses in the program with a "C" or better.

Cooperative Education: Students in this curriculum will participate in at least 3 semester hours of Cooperative Education unless they already have equivalent experience. For further information, contact the Cooperative Education Office.

Special Accreditation Status: The Legal Assisting program is accredited by the American Bar Association.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I	3	
LGL 110 Intro. to Law & the Legal Asst.	3	
LGL 116 Domestic Relations & Consumer Law	3	
LGL 125 Legal Research	3	
PED 101 Fund. of Physical Activity	1	
PHI 115 Practical Reasoning	3	
STD 100 Orientation	1	
ENG 112 College Composition II		3
LGL 126 Legal Writing		3
LGL 215 Torts		3
LGL 218 Criminal Law		3
MTH 151 Math for the Liberal Arts I		3
PED Elective		1
Total Credits	17	16

Second Year	Credits	
	1st Semester	2nd Semester
Approved elective	3	
CIS 100 Intro. to Information Systems	3	
LGL 115 Real Estate Law	3	
LGL 217 Trial Pract./the Law of Evidence	3	
LGL 235 Legal Aspects of Business Organ.	3	
PSY 201 Intro. to Psychology I or SOC 201 Intro. to Sociology I	3	
Approved elective		3
LGL 227 Admin. of Decedents' Estates		3
LGL 230 Legal Transactions		3
LGL 297 Cooperative Education		3
PSY 202 Intro. to Psychology II or SOC 202 Intro. to Sociology II		3
SPD 110 Intro. to Speech Communication		3
Total Credits	18	18

Total minimum credits for the Legal Assisting major (A.A.S. degree) = 69.

LIBERAL ARTS

**Associate in Arts Degree
Liberal Arts Degree Program**

Purpose: The Associate in Arts degree major in Liberal Arts is designed for persons who plan to transfer to a four-year institution to complete a bachelor's degree program in any of the humanities or social science areas.

Recommended Preparation: Satisfactory completion of the following high school units or equivalent: 4 of English, 2 of mathematics (algebra and geometry), 1 of laboratory science, 1 of history, and two units of foreign language.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I	3	
¹ Foreign language	3	
² HIS Elective	3	
³ MTH 151 Math for the Liberal Arts I	3	
⁴ Natural science/lab elective	4	
STD 100 Orientation	1	
ENG 112 College Composition II		3
¹ Foreign language		3
² HIS Elective		3
³ MTH 152 Math for the Liberal Arts II		3
⁴ Natural science/lab elective		4
Total Credits	17	16

Second Year	Credits	
	1st Semester	2nd Semester
⁵ ENG Elective	3	
¹ Foreign language	3	
⁶ General elective	5	
⁷ Social science elective	3	
SPD 110 Intro. to Speech Communication	3	
⁵ ENG Elective		3
¹ Foreign language		3
⁶ General elective		4
PED 101 Fund. of Physical Activity		1
PED Elective		1
⁷ Social science elective		3
Total Credits	17	15

Total minimum credits for the Liberal Arts major (A.A. degree) = 65.

¹ Intermediate level (201-202) proficiency in a foreign language is required. These courses require a 101-102 sequence in the language or equivalent proficiency. Waivers or credit by exam (through CLEP) for previous experience may be available for some languages.

² HIS 121-122 U.S. History or HIS 101-102 History of Western Civ. I-II.

³ MTH 151-152 meets general education requirements: a math course and knowledge of the computer.

⁴ Science courses may be selected from biology, chemistry, physics, geology or the natural science 100 series courses.

⁵ ENG 241-242 Survey of American Lit., ENG 243-244 Survey of English Lit., or ENG 251-252 Survey of World Lit.

⁶ Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated.

⁷ Two semester sequence social science courses may be selected from one of the following disciplines: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Art History Specialization

Purpose: The Art History specialization is designed for students who plan to transfer to a college or university for a Bachelor of Arts degree in Art History.

First Year	Credits	
	1st Semester	2nd Semester
ART 101 Hist. & Appreciation of Art I.....	3	
ENG 111 College Composition I	3	
1 Foreign language.....	3	
MTH 151 Math for the Liberal Arts I.....	3	
2 Natural science/lab elective.....	4	
STD 100 Orientation	1	
ART 102 Hist. & Appreciation of Art II.....		3
ENG 112 College Composition II.....		3
1 Foreign language.....		3
MTH 152 Math for the Liberal Arts II.....		3
2 Natural science/lab elective.....		4
PED 101 Fundamentals of Physical Activity		1
Total Credits	17	17

Second Year	Credits	
	1st Semester	2nd Semester
² ART 211 Hist. of American Art I or approved Art History elective.....	3	
³ Art History or studio elective	3	
ENG Elective	3	
HIS Elective	3	
⁴ Social science elective	3	
SPD 110 Intro. to Speech Communication .	3	
² ART 212 Hist. of American Art II or approved Art History elective		3
³ Art History or studio elective		3
ENG Elective		3
General elective		2
HIS Elective		3
PED Elective		1
⁴ Social science elective		3
Total Credits	18	18

Total minimum credits for the Liberal Arts major/Art History specialization (A.A. degree) = 70.

¹ Intermediate level (201-202) proficiency in a foreign language is required. These courses require a 101-102 sequence in the language or equivalent proficiency. Waivers or credit by exam (through CLEP) for previous experience may be available for *some* languages. Italian, French, or German is recommended.

² Art History electives: Introduction to Primitive Art, History of Far Eastern Art, History of Printmaking, Aesthetics (Philosophy), Art in World Culture, Seminar and Project in Art History, Gallery Management, History of Design (other, as approved).

³ Design, Drawing, or Painting Materials and Techniques recommended for studio electives.

⁴ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

International Studies Specialization

Purpose: The Liberal Arts A.A. degree with a specialization in International Studies is designed to prepare students who intend to transfer to a four-year institution to complete a bachelor's degree program in International Studies or in any discipline of the humanities or social sciences. Whatever the student's ultimate career objectives, the International Studies specialization will broaden the student's education to include more emphasis on other cultures and countries in recognition of the increasing interdependence of today's world.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I	3	
1 Foreign language.....	3	
HIS 101 History of Western Civ. I	3	
² MTH 151 Math for the Liberal Arts I.....	3	
³ Natural science/lab elective.....	4	
STD 100 Orientation	1	
ENG 112 College Composition II.....		3
1 Foreign language.....		3
HIS 102 History of Western Civ. II.....		3
² MTH 152 Math for the Liberal Arts II.....		3
³ Natural science/lab elective.....		4
Total Credits	17	16

Second Year	Credits	
	1st Semester	2nd Semester
ECO 201 Principles of Economics I.....	3	
ENG 251 Survey of World Lit. I.....	3	
1 Foreign language.....	3	
⁴ General elective	3	
⁵ Non-western requirement	3	
SPD 110 Intro. to Speech Communication .	3	
ECO 202 Principles of Economics II.....		3
ENG 252 Survey of World Lit. II.....		3
1 Foreign language.....		3
⁴ General elective		3
⁵ Non-western requirement		3
PED 101 Fundamentals of Physical Activity		1
PED Elective		1
Total Credits	18	17

Total minimum credits for the Liberal Arts major/International Studies specialization (A.A. degree) = 68.

¹ Intermediate level (201-202) proficiency in a foreign language is required. These courses require a 101-102 sequence in the language or equivalent proficiency. Waivers or credit by exam (through CLEP) for previous experience may be available for *some* languages.

² Math 151-152 meets general education requirements: math course and knowledge of the computer.

³ Science courses may be selected from biology, chemistry, physics, geology, or the natural science 100 series courses.

⁴ Electives should be chosen carefully and after investigation of transfer requirements of the institutions to which transfer is contemplated. Highly recommended electives are: ENG 243-244, GEO 221-222, PLS 241-242, HIS 211-212, HIS 111-112, HIS 271-272, ART 101-102, ART 105, ART 106, HUM 111-112, HUM 201-202, MUS 221-222, HUM 256, HUM 260, SPD 229, PHI 211-212, or SOC 211-212.

⁵ Students may choose from: ART 103-104, HIS 253-254, HIS 255, HIS 256, HIS 251-252, HIS 241-242, HIS 231-232, REL 231-232, HIS 203-204, or HUM 231-232.

Music Specialization

Purpose: The Associate in Arts degree with a specialization in Music may be used by students who wish to transfer to a four-year college or university to complete the Bachelor of Arts degree.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
¹ ENG	Foreign language	3	
² HIS	Elective	3	
MUS	Applied music	1	
MUS	Ensemble	1	
MUS	111 Music Theory I	4	
PED	Elective	1	
ENG	112 College Composition II		3
¹ ENG	Foreign language		3
² HIS	Elective		3
MUS	Applied music		1
³ MUS	Elective or general elective		1
MUS	Ensemble		1
MUS	112 Music Theory II		4
STD	100 Orientation		1
Total Credits		16	17

Second Year		Credits	
		1st Semester	2nd Semester
ENG	Elective	3	
³ ENG	General elective	2	
MTH	151 Math for the Liberal Arts I	3	
MUS	Applied music	1	
MUS	Ensemble	1	
⁴ ENG	Natural science/lab elective	4	
PED	101 Fundamentals of Physical Activity	1	
⁵ ENG	Social science elective	3	
ENG	Elective		3
MTH	152 Math for the Liberal Arts II		3
MUS	Applied music		1
⁶ MUS	Elective or general elective		1
⁴ ENG	Natural science/lab elective		4
⁵ ENG	Social science elective		3
SPD	110 Intro. to Speech Communication		3
Total Credits		18	18

Total minimum credits for the Liberal Arts major/Music specialization (A.A. degree) = 69.

¹ Intermediate level (201-202) proficiency in a foreign language is required. These courses require a 101-102 sequence in the language or equivalent proficiency. Waivers or credit by exam (through CLEP) for previous experience may be available for *some* languages. Italian, French, or German is recommended.

² HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II.

³ Electives should be chosen carefully and after investigation of transfer requirements of the institution to which transfer is contemplated. If majoring in piano, two semesters of class voice are recommended; if majoring in voice, two semesters of class piano are recommended.

⁴ Science courses may be selected from biology, chemistry, geology, or physics.

⁵ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

⁶ Ensemble is recommended.

Philosophy Specialization

Purpose: The Liberal Arts degree with the specialization in Philosophy is designed for students who wish to study philosophy at the college level or who wish to transfer to a four-year institution for a baccalaureate degree.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
¹ ENG	Foreign language	3	
HIS	101 History of Western Civ. I or HIS 111 History of World Civ. I	3	
PHI	101 Introduction to Philosophy I	3	
PHI	111 Logic	3	
STD	100 Orientation	1	
ENG	112 College Composition II		3
¹ ENG	Foreign language		3
HIS	102 History of Western Civ. II or HIS 112 History of World Civ. II		3
PED	101 Fundamentals of Physical Activity		1
PHI	102 Introduction to Philosophy II		3
SPD	110 Intro. to Speech Communication or SPD 228 Persuasion		3
Total Credits		16	16

Second Year		Credits	
		1st Semester	2nd Semester
² ENG	Elective: American, English, or World Lit. or Great Books or any literature of the Bible	3	
³ MTH	151 Math for the Liberal Arts I	3	
⁴ ENG	Natural science with lab elective	4	
PED	Elective	1	
⁵ PHI	Elective	3	
PHI	/REL elective	3	
² ENG	Elective: American, English, or World Lit. or Great Books or any literature of the Bible		3
³ MTH	152 Math for the Liberal Arts II		3
⁴ ENG	Natural science with lab elective		4
⁵ PHI	Elective		3
PHI	/REL elective		3
Total Credits		17	16

Total minimum credits for the Liberal Arts major/Philosophy specialization (A.A. degree) = 65.

¹ Intermediate level (201-202) proficiency in a foreign language is required. These courses require a 101-102 sequence in the language or equivalent proficiency. Waivers or credit by exam (through CLEP) for previous experience may be available for *some* languages. Latin or Greek is recommended. Students should investigate transfer requirements of the institution to which they plan to transfer.

² Any two courses in literature: ENG 241-242, ENG 243-244, ENG 251-252, HUM 111-112, or any literature of the Bible.

³ MTH 151-152 meets general education requirements: a math course and knowledge of the computer. Any higher math with computer course is also acceptable.

⁴ Science courses may be selected from biology, chemistry, geology, physics, or the natural science 100 series for 2 semesters.

⁵ To be selected from PHI or REL courses not used to fulfill specialization requirements. All electives should be chosen carefully, after investigation of transfer requirements.

Religion Specialization

Purpose: The Liberal Arts major with the specialization in Religion is designed for students who wish to study religion at the college level or who wish to transfer to a four-year institution for a baccalaureate degree.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I	3	
¹ Foreign language	3	
HIS 101 History of West. Civ. I or HIS 111 History of World Civ. I	3	
² MTH 151 Math for the Liberal Arts I	3	
³ PHI /REL elective	3	
STD 100 Orientation	1	
ENG 112 College Composition II		3
¹ Foreign language		3
HIS 102 History of West. Civ. II or HIS 112 History of World Civ. II		3
² MTH 152 Math for the Liberal Arts II		3
PED 101 Fundamentals of Physical Activity		1
SPD 110 Intro. to Speech Communication or SPD 228 Persuasion		3
Total Credits	16	16

Second Year	Credits	
	1st Semester	2nd Semester
⁴ ENG Elective: American, English or World Lit., or Great Books or any literature of the Bible	3	
⁵ Natural science/lab elective	4	
PED Elective	1	
PHI /REL elective	3	
⁶ REL Elective	3	
REL Elective	3	
⁴ ENG Elective: American, English or World Lit., or Great Books or any literature of the Bible		3
⁵ Natural science/lab elective		4
PHI /REL elective		3
⁶ REL Elective		3
REL Elective		3
Total Credits	17	16

Total minimum credits for the Liberal Arts major/Religion specialization (A.A. degree) = 65.

¹ Intermediate level (201-202) proficiency in a foreign language is required. These courses require a 101-102 sequence in the language or equivalent proficiency. Waivers or credit by exam (through CLEP) for previous experience may be available for some languages. Latin or Greek is recommended. Students should investigate transfer requirements of the institution to which they plan to transfer.

² MTH 151-152 meets general education requirements: a math course and knowledge of the computer. Any higher math with computer course is also acceptable.

³ REL 100, REL 230, PHI 101, or PHI 102.

⁴ Any two courses in literature: ENG 241-242, ENG 243-244, ENG 251-252, HUM 111-112, or any literature of the Bible.

⁵ Science courses may be selected from biology, chemistry, geology, physics, or the natural science 100 series for 2 semesters.

⁶ REL and PHI electives to be selected from PHI or REL courses not used to fulfill specialization requirements. Carefully investigate transfer requirements on all electives.

Speech Communication Specialization

Purpose: The Liberal Arts major with the specialization in Speech Communication is designed for students who wish to study speech communication at the college level or who wish to transfer to a four-year institution for a baccalaureate degree.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I	3	
¹ Foreign language	3	
² HIS Elective	3	
PED 101 Fund. of Physical Activity	1	
³ Social science elective	3	
SPD 110 Intro. to Speech Communication or SPD 126 Interpersonal Communication		3
STD 100 Orientation		1
ENG 112 College Composition II		3
¹ Foreign language		3
² HIS Elective		3
PED Elective		1
³ Social science elective		3
SPD 100 Principles of Public Speaking		3
Total Credits	17	16

Second Year	Credits	
	1st Semester	2nd Semester
⁴ ENG Elective	3	
⁵ General elective	3	
⁶ MTH 151 Math for the Liberal Arts I	3	
Natural science/lab elective	4	
SPD 115 Small Group Communication	3	
⁴ ENG Elective		3
⁵ General elective		3
⁶ MTH 152 Math for the Liberal Arts II		3
Natural science/lab elective		4
SPD 111 Voice & Diction I		3
Total Credits	16	16

Total minimum credits for the Liberal Arts major/Speech Communication specialization (A.A. degree) = 65.

¹ Intermediate level (201-202) proficiency in a foreign language is required. These courses require a 101-102 sequence in the language or equivalent proficiency. Waivers or credit by exam (through CLEP) for previous experience may be available for some languages.

² HIS 101-102 History of Western Civilization I-II, or HIS 121-122 U.S. History I-II.

³ Two semester sequence social science courses may be elected from one of the following disciplines: economics, geography, history, political science, psychology, or sociology (includes anthropology).

⁴ ENG 241-242, ENG 243-244, or ENG 251-252.

⁵ Electives should be chosen carefully, after investigation of transfer requirements of the institution to which the student plans to transfer.

⁶ Math 151-152 meets general education requirements: a math course and knowledge of the computer.

MACHINE TOOL OPERATION

Certificate
(See "Mechanical Engineering.")

MARKETING

Associate in Applied Science Degree
Business Management Degree Program

Purpose: The curriculum is designed for persons who seek full-time employment in areas involving the marketing and distribution of goods and for those presently in these fields who are seeking promotion. The occupational objectives include: store manager, assistant manager, sales supervisor, department manager, sales representative, buyer, assistant buyer. The Marketing curriculum offers a specialization in Fashion. This specialization is designed for the second year of the curriculum after a common first year.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

For Retail Emphasis

First Year		Credits	
		1st Semester	2nd Semester
BUS	100 Introduction to Business.....	3	
ENG	111 College Composition I	3	
MKT	100 Principles of Marketing	3	
MKT	115 Retail Organization & Mgmt.....	3	
MTH	120 Intro. to Mathematics	3	
PED	101 Fund. of Physical Activity	1	
STD	100 Orientation	1	
BUS	125 Applied Business Mathematics or BUS 121 Business Mathematics I		3
BUS	150 Principles of Management		3
CIS	100 Intro. to Information Systems		3
ENG	112 College Composition II.....		3
MKT	110 Principles of Selling.....		3
MKT	200 Consumers, Marketing & Society		3
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I	3	
BUS	115 Organizational Behavior.....	3	
BUS	241 Business Law I	3	
ECO	120 Survey of Economics.....	3	
MKT	228 Promotion.....	3	
—	Business elective		3
BUS	205 Human Resource Management ...		3
MKT	227 Merchandise Buying and Control .		3
PED	Elective		1
¹ —	Social science elective		3
SPD	110 Intro. to Speech Communication .		3
Total Credits		15	16

Total minimum credits for the Marketing major (A.A.S. degree) = 66.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Fashion Specialization

First Year		Credits	
		1st Semester	2nd Semester
BUS	100 Introduction to Business.....	3	
ENG	111 College Composition I	3	
MKT	100 Principles of Marketing	3	
MKT	115 Retail Organization & Mgmt.....	3	
MTH	120 Intro. to Mathematics	3	
PED	101 Fund. of Physical Activity	1	
STD	100 Orientation	1	
BUS	125 Applied Business Mathematics or BUS 121 Business Mathematics I		3
BUS	150 Principles of Management		3
CIS	100 Intro. to Information Systems		3
ENG	112 College Composition II.....		3
MKT	110 Principles of Selling.....		3
MKT	200 Consumers, Marketing & Society		3
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I	3	
BUS	115 Organizational Behavior.....	3	
BUS	241 Business Law I	3	
ECO	120 Survey of Economics.....	3	
MKT	120 Fundamentals of Fashion	3	
MKT	228 Promotion.....	3	
BUS	205 Human Resource Management ...		3
MKT	236 Color, Line & Design Application .		3
MKT	238 Fashion Merchandising.....		3
PED	Elective		1
¹ —	Social science elective		3
SPD	110 Intro. to Speech Communication .		3
Total Credits		18	16

Total minimum credits for the Marketing major/Fashion specialization (A.A.S. degree) = 69.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

MECHANICAL ENGINEERING

Associate in Applied Science Degree
Mechanical Degree Program

Purpose: This curriculum is designed to prepare the student for employment as a mechanical engineering technician or for transfer to a four-year college to seek a bachelor's degree. Occupational objectives include: mechanical draftsman, engineering technician, research and development technician, engineering equipment inspector, engineering plant operator or estimator.

Recommended Preparation: Two years of high school algebra and geometry.

		Credits	
First Year		1st Semester	2nd Semester
DRF	151 Engineering Draw. Fund. I.....	3	
ENG	111 College Composition I.....	3	
MEC	120 Principles of Machine Technology.	3	
MEC	127 Comp. Programming for Engr. Tech.....	3	
MTH	115 Technical Math I.....	3	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation.....	1	
DRF	152 Engineering Draw. Fund. II.....		3
DRF	231 Computer Aided Drafting I.....		3
MEC	112 Processes of Industry.....		3
MEC	118 Automated Manufacturing Tech. .		3
MTH	116 Technical Math II.....		3
PED	Elective.....		1
SPD	127 Workshop in Interpersonal Skills..		1
Total Credits		17	17

		Credits	
Second Year		1st Semester	2nd Semester
EGR	130 Statics and Strength of Materials..	5	
MEC	225 Metallurgy.....	3	
MEC	265 Fluid Mechanics.....	3	
PHY	111 Technical Physics I.....	4	
---	Social science elective or PSY 126 Psychology for Business & Industry...	3	
ENG	115 Technical Writing.....		3
MEC	133 Mechanics III-Dynamics for Engr. Tech.		2
MEC	210 Machine Design.....		3
MEC	245 Robotics.....		3
PHY	112 Technical Physics II.....		4
---	Social science elective.....		3
Total Credits		18	18

Total minimum credits for the Mechanical Engineering major (A.A.S. degree) = 70.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology). Students planning to transfer should consider taking a two-semester sequence of a social science.

Computer-Aided Drafting and Manufacturing Specialization

Purpose: This program is designed to prepare the student for employment as a CAD operator or automated manufacturing technician. Occupational objectives include: CAD operator, mechanical engineering technician, numerical control programmer, robotics technician, research and development technician, mechanical draftsman.

Recommended Preparation: Two years of high school algebra and geometry.

		Credits	
First Year		1st Semester	2nd Semester
DRF	151 Engineering Drawing Fund. I.....	3	
ENG	111 College Composition I.....	3	
MEC	120 Principles of Machine Technology.	3	
MEC	127 Comp. Programming for Engr. Tech.....	3	
MTH	115 Technical Math I.....	3	
PED	101 Fundamentals of Physical Activity	1	
SPD	127 Workshop in Interpersonal Skills..	1	
STD	100 Orientation.....	1	
DRF	152 Engineering Drawing Fund. II.....		3
DRF	231 Computer Aided Drafting I.....		3
ENG	115 Technical Writing.....		3
MEC	118 Automated Manufacturing Tech. .		3
MTH	116 Technical Math II.....		3
---	Social science elective.....		3
Total Credits		18	18

		Credits	
Second Year		1st Semester	2nd Semester
DRF	232 Computer Aided Drafting II.....	3	
EGR	130 Statics and Strength of Materials for Engineering Technology.....	5	
MEC	265 Fluid Mechanics.....	3	
PHY	111 Technical Physics I.....	4	
---	Social science elective.....	3	
DRF	233 Computer Aided Drafting III.....		3
DRF	237 CADD Systems Management.....		3
MEC	210 Machine Design.....		3
MEC	245 Robotics.....		3
PED	Elective.....		1
PHY	112 Technical Physics II.....		4
Total Credits		18	17

Total minimum credits for the Mechanical Engineering major/Computer-Aided Drafting and Manufacturing specialization (A.A.S. degree) = 71.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Electro-Mechanical Technology Specialization

Purpose: This program is designed to prepare the student for employment as an electro-mechanical technician, where the job skills require both electronic and mechanical training. Occupational objectives include: electro-mechanical technician, electro-mechanical draftsman, research and development technician, electronics draftsman.

Recommended Preparation: Two years of high school algebra and geometry.

First Year		Credits	
		1st Semester	2nd Semester
DRF	151 Engr. Drawing Fundamentals I . . .	3	
ETR	113 DC and AC Fundamentals I	4	
MEC	120 Principles of Machine Technology.	3	
MEC	127 Computer Programming For Engr. Tech.	3	
MTH	115 Technical Math I	3	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation	1	
ENG	111 College Composition I		3
ETR	114 DC and AC Fundamentals II		4
ETR	144 Devices and Applications II		4
ETR	167 Logic Circuits and Systems I or MEC 118 Automated Manufacturing Tech.		4-3
MTH	116 Technical Math II		3
Total Credits		18	18-17

Second Year		Credits	
		1st Semester	2nd Semester
EGR	130 Statics and Strength of Materials .	5	
ENG	115 Technical Writing	3	
ETR	261 Microprocessor Application I	4	
MEC	265 Fluid Mechanics	3	
1	Social science elective	3	
DRF	245 Electronic Drafting		2
ETR	221 Electronic Controls I or MEC 210 Machine Design		4-3
MEC	245 Robotics		3
PED	Elective		1
PHY	111 Technical Physics I		4
1	Social science elective		3
SPD	127 Workshop in Interpersonal Skills. .		1
Total Credits		18	18-17

Total minimum credits for the Mechanical Engineering major/Electro-Mechanical Technology specialization (A.A.S. degree) = 70.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

MACHINE TOOL OPERATION

Certificate

Purpose: This program is designed to prepare the student for industrial employment as a machinist or draftsman in any of the many industrial firms or small machine shops. Students may also choose to pursue the degree in Mechanical Engineering upon completion of the certificate program. Occupational objectives include: machine operator, mechanical draftsman, drill press or lathe operator, NC operator.

Recommended Preparation: High school algebra and geometry.

		Credits	
		1st Semester	2nd Semester
DRF	151 Engr. Drawing Fund. I	3	
ENG	111 College Composition I	3	
MEC	120 Principles of Machine Technology.	3	
MEC	127 Computer Programming for Engr. Tech.	3	
MTH	103 Basic Technical Math I or MTH 115 Technical Math I	3	
STD	100 Orientation	1	
DRF	152 Engr. Drawing Fund. II		3
DRF	231 Computer Aided Drafting I		3
MEC	112 Processes of Industry		3
MEC	118 Automated Manufacturing Tech. . .		3
MEC	136 Advanced Machine Technology . . .		3
MTH	104 Basic Technical Math II or MTH 116 Technical Math II		3
Total Credits		16	18

Total minimum credits for the Machine Tool Operation certificate = 34.

MEDICAL LABORATORY TECHNOLOGY

Associate in Applied Science Degree
(See "Health Technologies" at the end of these curricular listings.)

MEDICAL OFFICE ASSISTING

Career Studies Certificate
(See "Health Technologies" at the end of these curricular listings.)

MEDICAL RECORD TECHNOLOGY

Associate in Applied Science Degree
(See "Health Technologies" at the end of these curricular listings.)

MICROCOMPUTER REPAIR

Career Studies Certificate
(See "Electronics.")

MICROCOMPUTER USAGE

Career Studies Certificate
(See "Computer Information Systems.")

MUSIC

Associate in Applied Arts Degree
Visual and Performing Arts Degree Program

Purpose: The Associate in Applied Arts degree curriculum is designed for students who seek employment in the performing arts field. The degree offers a major in Music and two specializations: Sacred Music and Jazz/Popular Music. All three programs have a common first year curriculum.

Recommended Preparation: An interview by the music faculty may be required before beginning the program.

Special Curriculum Completion Requirements: Applied music students: Tuition fees are payable to the College. Studio charges are payable to applied music instructors. Applied proficiency requirements must be met in order for students to advance to the 200-level of applied music courses. Piano proficiency skills are required of all music majors.

First Year	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I	3	
MUS Applied music (major)	2	
¹ MUS Applied music (minor)	1	
MUS Chorus/Band/Orchestra/Ensemble	1	
MUS 111 Music Theory I	4	
PED 101 Fund. of Physical Activity	1	
² Social science elective	3	
STD 100 Orientation	1	
ENG 112 College Composition II		3
MTH 151 Math for the Liberal Arts I		3
MUS Applied music (major)		2
¹ MUS Applied music (minor)		1
MUS Chorus/Band/Orchestra/Ensemble		1
MUS 112 Music Theory II		4
PED Elective		1
² Social science elective		3
Total Credits	16	18

Second Year	Credits	
	1st Semester	2nd Semester
General elective	4	
MUS Applied music (major)	2	
¹ MUS Applied music (minor)	1	
MUS Chorus/Band/Orchestra/Ensemble	1	
MUS 211 Advanced Music Theory I	4	
MUS 221 History of Music I	3	
³ ENG Elective		3
MUS Applied music (major)		2
¹ MUS Applied music (minor)		1
MUS Chorus/Band/Orchestra/Ensemble		1
MUS 212 Advanced Music Theory II		4
MUS 222 History of Music II		3
SPD 110 Intro. to Speech Communication		3
Total Credits	15	17

Total minimum credits for the Music major (A.A.A. degree) = 66.

¹ Class instruction such as Class Voice or Class Piano may be substituted.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

³ 200-level literature class

Jazz/Popular Music Specialization

First Year	Credits	
	1st Semester	2nd Semester
ENG 111 College Composition I	3	
MUS Applied music (major)	2	
¹ MUS Applied music (minor)	1	
MUS Chorus/Band/Orchestra/Ensemble	1	
MUS 111 Music Theory I	4	
PED 101 Fund. of Physical Activity	1	
² Social science elective	3	
STD 100 Orientation	1	
ENG 112 College Composition II		3
MTH 151 Math for the Liberal Arts I		3
MUS Applied music (major)		2
¹ MUS Applied music (minor)		1
MUS Chorus/Band/Orchestra/Ensemble		1
MUS 112 Music Theory II		4
PED Elective		1
² Social science elective		3
Total Credits	16	18

Second Year	Credits	
	1st Semester	2nd Semester
General elective	4	
MUS Applied music (major)	2	
¹ MUS Applied music (minor)	1	
MUS Chorus/Band/Orchestra/Ensemble	1	
MUS 159 Improvisational Techniques	3	
MUS 213 Composition I	3	
SPD 110 Intro. to Speech Communication	3	
³ ENG Elective		3
General elective		2
MUS Applied music (major)		2
¹ MUS Applied music (minor)		1
MUS Chorus/Band/Orchestra/Ensemble		1
MUS 214 Composition II		3
MUS 225 The History of Jazz		3
MUS 259 Adv. Improvisational Techniques		3
Total Credits	17	18

Total minimum credits for the Music major/Jazz/Popular Music specialization (A.A.A. degree) = 69.

¹ Class instruction such as Class Voice or Class Piano may be substituted.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

³ 200-level literature class.

Sacred Music Specialization

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
MUS	Applied music (major)	2	
¹ MUS	Applied music (minor)	1	
MUS	Chorus/Band/Orchestra/Ensemble	1	
MUS	111 Music Theory I	4	
PED	101 Fund. of Physical Activity	1	
² —	Social science elective	3	
STD	100 Orientation	1	
ENG	112 College Composition II		3
MTH	151 Math for the Liberal Arts I		3
MUS	Applied music (major)		2
¹ MUS	Applied music (minor)		1
MUS	Chorus/Band/Orchestra/Ensemble		1
MUS	112 Music Theory II		4
PED	Elective		1
² —	Social science elective		3
Total Credits		16	18

Second Year		Credits	
		1st Semester	2nd Semester
³ ENG	Elective	3	
—	General elective	4	
MUS	Applied music (major)	2	
MUS	Chorus/Band/Orchestra/Ensemble	1	
MUS	123 Org. & Dir. Choral Activities I	2	
MUS	213 Composition I	3	
MUS	221 History of Music I	3	
MUS	Applied music (major)		2
MUS	Chorus/Band/Orchestra/Ensemble		1
MUS	120 Hymnology		3
MUS	124 Org. & Dir. Choral Activities II		2
MUS	222 History of Music II		3
MUS	243 Liturgical Music & Service Playing I		3
SPD	110 Intro. to Speech Communication		3
Total Credits		18	17

Total minimum credits for the Music major/Sacred Music specialization (A.A.A. degree) = 69.

- ¹ Class instruction such as Class Voice or Class Piano may be substituted.
- ² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).
- ³ 200-level literature class.

MUSIC

**Associate in Arts Degree
Visual and Performing Arts Degree Program**

Purpose: The Associate in Arts degree curriculum in Music offers an emphasis in fine arts. The Associate in Arts degree curriculum may be used by students who wish to transfer to a four-year college or university to complete the baccalaureate degree in Music or Music Education.

Recommended Preparation: An interview with the Music faculty may be required before beginning the program.

Special Curriculum Completion Requirements: Applied music students: Tuition fees are payable to the College. Studio charges are payable to applied music instructors. Applied proficiency requirements must be met in order for students to advance to the 200-level of applied music courses. Piano proficiency skills are required of all Music majors.

For Fine Arts Emphasis

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
MTH	151 Math for the Liberal Arts I	3	
MUS	Applied Music (Major)	2	
MUS	Chorus/Band/Orchestra/Ensemble	1	
MUS	111 Music Theory I	4	
PED	101 Fundamentals of Physical Activity	1	
¹ —	Social science elective	3	
STD	100 Orientation	1	
ENG	112 College Composition II		3
MTH	152 Math for the Liberal Arts II		3
MUS	Applied Music (Major)		2
MUS	Chorus/Band/Orchestra/Ensemble		1
MUS	112 Music Theory II		4
PED	Elective		1
¹ —	Social science elective		3
Total Credits		18	17

Second Year		Credits	
		1st Semester	2nd Semester
² —	Foreign language	3	
—	General elective	3	
³ HIS	Elective	3	
MUS	Applied Music (Major)	2	
MUS	Chorus/Band/Orchestra/Ensemble	1	
⁴ —	Natural science/lab elective	4	
² —	Foreign language		3
³ HIS	Elective		3
MUS	Applied Music (Major)		2
MUS	Chorus/Band/Orchestra/Ensemble		1
⁴ —	Natural science/lab elective		4
SPD	110 Intro. to Speech Communication		3
Total Credits		16	16

Total minimum credits for the Music major (A.A. degree) = 67.

- ¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).
- ² Intermediate level (201-202) proficiency in a foreign language is required. These courses require a 101-102 sequence in the language or equivalent proficiency. Waivers or credit by exam (through CLEP) for previous experience may be available for *some* languages.
- ³ HIS 101-102 History of Western Civ. I-II or HIS 121-122 U.S. History I-II.
- ⁴ Science courses may be selected from biology, chemistry, geology, or physics.

MUSIC RECORDING TECHNOLOGY

Certificate

Purpose: The Music Recording Technology curriculum is designed for persons who seek employment as music recording technicians. Occupational objectives include: development for positions as assistants and aides in recording studios, broadcast studios, television studios, a myriad of other recording enterprises, (i.e. Musak) and countless private studios in the recording industry.

Recommended Preparation: A personal interview with a program faculty member.

		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
ENG	111 College Composition I	3		
MTH	103 Basic Technical Math I	3		
MUS	130 Overview of the Recording Ind.	1		
MUS	140 Intro. to Recording Tech.	3		
MUS	157 Sound Studio Design	3		
MUS	158 Recording Studio Electronics: Theory and Maintenance	3		
STD	100 Orientation	1		
ENG	112 College Composition II		3	
BUS	165 Small Business Management		3	
MUS	179 Music Copyright Law		1	
MUS	227 Editing & Mixdown Tech.		3	
MUS	235 Advanced Recording Tech.		3	
MUS	288 Recording Problems Seminar		2	
PSY	120 Human Relations		3	
MUS	290 Coordinated Internship			3
Total Credits		17	18	3

Total minimum credits for the Music Recording Technology certificate = 38.

NURSING

Associate in Applied Science Degree

(See "Health Technologies" at the end of these curricular listings.)

OFFICE ADMINISTRATION AND MANAGEMENT

Associate in Applied Science Degree Business and Office Degree Program

Purpose: The curriculum is designed to prepare students in the administration and supervision of a large office in terms of selection, interviewing, hiring, training, and coordinating of office, secretarial, and clerical personnel; to provide to individuals currently employed in secretarial and clerical fields an opportunity to upgrade their skills and enhance their careers by enabling them to enter into an administrative/management area.

Recommended Preparation: Proficiency in high school English and mathematics.

		Credits	
		1st Semester	2nd Semester
First Year			
BUS	100 Introduction to Business	3	
ENG	111 College Composition I	3	
MTH	120 Introduction to Mathematics	3	
OFT	111 Keyboarding I	3	
OFT	137 Filing & Records Management	3	
STD	100 Orientation	1	
BUS	125 Applied Business Mathematics		3
CIS	100 Intro. to Information Systems		3
ECO	120 Survey of Economics		3
OFT	107 Editing/Proofreading Skills		3
	Social science elective		3
SPD	110 Intro. to Speech Communication		3
Total Credits		16	18

		Credits	
		1st Semester	2nd Semester
Second Year			
ACC	211 Principles of Accounting I	3	
BUS	150 Principles of Management	3	
BUS	241 Business Law I	3	
OFT	230 Intro. to Office Automation	3	
OFT	251 Office Systems & Proc. I	3	
PED	101 Fund. of Physical Activity	1	
PED	Elective	1	
ACC	212 Principles of Accounting II		3
	Business elective		3
BUS	205 Human Resource Management		3
OFT	231 Microcomputer Office App. I or OFT 235 Specialized Software Appl.		3
OFT	252 Office Systems & Proc. II		3
Total Credits		17	15

Total minimum credits for the Office Administration and Management major (A.A.S. degree) = 66.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

² Preferred electives from OFT program.

OFFICE SYSTEMS TECHNOLOGY**Associate in Applied Science Degree
Business and Office Degree Program**

Purpose: The curriculum is designed to prepare persons for initial full-time employment in the secretarial, word processing, and administrative areas of business or to enhance and further develop job related competencies for those presently employed.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

		Credits	
		1st Semester	2nd Semester
First Year			
BUS	100 Introduction to Business	3	
CIS	100 Intro. to Information Systems	3	
ENG	111 College Composition I	3	
OFT	111 Keyboarding I	3	
OFT	137 Filing & Records Management	3	
STD	100 Orientation	1	
1	Business elective		3
MTH	120 Introduction to Mathematics		3
OFT	107 Editing/Proofreading Skills		3
OFT	112 Keyboarding II		3
2	Social science elective		3
SPD	110 Intro. to Speech Communication		3
Total Credits		16	18

		Credits	
		1st Semester	2nd Semester
Second Year			
ACC	211 Principles of Accounting I	3	
ECO	120 Survey of Economics	3	
OFT	230 Intro. to Office Automation	3	
OFT	241 Machine Transcription I	3	
OFT	251 Office Systems & Procedures I	3	
PED	101 Fundamentals of Physical Activity	1	
ACC	212 Principles of Accounting II or BUS 241 Business Law I		3
1	Business elective		3
BUS	150 Principles of Management		3
OFT	231 Microcomputer Office App. I or OFT 236 Word Proc. Oper. & Syst. Oper.		3
OFT	252 Office Systems & Procedures II		3
PED ²	Elective		1
Total Credits		16	16

Total minimum credits for the Office Systems Technology major (A.A.S. degree) = 66.

¹ Preferred electives from OFT courses.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Executive Secretary Specialization

Purpose: The curriculum is designed to prepare students for initial employment or advancement in present employment in an executive secretarial position.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

		Credits	
		1st Semester	2nd Semester
First Year			
BUS	100 Introduction to Business	3	
CIS	100 Intro. to Information Systems	3	
ENG	111 College Composition I	3	
OFT	111 Keyboarding I	3	
OFT	121 Shorthand I	3	
STD	100 Orientation	1	
MTH	120 Introduction to Mathematics		3
OFT	107 Editing/Proofreading Skills		3
OFT	112 Keyboarding II		3
OFT	122 Shorthand II		3
SPD	110 Intro. to Speech Communication		3
Total Credits		16	15

		Credits	
		1st Semester	2nd Semester
Second Year			
ACC	211 Principles of Accounting I	3	
ECO	120 Survey of Economics	3	
OFT	137 Filing and Records Management	3	
OFT	230 Intro. to Office Automation	3	
OFT	251 Office Systems and Proc. I	3	
PED	101 Fundamentals of Physical Activity	1	
PED	Elective	1	
BUS	150 Principles of Management		3
1	Business elective		3
OFT	231 Microcomputer Office Appl. I		3
OFT	241 Machine Transcription I		3
OFT	252 Office Systems and Proc. II		3
2	Social science elective		3
Total Credits		17	18

Total minimum credits for the Office Systems Technology major/Executive Secretary specialization (A.A.S. degree) = 66.

¹ Suggested elective OFT 221, Advanced Shorthand and Transcription I.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Word Processing Specialization

Purpose: The curriculum is designed to prepare students for initial full-time employment or advancement in present employment in a word processing position.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

		Credits	
		1st Semester	2nd Semester
First Year			
BUS	100 Introduction to Business	3	
CIS	100 Intro. to Information Systems	3	
ENG	111 College Composition I	3	
OFT	111 Keyboarding I	3	
OFT	137 Filing & Records Management	3	
STD	100 Orientation	1	
MTH	120 Intro. to Mathematics		3
OFT	107 Editing/Proofreading Skills		3
OFT	112 Keyboarding II		3
OFT	230 Intro. to Office Automation		3
1	Social science elective		3
SPD	110 Intro. to Speech Communication		3
Total Credits		16	18

Second Year		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I	3	
ECO	120 Survey of Economics	3	
OFT	231 Microcomputer Office Appl. I....	3	
OFT	241 Machine Transcription I	3	
OFT	251 Office Systems & Proc. I	3	
PED	101 Fundamentals of Physical Activity	1	
BUS	150 Principles of Management		3
	Business elective		3
OFT	232 Microcomputer Office Appl. II or OFT 236 Word Proc. Oper. & Syst. Oper.		3
OFT	235 Specialized Software Applications		3
OFT	252 Office Systems & Proc. II		3
PED	Elective		1
Total Credits		16	16

Total minimum credits for the Office Systems Technology major/Word Processing specialization (A.A.S. degree) = 66.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

² Preferred electives from OFT courses.

OFFICE SYSTEMS TECHNOLOGY

Certificate

Purpose: The one-year certificate program is designed to prepare students for entry-level office work. Upon completion of the program, students will be able to secure positions as clerk typists, file clerks, receptionists, or general office workers. Additionally, students will have basic word processing experience.

		Credits	
		1st Semester	2nd Semester
CIS	100 Intro. to Information Systems	3	
ENG	111 College Composition I	3	
OFT	111 Keyboarding I	3	
OFT	137 Filing & Records Management	3	
OFT	251 Office Systems & Procedures I or OFT 130 Office Procedures	3	
STD	100 Orientation	1	
OFT	107 Editing/Proofreading Skills		3
OFT	112 Keyboarding II		3
OFT	136 Office Recordkeeping or ACC 211 Principles of Accounting I ..		3
OFT	230 Introduction to Office Automation		3
OFT	231 Microcomputer Office App. I or OFT 235 Specialized Software Appl. ...		3
¹ _	Elective		3
Total Credits		16	18

Total minimum credits for the Office Systems Technology certificate = 34.

¹ Must be selected from humanities, social science or mathematics electives.

DESKTOP PUBLISHING

Career Studies Certificate

Purpose: This program is designed to provide the skills and knowledge necessary for students to use desktop publishing techniques and procedures to produce professional-looking publications. Employed and inexperienced students as well as graduates of Office Systems Technology or other programs may update their skills by enrolling in the program. The one-semester curriculum includes the following courses:

		Credits
		1st Semester
¹ ENG	Elective	3
OFT	107 Editing/Proofreading Skills	3
² OFT	141 Word Processing I	3
OFT	253 Desktop Publishing I	3
Total Credits		12

Total minimum credits for the Desktop Publishing career studies certificate = 12.

¹ Recommended electives: ENG 111, ENG 115, or ENG 121.

² Prerequisite: OFT 111 Keyboarding I or equivalent skills.

PHLEBOTOMY

Career Studies Certificate

(See "Health Technologies" at the end of these curricular listings.)

PHOTOGRAPHY

**Associate in Applied Science Degree
Graphic Communications Degree Program**

Purpose: The curriculum is designed to prepare students for diverse career options within the field of photography. Course work will stress both technical and aesthetic elements, enabling students to solve a wide range of visual problems with imagination and originality.

Recommended Preparation: Proficiency in high school English and satisfactory aptitude in visual art.

Equipment and Supplies: Photography students are required to purchase certain basic equipment and materials necessary to achieve professionally-oriented objectives. Most of the equipment is purchased in the beginning class (Photography I) and can be used throughout the two-year program.

First Year	Credits	
	1st Semester	2nd Semester
ART	121 Drawing I or ART 131 Fundamentals of Design I	4
ENG	111 College Composition	3
PED	101 Fund. of Physical Activity	1
PHT	101 Photography I	3
PHT	110 History of Photography	3
STD	100 Orientation	1
ART	122 Drawing II or ART 132 Fundamentals of Design II	4
MTH	151 Math for the Liberal Arts I.....	3
—	Open elective	3
PED	Elective	1
PHT	102 Photography II.....	3
SPD	110 Intro. to Speech Communication .	3
Total Credits		15 17

Second Year	Credits	
	1st Semester	2nd Semester
ART	101 History & Apprec. of Art I.....	3
PHT	206 Large Format Photography	3
PHT	211 Color Photography I.....	3
PHT	Electives	6
¹ —	Social science elective	3
ART	102 History & Apprec. of Art II.....	3
PHT	Electives	9
PHT	298 Seminar & Project	3
¹ —	Social science elective	3
Total Credits		18 18

Total minimum credits for the Photography major (A.A.S. degree) = 68.
¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

Studio Photography Specialization

First Year	Credits	
	1st Semester	2nd Semester
ART	121 Drawing I or ART 131 Fundamentals of Design I	4
ENG	111 College Composition	3
PED	101 Fund. of Physical Activity	1
PHT	101 Photography I	3
PHT	110 History of Photography	3
STD	100 Orientation	1
ART	122 Drawing II or ART 132 Fundamentals of Design II	4
MTH	151 Math for the Liberal Arts I.....	3
—	Open elective	3
PED	Elective	1
PHT	102 Photography II.....	3
SPD	110 Intro. to Speech Communication .	3
Total Credits		15 17

Second Year	Credits	
	1st Semester	2nd Semester
ART	135 Visual Communications	4
PHT	206 Large Format Photography	3
PHT	211 Color Photography I.....	3
PHT	221 Studio Lighting I	3
¹ —	Social science elective	3
PHT	222 Studio Lighting II	3
PHT	226 Commercial Photography	3
PHT	227 Photographic Marketing.....	3
PHT	298 Seminar and Project	1
PHT	Electives	4
¹ —	Social science elective	3
Total Credits		16 17

Total minimum credits for the Photography major/Studio Photography specialization (A.A.S. degree) = 65.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

PHYSICAL SECURITY

Career Studies Certificate
 (See "Security Administration.")

PHYSICAL THERAPIST ASSISTANT

Associate in Applied Science Degree
 (See "Health Technologies" at the end of these curricular listings.)

PROFESSIONAL WRITING FOR BUSINESS, GOVERNMENT, AND INDUSTRY

Certificate

Purpose: This certificate program prepares participants to write with expertise in professional contexts. The curriculum provides skills needed by currently employed or potential writers in business, government, and industry. Writers will acquire a sound foundation in composing, editing, and formatting on computers, as well as a comprehensive grounding in grammar and punctuation. Additional courses which may be chosen as electives include instruction in graphics, desktop publishing, journalism, organizational communication, and technical report writing.

Special Curriculum Completion Requirements: The student must complete a minimum of nine credits of computer-intensive courses.

Advanced Standing: The program considers advanced standing for previous education on an individual basis.

		Credits	
		1st Semester	2nd Semester
¹ ART	283 Computer Graphics I	4	
²	Elective	3	
¹ ENG	111 College Composition I	3	
¹ ENG	115 Technical Writing	3	
² SPD	115 Small Group Communication	3	
	Electives		6
¹ ENG	116 Writing for Business		3
¹ ENG	135 Applied Grammar		3
¹ ENG	295 Topics In: Professional Writing		3
Total Credits		16	15

Total minimum credits for the Professional Writing for Business, Government, and Industry certificate = 31.

¹ This course may be offered as computer-intensive, with an individual computer provided for each student's instruction.

² Elective courses should be selected in consultation with a faculty advisor. Those elective courses particularly appropriate to the professional writing certificate program are as follows: ART 131, ART 284, ENG 105, ENG 121-122, ENG 131-132, ENG 210, ENG 221-222, and SPD 227. Other electives may be selected, as appropriate.

RADIOGRAPHY

Associate in Applied Science Degree

(See "Health Technologies" at the end of these curricular listings.)

REAL ESTATE

Associate in Applied Science Degree

Business Management Degree Program

Purpose: The curriculum is designed for persons who seek full-time employment in the real estate field or for those presently in the field who are seeking promotion. The occupational objectives include: real estate salesman, real estate broker, apartment house manager, real estate office manager, real estate loan officer, real estate sales manager, county urban planner.

Recommended Preparation: The student should possess a proficiency in high school English and a strong background in basic arithmetic operations.

		Credits	
		1st Semester	2nd Semester
ACC	211 Prin. of Accounting I	3	
BUS	100 Introduction to Business	3	
ENG	111 College Composition I	3	
MTH	120 Intro. to Mathematics	3	
PED	101 Fund. of Physical Activity	1	
REA	100 Principles of Real Estate	4	
STD	100 Orientation	1	
ACC	212 Prin. of Accounting II		3
BUS	150 Principles of Management		3
CIS	100 Intro. to Information Systems		3
ECO	120 Survey of Economics		3
ENG	112 College Composition II		3
REA	105 Real Estate Math (or Bus. Math I)		3
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
ACC	261 Prin. of Federal Taxation	3	
BUS	241 Business Law I	3	
REA	110 Real Estate Sales	3	
REA	216 Real Estate Appraisal	3	
REA	217 Real Estate Finance	3	
¹	Social science elective	3	
PED	Elective		1
REA	215 Real Estate Brokerage		3
REA	225 Real Property Management		3
REA	245 Real Estate Law		3
REA	247 Real Estate Investments		3
SPD	110 Intro. to Speech Communication		3
Total Credits		18	16

Total minimum credits for the Real Estate major (A.A.S. degree) = 70.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

REAL ESTATE

Certificate

Purpose: The curriculum is designed for present or future practitioners in the profession who wish to improve or acquire understanding and knowledge of essential real estate subjects.

Recommended Preparation: Proficiency in high school English and background in basic arithmetic operations.

		Credits	
		1st Semester	2nd Semester
BUS	100 Introduction to Business	3	
ENG	111 College Composition I	3	
REA	100 Principles of Real Estate	4	
REA	105 Real Estate Math (or Bus. Math I)	3	
REA	217 Real Estate Finance	3	
STD	100 Orientation	1	
REA	215 Real Estate Brokerage		3
REA	216 Real Estate Appraisal		3
REA	245 Real Estate Law		3
REA	Elective		3
¹	Social science elective		3
Total Credits		17	15

Total minimum credits for the Real Estate certificate = 32.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

RECREATION AND PARKS

**Associate in Applied Science Degree
Parks and Recreation Degree Program**

Purpose: The curriculum is designed with three purposes:

To prepare students for entry level into the field of recreation and parks in both private and public agencies.

To provide those already employed in this field an opportunity to improve and upgrade their skills.

To guide students who wish to transfer to a 4-year institution in Recreation and Parks. The occupational objectives include: recreation leader, assistant recreation supervisor, park ranger, assistant park manager, park manager.

Recommended Preparation: Proficiency in high school English and background in basic arithmetic operations.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
MTH	120 Introduction to Math	3	
PED	101 Fund. of Physical Activity	1	
RPK	100 Intro. to the Field of Rec. & Parks	3	
RPK	110 Arts Activities in Rec. & Parks	3	
¹ __	Social science elective	3	
STD	100 Orientation	1	
² __	Approved recreation elective		1
ENG	112 College Composition II		3
PED	Elective		1
RPK	120 Outdoor Recreation		3
RPK	136 Org. & Mgmt. of Rec. Social & Phys. Act.		3
RPK	200 Microcomp. in Pub. Serv. Agencies		3
¹ __	Social science elective		3
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
² __	Approved recreation electives	1-3	
RPK	135 Prog. Plan, Org. & Group Leadership	3	
RPK	145 Hort. & Turf Practices in Rec. & Parks	3	
RPK	165 Risk Mgmt. on Rec. in Rec. & Parks	3	
RPK	201 Rec. & Parks Mgmt. I	3	
SPD	110 Intro. to Speech Communication	3	
² __	Approved recreation electives		3-5
RPK	125 Outdoor Ed. & Interp. Serv.		3
RPK	146 Fac. & Landscap. Plan. for Rec. & Parks		3
RPK	155 Therapeutic Recreation		3
RPK	202 Rec. & Parks Mgmt. II		3
Total Credits		16-18	15-17

Total minimum credits for the Recreation and Parks major (A.A.S. degree) = 65.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

² All courses in the RPK and FOR listing in this catalog will be considered approved recreation electives.

RESPIRATORY THERAPY

Associate in Applied Science Degree
(See "Health Technologies" at the end of these curricular listings.)

RESPIRATORY THERAPY

Certificate
(See "Health Technologies" at the end of these curricular listings.)

SCIENCE

**Associate in Science Degree
Natural Sciences Degree Program**

Purpose: The curriculum is designed for persons who are interested in a professional or scientific program and who plan to transfer to a four-year college or university to complete a baccalaureate degree program with a major in one of the following fields: agriculture, biology, chemistry, pre-dentistry, forestry, geology, home economics, nursing, oceanography, pharmacy, physics, physical therapy, pre-medicine, science education, mathematics.

Recommended Preparation: Satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English, 3 units of college preparatory mathematics, 1 unit of laboratory science, 1 unit of social science.

First Year		Credits	
		1st Semester	2nd Semester
CSC	110 Introduction to Computing	3	
ENG	111 College Composition I	3	
¹ HIS	Elective	3	
² MTH	271 Applied Calculus I or 173 Calc. with Analytic Geometry I	3-5	
^{3,6} __	Science (with laboratory)	4	
ENG	112 College Composition II		3
¹ HIS	Elective		3
² MTH	272 Applied Calculus II or 174 Calc. with Analytic Geometry II		3-5
PED	101 Fundamentals of Physical Activity		1
PED	Elective		1
^{3,6} __	Science (with laboratory)		4
STD	100 Orientation		1
Total Credits		16-18	16-18

Second Year		Credits	
		1st Semester	2nd Semester
⁴ ENG	Elective	3	
---	General elective	3	
³ ---	Science (with laboratory)	4-5	
³ ---	Science elective	4	
⁵ ---	Social science elective	3	
⁴ ENG	Elective		3
³ ---	Science (with laboratory)		4-5
³ ---	Science elective		4
⁵ ---	Social science elective		3
SPD	110 Intro. to Speech Communication .		3
Total Credits		17-18	17-18

Total minimum credits for the Science major (A.S. degree) = 66. Twenty of these credits must be taken in laboratory science courses for transfer to a four-year institution with a major in Science.

Students are advised to work closely with the faculty and counseling staff for program and course scheduling. Electives should be chosen carefully after investigation of transfer requirements of the institution to which transfer is contemplated. The burden of responsibility for proper course selection rests with the student.

¹ HIS 101-102 or HIS 121-122. Students with a good background in mathematics and science may take two beginning laboratory science courses the first year and history the second year.

² MTH 173-174 is required for students planning a four-year major in Physics or Chemistry. MTH 181-182 may be taken by four-year Biology majors with division approval. Students not adequately prepared for MTH 173 may be required to take MTH 166.

³ Sciences (with laboratories) may be selected from the following: BIO 101-102, CHM 111-112, PHY 201-202, PHY 241-242, PHY 243, GOL 105-106, or any 200-level biology, chemistry, geology or physics course.

⁴ ENG 241-242, ENG 243-244, or ENG 251-252.

⁵ Two semester sequence social science courses may be selected from one of the following disciplines: economics, geography, history, political science, psychology, or sociology (includes anthropology).

⁶ Chemistry majors should elect CHM 111-112 and CHM 241-242 or CHM 245-246 plus 2 years consisting of BIO 101-102, GOL 105-106 or any 200-level biology, chemistry, geology or physics course.

Mathematics Specialization

Purpose: The curriculum is designed for persons who are interested in a professional or mathematics program and who plan to transfer to a four-year college or university to complete a baccalaureate degree program with a major in Mathematics, Economics, Statistics, or Mathematics Education.

Recommended Preparation: Satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English, 4 units of college preparatory mathematics, 1 unit of laboratory science, 1 unit of social science.

First Year		Credits	
		1st Semester	2nd Semester
CSC	110 Introduction to Computing	3	
ENG	111 College Composition I	3	
¹ HIS	Elective	3	
² MTH	173 Calc. with Analytic Geometry I... .	5	
---	Social science elective	3	
CSC	130 Scientific Programming		3
ENG	112 College Composition II		3
¹ HIS	Elective		3
² MTH	174 Calc. with Analytic Geometry II ..		5
---	Social science elective		3
STD	100 Orientation		1
Total Credits		17	18

Second Year		Credits	
		1st Semester	2nd Semester
³ ENG	Elective	3	
MTH	277 Multivariable Calculus	4	
⁴ MTH	Elective	3-4	
⁵ ---	Natural science/lab elective	4	
PED	101 Fund. of Physical Activity	1	
PED	Elective	1	
³ ENG	Elective		3
⁴ MTH	Elective		4
⁵ ---	Natural science/lab elective		4
SPD	110 Intro. to Speech Communication .		3
Total Credits		16-17	14

Total minimum credits for the Science major/Mathematics specialization (A.S. degree) = 65. Twenty of these credits must be taken in MTH courses for transfer to a four-year institution with a major in Science.

¹ HIS 101-102 or HIS 121-122.

² Two semester sequence social science courses may be selected from one of the following disciplines: economics, geography, history, political science, psychology, or sociology (includes anthropology).

³ ENG 241-242, ENG 243-244, or ENG 251-252.

⁴ Math electives should be chosen carefully from 200-level courses and after investigation of transfer requirements of the institution to which transfer is contemplated.

⁵ Science courses (with laboratories) may be selected from the following: BIO 101-102, CHM 111-112, PHY 201-202, PHY 241-242, PHY 243, GOL 105-106, or any 200-level biology, chemistry, geology or physics course.

SECURITY ADMINISTRATION

Associate in Applied Science Degree Protective Services Degree Program

Purpose: The curriculum in Security Administration is designed to prepare students to enter any of the varied fields of security administration and to improve the competencies of in-service personnel. The occupational objectives include: security administrator, director & manager, loss prevention director, classification manager, personnel clearance administrator.

Recommended Preparation: Students are advised that many employees in private industry and criminal justice agencies require excellent moral character and a written record of conduct prior to consideration for employment.

Related Certificates: Industrial and Commercial Security career studies certificate, and Physical Security career studies certificate.

		Credits	
First Year		1st Semester	2nd Semester
ADJ	150 Intro. to Sec. Administration	3	
BUS	100 Introduction to Business	3	
ENG	111 College Composition I	3	
FIR	116 Fire Prevention Fundamentals	3	
PED	101 Fundamentals of Physical Activity . .	1	
PSY	201 Intro. to Psychology I	3	
STD	100 Orientation	1	
ADJ	156 Legal Aspects of Security		3
ADJ	159 Physical Security		3
ENG	112 College Composition II		3
¹ MTH	Elective		3
PED	Elective		1
PSY	202 Intro. to Psychology II		3
Total Credits		17	16

		Credits	
Second Year		1st Semester	2nd Semester
ADJ	211 Crim. Law, Evid. & Proc. I	3	
ADJ	236 Crim. Invest. (Prin. & Adv.)	3	
ADJ	258 Substance Abuse in Security	3	
BUS	150 Principles of Management	3	
² CIS	100 Intro. to Information Systems	3	
SPD	110 Intro. to Speech Communication . . .	3	
ADJ	212 Crim. Law, Evid. & Proc. II		3
ADJ	215 Report Writing		3
ADJ	² 237 Crim. Invest. (Prin. & Adv.)		3
ADJ	255 Security Management		3
ADJ	256 Information Security		3
FIR	111 Hazardous Materials		3
Total Credits		18	18

Total minimum credits for the Security Administration major (A.A.S. degree) = 69.

¹ Math elective approved by faculty advisor.

² Or CIS elective approved by faculty advisor.

INDUSTRIAL AND COMMERCIAL SECURITY

Career Studies Certificate

Purpose: This curriculum is in response to the short-term educational needs of experienced security practitioners who wish to extend their knowledge and skills in industrial security methods and techniques; mid-career transition persons who wish to gain insight into the industrial/commercial security field for career alternative potential; and security personnel with little formal education who need an initial boost. This certificate is applicable toward the two-year associate degree in Security Administration at this college.

		Credits	
		1st Semester	2nd Semester
ADJ	255 Security Management	3	
¹ —	ADJ elective	3	
² —	ENG/SPD elective	3	
¹ —	ADJ elective		3
ADJ	256 Information Security		3
Total Credits		9	6

Total minimum credits for the Industrial and Commercial Security career studies certificate = 15.

¹ Select two from the following: ADJ 150, ADJ 156, ADJ 159, or ADJ 236.

² Select either ENG 111 or SPD 110.

PHYSICAL SECURITY

Career Studies Certificate

Purpose: This curriculum is a response to the short-term educational needs of experienced security practitioners who wish to extend their knowledge and skills in physical security, mid-career transition persons who wish to gain insight into physical security and possibly decide on a career alternative in the security field, and security personnel with little formal education who need an initial boost. This certificate is applicable toward the two-year associate degree in Security Administration at this college.

		Credits	
		1st Semester	2nd Semester
ADJ	159 Physical Security	3	
¹ ADJ	Elective	3	
² ENG	/SPD elective	3	
ADJ	256 Information Security		3
¹ ADJ	Elective		3
Total Credits		9	6

Total minimum credits for the Physical Security career studies certificate = 15.

¹ Select two from the following: ADJ 150, ADJ 156, ADJ 236.

² Select one from the following: ENG 111, SPD 110, SPD 100, or SPD 200.

SITE MANAGEMENT

Certificate (See "Civil Engineering.")

SMALL BUSINESS MANAGEMENT

Certificate (See "Business Management.")

SUBSTANCE ABUSE REHABILITATION

Associate in Applied Science Degree
Human Services Degree Program

Purpose: The curriculum is designed to provide a broad base of knowledge, methods and skills which underlie comprehensive delivery of human services with options or specialties in the substance abuse rehabilitation field.

Cooperative Education: Students in this curriculum will participate in at least 3 semester hours of Cooperative Education unless they already have equivalent experience. For further information, contact the Cooperative Education Office.

		Credits	
		1st Semester	2nd Semester
First Year			
ENG	111 College Composition I	3	
HMS	109 Struct. Career Plan. in Hum. Serv.	3	
HMS	121 Basic Counseling Skills I	3	
HMS	251 Substance Abuse I	3	
PED	101 Fundamentals of Physical Activity	1	
PED	Elective	1	
PSY	231 Life Span Human Dev. I	3	
STD	100 Orientation	1	
ENG	112 College Composition II		3
HMS	122 Basic Counseling Skills II		3
HMS	145 Effects of Psychoactive Drugs		3
HMS	226 Helping Across Cultures		3
HMS	252 Substance Abuse II		3
PSY	232 Life Span Human Dev. II		3
Total Credits		18	18

		Credits	
		1st Semester	2nd Semester
Second Year			
HMS	141 Group Dynamics I	3	
HMS	225 Functional Family Intervention	3	
HMS	255 Adolescent Alcohol Use & Abuse	3	
HMS	265 Personality Theory	3	
MTH	151 Math for the Liberal Arts I	3	
SPD	110 Intro. to Speech Communication	3	
HMS	142 Group Dynamics II		3
HMS	227 The Helper as a Change Agent		3
HMS	228 Productive Problem-Solving		3
HMS	258 Case Mgmt. & Substance Abuse		3
HMS	266 Counseling Psychology		3
HMS	297 Coop. Educ./or HMS 290 Intern.		3
Total Credits		18	18

Total minimum credits for the Substance Abuse Rehabilitation major (A.A.S. degree) = 72.

SUBSTANCE ABUSE REHABILITATION COUNSELOR

Certificate

Purpose: This curriculum is designed to fulfill the Virginia state educational requirements for the certification of substance abuse counselors. To meet substance abuse counselor certification requirements, the applicant is expected to meet specific education requirements including didactic and experiential learning with a supervised internship required.

Individuals desiring skills and knowledge in this career field, but not seeking State Certification may also enroll. Courses taken in the Substance Abuse certificate program can be applied to the A.A.S. degree in Substance Abuse Rehabilitation.

Cooperative Education: Students in this curriculum will participate in at least 3 semester hours of Cooperative Education unless they already have equivalent experience. For further information, contact the Cooperative Education Office.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I or SPD 110 Intro. to Speech Communication	3	
HMS	121 Basic Counseling Skills I	3	
HMS	141 Group Dynamics I	3	
HMS	251 Substance Abuse I	3	
HMS	266 Counseling Psychology	3	
PSY	231 Life Span Human Dev. I	3	
HMS	142 Group Dynamics II		3
HMS	145 Effects of Psychoactive Drugs		3
HMS	252 Substance Abuse II		3
HMS	258 Case Mgmt. & Substance Abuse		3
HMS	290 Coord. Intern. or HMS 297 Coop. Ed.		3
PSY	232 Life Span Human Dev. II		3
Total Credits		18	18

Total minimum credits for the Substance Abuse Rehabilitation Counselor certificate = 36.

TRAVEL & TOURISM

**Associate in Applied Science Degree
Business Management Degree Program**

Purpose: The curriculum is designed to enable students to enter management training positions within the travel industry, and to prepare industry employees to assume managerial responsibility. This includes a diversity of career opportunities in areas such as airline sales and marketing, travel agency management, cruise and tour operations, and meeting and conference planning.

First Year		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
¹ MTH	Elective	3	
PED	101 Fundamentals of Physical Activity	1	
STD	100 Orientation	1	
TRV	100 Intro. to the Travel Industry	3	
TRV	111 Geography of Tourism I	3	
² TRV	115 Ground Trans., Tours, Cruises, & Services Planning	3	
HRI	255 Human Resources Mgmt. Training for Hosp. & Tourism		3
PED	Elective		1
SPD	110 Intro. to Speech Communication		3
TRV	112 Geography of Tourism II		3
² TRV	116 Air Travel Planning		4
² TRV	125 Prin. of Travel Selling & Counseling		3
Total Credits		17	17

Second Year		Credits	
		1st Semester	2nd Semester
ACC	211 Principles of Accounting I	3	
³ ---	Social science elective	3	
² TRV	211 Airline Comp. Reserv. Sys. I	4	
² TRV	220 Prin. of Group Travel & Tour Operations	3	
² TRV	230 Marketing & Mgmt. of Travel Serv.	3	
³ ---	Social science elective		3
TRV	130 Intro. to Meeting Planning		3
⁴ TRV	290 Coordinated Internship or TRV/HRI elective		3
⁴ TRV	Elective		3
⁴ TRV	Elective		3
Total Credits		16	15

Total minimum credits for the Travel and Tourism major (A.A.S. degree) = 65.

¹ If you are planning to transfer to another college or university, select a math course which is equivalent to the transfer institution's requirement.

² Check course descriptions for applicable prerequisites.

³ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

⁴ Preapproved electives can be selected from any non-required course with a TRV or HRI prefix. See your faculty advisor for alternative procedures.

TRAVEL & TOURISM

Certificate

Purpose: The curriculum is designed for persons seeking careers in the field of travel and tourism and to develop and update the skills of present travel industry employees. Career opportunities for graduates exist in travel agencies, airlines and other transportation companies, as well as in hotels and other businesses serving the traveling public.

		Credits	
		1st Semester	2nd Semester
ENG	111 College Composition I	3	
¹ ---	Social science elective	3	
STD	100 Orientation	1	
TRV	100 Introduction to the Travel Industry	3	
TRV	111 Geography of Tourism I	3	
² TRV	115 Ground Trans., Tours, Cruises, & Serv. Planning	3	
TRV	112 Geography of Tourism II		3
² TRV	116 Air Travel Planning		4
² TRV	125 Prin. of Travel Selling & Counseling		3
³ TRV	211 Airline Computer Reservation Systems		4
Total Credits		16	14

Total minimum credits for the Travel and Tourism certificate = 30.

¹ Select any course with the prefix ECO, GEO, HIS, PLS, PSY, or SOC (includes anthropology).

² Prerequisite for this course is TRV 100.

³ Prerequisite for this course is completion of, or concurrent enrollment in TRV 116.

TURF AND GROUNDS MANAGEMENT

Career Studies Certificate

(See "Horticulture Technology.")

VETERINARY TECHNOLOGY

Associate in Applied Science Degree Animal Science Degree Program

Purpose: The curriculum will prepare the student for a career as a veterinary technician. Satisfactory completion of the curriculum will make the student eligible to take State Board and National Board examinations for certification as a veterinary technician. The curriculum is broad-based and includes both practical and theoretical course work which prepares the student for employment in various areas of animal health care, including veterinary hospitals and research and diagnostic laboratories.

Special Curriculum Admission Requirements: Entry into the Veterinary Technology curriculum requires an interview by the program head. This curriculum accepts 30 students each year. Preference is given to Virginia residents.

Satisfactory completion of the following high school units or equivalent is desired: one unit of algebra, one unit of biology, one unit of chemistry, and proficiency in high school English.

Completion Requirements: Because of the eventual certification process, it is necessary for students to maintain satisfactory progress in their course work. Periodic evaluation of each student will be made by the program head.

Special Accreditation Status: The curriculum is accredited by the American Veterinary Medical Association.

First Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
ENG	111 College Composition I	3		
MTH	126 Mathematics for Allied Health	2		
STD	100 Orientation	1		
VET	105 Intro. to Veterinary Technology	3		
VET	111 Anatomy & Phys. of Domestic Animals	4		
VET	116 Animal Breeds & Behavior	3		
CHM	121 Health Science Chemistry I		4	
CIS	150 Intro. to Microcomputer Software		3	
VET	121 Clinical Practices I		4	
VET	131 Clinical Pathology I		3	
VET	135 Anesthesia of Domestic Animals		2	
VET	225 Parasitology of Domestic Animals		2	
AGR	215 Animal Nutrition			2
SPD	110 Intro. to Speech Communication			3
VET	122 Clinical Practices II			4
VET	132 Clinical Pathology II			3
VET	211 Animal Diseases I			2
Total Credits		16	18	14

Second Year		Credits	
		1st Semester	2nd Semester
	Social science elective	3	
VET	133 Clinical Pathology III	3	
VET	212 Animal Diseases II	2	
VET	216 Animal Pharmacology	2	
VET	221 Advanced Clinical Practices III	4	
PED	101 Fundamentals of Physical Activity		1
PED	Elective		1
	Social science elective		3
VET	217 Intro. to Lab., Zoo & Wildlife Medicine		2
VET	235 Animal Hosp. Mgmt. & Client Relations		3
VET	290 Internship		4
VET	298 Seminar & Project		2
Total Credits		14	16

Total minimum credits for the Veterinary Technology major (A.A.S. degree) = 78.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

WELDING

Certificate

Purpose: This curriculum is designed to prepare students for industrial employment as welders, quality control inspectors, welding equipment salesmen and welding laboratory assistants, as well as leading to careers as welding instructors and structural steel inspectors.

First Year		Credits	
		1st Semester	2nd Semester
ENG	100 Basic Occ. Communication	3	
MTH	103 Basic Tech. Math I	3	
STD	100 Orientation	1	
WEL	116 Welding I (Oxyacetylene)	2	
WEL	121 Arc Welding	2	
WEL	150 Welding Drawing & Interpretation	2	
BUS	116 Entrepreneurship		3
MTH	104 Basic Tech. Math. II		3
PSY	120 Human Relations		3
WEL	122 Welding II (Elec. Arc)		3
WEL	141 Weld. Qual. Tests I		3
Total Credits		13	15

Second Year		Credits
		1st Semester
WEL	126 Pipe Welding I	3
WEL	130 Inert Gas Welding	3
WEL	160 Semi-Auto. Weld. Proc.	3
Total Credits		9

Total minimum credits for the Welding certificate = 37.

WELDING: ADVANCED TECHNIQUES

Career Studies Certificate

Purpose: This career studies certificate is designed to prepare students for career advancement as quality control inspectors, metallurgy laboratory technicians, as well as structural steel inspectors and welding instructors.

Special Curriculum Admission Requirements: Welding certificate or equivalent relevant practical experience. Departmental approval required.

		Credits
		1st Semester
ENG	/Speech elective	3
WEL	127 Pipe Welding II	3
WEL	142 Welder Qualification Tests II	3
WEL	145 Welding Metallurgy	3
WEL	146 Welding Quality Control	3
Total Credits		15

Total minimum credits for the Welding: Advanced Techniques career studies certificate = 15.

WELDING: BASIC TECHNIQUES

Career Studies Certificate

Purpose: This curriculum is designed for persons wishing to obtain fundamental skills for immediate entry-level positions in the welding trade as welding apprentices or welding laboratory assistants. Its structure allows students to pursue these courses on a part-time basis. All courses will apply to the Welding certificate program.

First Year		Credits	
		1st Semester	2nd Semester
ENG	/Speech elective.....	3	
WEL	116 Welding I (Oxyacetylene).....	2	
WEL	121 Arc Welding.....	2	
WEL	122 Welding II (Electric Arc).....		3
Total Credits		7	3

Second Year		Credits	
		1st Semester	
WEL	130 Inert Gas Welding.....		3
WEL	160 Semi-Automatic Welding Processes.....		3
Total Credits			6

Total minimum credits for the Welding: Basic Techniques career studies certificate = 16.

HEALTH TECHNOLOGIES PROGRAMS

The College offers numerous opportunities for those who wish to pursue a health-related career. Each certificate and degree program is designed with the advice of community health professionals to include a balance of technical and general education courses. In response to community needs, specialized short-term courses or technical certificates are also offered.

The Annandale Campus is home to the College's eight Health Technologies Programs. With some 13,000 students, Annandale is a comprehensive campus and offers a broad array of academic options and student development opportunities. Students may choose to take general education support courses at any of the five College campuses.

In addition to campus Health Technologies laboratory and classroom facilities, the College contracts with a large number of Metropolitan Washington health-care facilities and agencies for clinical instruction. These contracts regulate the conditions under which NVCC Health Technologies students may obtain required clinical experience and in some cases may specify program requirements.

Because of limited laboratory, classroom and/or clinical space, certain Health Technologies programs have limited enrollment. Acceptance to Northern Virginia Community College *does not* constitute acceptance into a specific Health Technologies program.

Each program has specific admission, program continuation and program completion criteria. These are described in the appropriate catalog section. Due to the unique responsibilities involved in health careers, each program reserves the right to require that any student who appears to be unsuited for any Health Technologies program withdraw from that program and be guided into more suitable study.

Admission into a program begins with application to the College and a program placement interview with a counselor or a program head. Admission is not complete until all admission requirements are met. Early application is desirable.

The Health Technologies programs are authorized to deny enrollment in health programs to any student who has been arrested and charged with a felony pertaining to controlled substances and who was adjudicated guilty, or adjudication was withheld because of placement in a pre-trial intervention program or who entered a plea of nolo contendere.

Students are advised that the Northern Virginia Community College Health Technologies programs have been designed to prepare students for direct entry to health careers. Some programs have articulated agreements with four-year colleges and universities that enable the partial or complete transfer of NVCC course work to four-year degree programs. Students who wish to consider such options should consult the appropriate program head early in the program of study.

One- & Two-Year Health Technologies Certificate and Degree Programs

		Credits
Dental Hygiene	AAS	78
Emergency Medical Services Tech.	AAS	76
Emergency Medical Services Tech.	Certificate	35
Medical Lab Technology	AAS	78
Medical Record Technology	AAS	68
Nursing	AAS	75
Physical Therapist Assistant	AAS	77
Radiography	AAS	77
Respiratory Therapy	AAS	76
Respiratory Therapy	Certificate	45

Short-Term Programs

		Credits
Cardiac Care Technician	Career Studies Certificate	22
Histotechnology	Career Studies Certificate	22
Medical Office Assisting	Career Studies Certificate	15
Phlebotomy	Career Studies Certificate	13

Section I: GENERAL REQUIREMENTS OF HEALTH TECHNOLOGIES PROGRAMS**Admission Requirements for Health Technologies Programs**

To be admitted to any one- or two-year Health Technologies program, applicants must meet *all* of the following requirements:

1. Admission to Northern Virginia Community College.
2. Be 18 years of age or older, or have program head approval.
3. Satisfactory scores on Northern Virginia Community College placement tests.
4. Completion of one unit of high school-level algebra or equivalent.
5. Completion of at least one unit of high school-level science or equivalent. See "Admission Requirements" under EACH program for particular science course prerequisites.
6. Past academic achievement in the above course requirements must reflect a "C" average or better. Deficiencies may be corrected in the College's developmental program before entering a Health Technologies program.
7. Evidence of good physical and mental health, as substantiated by a completed Preadmission Health History and Physical for Health Technology Form (NVCC 125-7) signed by a licensed physician, must be submitted prior to entering clinical courses.
8. A student may elect to take general education courses listed in a program's curriculum prior to seeking acceptance to a Health Technologies program. These courses may be taken at any of the College's campuses and may be transferred to NVCC from other accredited post-secondary institutions. A cumulative grade point average of 2.0 or better is required in all required general education courses taken preceding admission to a Health Technologies program, unless waived by the division chair upon the recommendation of the program head.
9. CPR certification is required prior to entering clinical courses, unless formally waived by the program head.
10. The student seeking admission to a Health Technologies program must arrange to have an interview with the program head prior to entering the program.

Responsibilities of Health Technologies Students

The following are responsibilities of students in all Health Technologies programs:

1. Students in Health Technologies programs incur a variety of additional expenses. These include, but are not limited to, the cost of uniforms, accessories, and travel to clinical assignments. Students are also responsible for state licensure and national accreditation application and testing fees.
2. A strict dress code is required in the clinical setting. Students may be dismissed if they fail to comply with this dress code.
3. The College reserves the right to require students to take out and maintain at their own expense liability/malpractice insurance with a carrier authorized to transact such business in the Commonwealth of Virginia. Whether or not insurance appropriate to the program is required, students are encouraged to carry such insurance on their own.
4. Students are required to complete learning experiences at local hospitals and/or other agencies. Students may be required to attend both day and/or evening clinical assignments.

5. Students must provide their own transportation to clinical assignments. Strict attendance is required at clinical sites.
6. Students may utilize the resources of the assigned clinical affiliate for emergency medical treatment for injuries or illness which may occur during the time period when students are assigned to the health care facility. The student is responsible for any expenses incurred for this treatment.
7. Students must comply with all clinical contract protocols including immunization requirements.
8. Students must keep their CPR certifications current each year, when required.
9. While enrolled in clinical courses, students may not replace or take the responsibility of "qualified" staff in affiliated facilities. However, after demonstrating proficiency, students may be permitted to perform specified procedures under careful supervision. Health Technologies students may be employed in clinical facilities outside regular education hours provided that such work does not interfere with academic responsibilities. The work must be noncompulsory and subject to employee regulations. Any exception to this policy must have the approval of the Health Technologies division chair.

Health Technologies Program Continuation Requirements

The following continuation requirements govern students in all Health Technologies programs:

1. All courses in the program major must be completed with a grade of "C" or better before taking the next course in the sequence, unless waived by the division chair upon the recommendation of the program head.
2. All courses in the major must be taken in the sequence prescribed in the *Catalog*, unless otherwise approved by the program head.
3. Students must pass both the theoretical and the clinical/lab portions in order to pass a course.
4. Program faculty and clinical affiliates reserve the right to recommend, through appropriate channels, withdrawal of any student who neither exhibits safe performance nor adheres to prescribed clinical affiliate policies and procedures.
5. Satisfactory physical and mental health must be maintained for continuance in the program. Applicants must be free of any physical and/or mental condition which might adversely affect their acceptance or performances in the program. The College reserves the right to require medical examinations to verify continuing compliance.

Program Re-enrollment Requirements

Any student who has voluntarily withdrawn or who has been withdrawn due to unsatisfactory academic or clinical performance may apply for re-admission the following academic year. Acceptance will be based upon space availability, successful fulfillment of any contingencies agreed to in writing at the time of withdrawal, and program head approval. An interview and medical examination may be required.

Section II: HEALTH TECHNOLOGIES CURRICULA**CARDIAC CARE TECHNICIAN**

Career Studies Certificate
(See "Emergency Medical Services Technology.")

DENTAL HYGIENE

**Associate in Applied Science Degree
Dental Hygiene Degree Program**

Purpose: The curriculum is designed to prepare selected students to serve in a dynamic and growing health profession, as valuable members of the Dental Hygiene team. At the successful completion of the program, the student will be eligible to take the National Board and State Board Examinations in Dental Hygiene leading to licensure as a Registered Dental Hygienist (R.D.H.). The Program is also designed to accommodate those students who wish to transfer to a four-year college or university to complete the baccalaureate degree in a health-related field.

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Admission Requirements:

1. Science Requirement: one additional unit of high school-level science (two units required — 1 unit of biology — 1 unit of chemistry) with a grade of "C" or better.
2. Students may be required to repeat courses or to complete evaluative testing for credits earned more than ten years ago.

Special Program Requirements:

1. Students must pass the natural sciences sequence with at least a "C" grade.
2. The Commonwealth of Virginia Board of Dentistry reserves the right to deny licensure to any candidate who has been convicted of a crime involving moral turpitude, the use of drugs or alcohol to the extent that such use renders him/her unsafe to practice dental hygiene. Any applicant who has been found guilty of a misdemeanor or felony must consult with the Dental Hygiene program head prior to admission.

Special Accreditation Status: The curriculum has been accredited by the Commission on Dental Accreditation of the American Dental Association, a specialized accrediting body recognized by the Council on Post-Secondary Accreditation and by the U.S. Department of Education.

First Year		1st Sem.	Credits 2nd Sem.	3rd Sem.
DNH	112 Oral Anatomy & Tooth Morphology	3		
DNH	113 General & Oral Histology	2		
DNH	141 Dental Hygiene I	5		
ENG	111 College Composition I	3		
NAS	161 Health Science I	4		
STD	100 Orientation	1		
DNH	114 Head/Neck Anatomy		2	
DNH	130 Oral Radiography for the Dental Hygienist		3	
DNH	142 Dental Hygiene II		5	
DNH	145 General & Oral Pathology		2	
DNH	146 Periodontics for the Dental Hygienist		2	
NAS	162 Health Science II		4	
CIS	116 Computers & Information Systems			1
DNH	143 Dental Hygiene III			4
DNH	150 Nutrition			2
DNH	198 Seminar & Project			1-3
MTH	Elective			2
Total Credits		18	18	10-12

Second Year		Credits	
		1st Semester	2nd Semester
DNH	147 Oral Microbiology	1	
DNH	215 Dental Materials	3	
DNH	216 Pharmacology	2	
DNH	220 Community Dental Health	2	
DNH	244 Dental Hygiene IV	5	
PED	101 Fund. of Physical Activity	1	
PSY	201 Intro. to Psychology I	3	
DNH	225 Community Dental Health Ed.		2
DNH	230 Office Practice & Ethics		1
DNH	245 Dental Hygiene V		5
PED	Elective		1
	Social science elective		3
SPD	110 Intro. to Speech Communication		3
Total Credits		17	15

Total minimum credits for the Dental Hygiene major (A.A.S. degree) = 78.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology). PSY 202 is recommended.

EMERGENCY MEDICAL SERVICES TECHNOLOGY

**Associate in Applied Science Degree
Emergency Medical Services Degree Program**

Purpose: The curriculum is designed to develop the competencies of the Emergency Medical Technician/Ambulance (EMT/A) as well as the Emergency Medical Technician/Paramedic (EMT/P). EMT/A education is accomplished in the first year of the curriculum. EMT/P education is accomplished in the second year. Only students who have been certified as EMT/A for at least one year may enroll in the second year. Upon successful completion of the two-year curriculum, students will be eligible to become certified as an Emergency Medical Technician-Paramedic.

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Admission Requirements and Information:

First-Year Curriculum Admission Requirements:

Students must meet the eligibility requirements for Virginia certification as an EMT/A. In order to be certified as an EMT/A in the Commonwealth of Virginia (Section 6:00 of the EMS Rules and Regulations), a student must:

1. Be proficient in reading, writing, and speaking the English language.
2. Be at least 18 years of age or be affiliated with an EMS agency which will attest that the student is a person of mature judgment.
3. Have no physical defect which would render the student unfit to perform all duties required of an EMT as evidenced by satisfactory completion of a medical history form.
4. Have never been convicted of a felony involving a sexual crime.

Second-Year Curriculum Admission Requirements:

1. Meet all first-year admission requirements.
2. Be certified as an EMT/A for at least one year as evidenced by an EMS agency verification form.
3. Be at least 18 years of age at the beginning of EMT 226.
4. Be affiliated with an EMS agency which provides or is capable of providing advanced life support as evidenced by an EMS agency verification form.

Special Program Completion Requirements:

1. Students who receive an "I" grade in any of the courses in the EMT sequence must resolve the "I" before continuing in the EMT sequence.
2. Students must receive a grade of "C" or higher in the appropriate EMT courses in order to sit for Virginia and/or National Registry certifying examinations.

3. All clinical requirements must be met prior to taking any Virginia and/or National Registry certifying examination. Students also must receive a grade of "C" or higher in their clinical courses (EMT 190, 225, 235, and 290) to be eligible to take the certifying examinations.

Re-Enrollment: Students who leave the EMT program before being certified must complete the following for reinstatement:

1. In order to meet Virginia Certification requirements, if more than two calendar years lapse between the time the student completes EMT 226 and returns to the EMT program, EMT 226 must be successfully re-completed before enrollment in EMT 231 and EMT 225.
2. In order to meet Virginia certification requirements, if Virginia Cardiac Care Technician certification lapses, the student must retake the entire CCT sequence: EMT 226, EMT 231, and EMT 225.
3. Resubmit current agency verification, health history, evidence of rubella immunity and negative tuberculin screening.
4. In order to meet the requirements of the National Registry, if a student's paramedic registry lapses, the student must retake the appropriate courses.

Special Accreditation Status: The program is accredited by the American Medical Association Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with the Joint Review Committee on Education Programs for EMT/Paramedic.

First Year		Credits	
		1st Semester	2nd Semester
BIO	141 Human Anat. & Phys. I	4	
EMT	106 Basic Emerg. Med. Tech./Amb.	6	
EMT	190 Coordinated Practice	1	
ENG	111 College Composition I	3	
FIR	111 Hazardous Materials I	3	
STD	100 Orientation	1	
BIO	142 Human Anat. & Phys. II		4
EMT	215 Principles of Extrication		4
FIR	112 Hazardous Materials II		3
HLT	143 Medical Terminology I		3
HLT	250 General Pharmacology		3
PED	101 Fundamentals of Physical Activity		1
Total Credits		18	18

Second Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
EMT	216 Pre-Hospital Phys. Assessment	2		
EMT	225 Clin. Exper. for the Cardiac Care Tech.	3		
EMT	226 Dysrhythmia Recognition & Mgt.	3		
EMT	231 Paramedic Procedures I	5		
MTH	Elective	2		
	Social science elective	3		
CIS	116 Computers and Info. Systems		1	
EMT	232 Paramedic Procedures II		6	
EMT	235 Clin. Exper. for the Paramedic		4	
PED	Elective		1	
	Social science elective		3	
SPD	110 Intro. to Speech Communication		3	
EMT	251 Adv. Cardiac Life Supp. Prov.			1
EMT	290 Coordinated Practice			3
Total Credits		18	18	4

Total minimum credits for the Emergency Medical Services Technology major (A.A.S. degree) = 76.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

EMERGENCY MEDICAL SERVICES TECHNOLOGY

Certificate

Purpose: The curriculum is designed to develop the competencies of Emergency Medical Technician/Ambulance (EMT/A). Upon successful completion of the curriculum, students will be eligible to become certified as an Emergency Medical Technician/Ambulance.

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Admission Requirements: Students must meet the following requirements in order to be certified as an EMT/A in the Commonwealth of Virginia (Section 6:00 of the EMS Rules and Regulations):

1. First Year Curriculum requirements.
2. Special Program Completion Requirements for the A.A.S. degree in Emergency Medical Services Technology.

Special Accreditation Status: The program is accredited by the American Medical Association Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with the Joint Review Committee on Education Programs for EMT/Paramedic.

		Credits	
		1st Semester	2nd Semester
BIO	141 Hum. Anat. & Phys. I	4	
EMT	106 Basic Emer. Med. Tech./Ambulance	6	
EMT	190 Coordinated Practice	1	
ENG	111 College Composition I	3	
FIR	111 Hazardous Materials I	3	
STD	100 Orientation	1	
BIO	142 Hum. Anat. & Phys. II		4
CIS	116 Computers and Info. Systems		1
EMT	215 Principles of Extrication		4
FIR	112 Hazardous Materials II		3
HLT	143 Medical Terminology I		3
MTH	Elective		2
Total Credits		18	17

Total minimum credits for the Emergency Medical Services Technology certificate = 35.

CARDIAC CARE TECHNICIAN

Career Studies Certificate

Purpose: The curriculum is designed to develop the competencies of the Virginia Cardiac Care Technician. Upon successful completion of the curriculum, students will be eligible to become certified as a Virginia Cardiac Care Technician (CCT).

Admission Requirements: Students are advised that most Emergency Medical Services agencies require excellent moral character, a rigorous physical examination, fitness testing, and background investigation prior to consideration for employment.

All students must be in compliance with section 6:00 of the Rules and Regulations Governing Emergency Medical Services of the Commonwealth of Virginia in order to be certified at any level.

Students must comply with "Second-Year Curriculum Admission Requirements" and "Special Program Completion Requirements" of the A.A.S. degree in Emergency Medical Services.

Re-enrollment: Students who leave the Cardiac Care Technician (CCT) program before being certified must complete the following for reinstatement:

1. In order to meet Virginia certification requirements, if more than two calendar years lapse between the time the student completes EMT 226 and wants to return to the EMT program, EMT 226 must be retaken before taking EMT 231 and EMT 225.
2. In order to meet Virginia certification requirement, if Virginia CCT certification lapses, the student must retake the entire CCT sequence — EMT 226, EMT 231 and EMT 225.
3. Resubmit agency verification, health history, evidence of rubella immunity and negative tuberculin screening.

Special Accreditation Status: The program is accredited by the American Medical Association Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with the Joint Review Committee on Educational Programs for EMT/Paramedic.

		Credits	
		1st Semester	2nd Semester
EMT	216 Pre-Hospital Physiological Assessment.....	2	
EMT	226 Dysrhythmia Recognition & Mgmt.	3	
ENG	111 College Composition I	3	
HLT	143 Medical Terminology.....	3	
EMT	225 Clinical Experiences for the CCT .		3
EMT	231 Paramedic Procedures I		5
HLT	250 General Pharmacology		3
Total Credits		11	11

Total minimum credits for the Cardiac Care Technician career studies certificate = 22.

HISTOTECHNOLOGY

Career Studies Certificate

(See "Medical Laboratory Technology.")

MEDICAL LABORATORY TECHNOLOGY

Associate in Applied Science Degree Medical Laboratory Degree Program

Purpose: The curriculum is designed to prepare the students for certification and employment as Medical Laboratory Technicians in hospital laboratories, private laboratories, physicians' office laboratories, health department laboratories, and industrial medical laboratories. Upon completion of the program graduates will be eligible to take the American Society of Clinical Pathologists (ASCP) Board of Registry and other national certification exams.

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Admission Requirements:

1. One additional unit of high-school mathematics (2 units total required) with a grade of "C" or better.
2. One additional unit of high-school level science (2 units total required, 1 unit of biology, 1 unit of chemistry) with a grade of "C" or better.

Special Accreditation Status: The program is accredited by the AMA Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
First Year				
BIO	Elective or NAS 161 Health Science I .	4		
CHM	101 General Chemistry I or CHM 111 College Chem. I	4		
ENG	111 College Composition I	3		
MDL	101 Intro. to Med. Lab Tech.	3		
MDL	110 Urinalysis & Body Fluids	3		
STD	100 Orientation	1		
BIO	150 Intro. to Microbiology		4	
CHM	102 General Chemistry II or CHM 112 College Chem. II.....		4	
MDL	120 Principles of Hematology.....		4	
MDL	215 Immunology		2	
PED	101 Fund. of Physical Activity		1	
SPD	110 Intro. to Speech Communication .		3	
MDL	276 Clin. Hematology Techniques			4
MTH	Elective			2
PED	Elective			1
1	Social science elective			3
Total Credits		18	18	10

		Credits	
		1st Semester	2nd Semester
Second Year			
MDL	130 Basic Clinical Microbiology	3	
MDL	216 Blood Banking	4	
MDL	255 Diagnostic Microbiology	3	
MDL	266 Clin. Chemistry Techniques	4	
1	Social science elective	3	
MDL	261 Clin. Chem. and Instrumentation I		4
MDL	265 Advanced Clin. Chemistry		2
MDL	277 Clin. Immunohematology/ Immuno. Tech.		4
MDL	278 Clin. Microbiology Techniques II .		4
MDL	281 Clinical Correlations		1
Total Credits		17	15

Total minimum credits for the Medical Laboratory Technology major (A.A.S. degree) = 78.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

HISTOTECHNOLOGY

Career Studies Certificate

Purpose: The career studies certificate in Histotechnology is designed to prepare students to work as histology technicians. Histology technicians work in the histology departments of hospitals and reference and research laboratories. They prepare tissue for microscopic examination through preservation, embedding, sectioning, routine and special stains, and slide preparation. The program may also be of interest to persons currently working in histology.

Admission Requirements: Applicants must have completed two units of high school science with at least a "C" average.

Applicants who have not completed a unit of high school chemistry must register for CHM 001.

Persons who have at least one year of experience in clinical histology may apply to the program head to waive the requirement for MDL 090, Coordinated Practice courses.

		Credits	
		1st Semester	2nd Semester
BIO	100 Basic Human Biology	3	
ENG	100 Basic Occupational Comm.	3	
MDL	090 Coordinated Practice.....	3	
MDL	230 Prin. & Techniques of Histology I.	3	
MDL	090 Coordinated Practice.....		3
MDL	090 Coordinated Practice.....		4
MDL	231 Prin. & Techniques of Histology II		3
Total Credits		12	10

Total minimum credits for the Histotechnology career studies certificate = 22.

PHLEBOTOMY

Career Studies Certificate

Purpose: The career studies certificate in Phlebotomy is designed to prepare personnel who collect and process blood and other samples for medical laboratory analysis. Phlebotomists work in hospitals, medical clinics, commercial laboratories and in other settings where blood is collected from patients. The curriculum includes learning experiences both in on-campus laboratories and at affiliated clinical laboratories.

Admission Requirements: Persons who have been certified by a national agency as a phlebotomist or who have extensive experience in phlebotomy may seek advanced standing for MDL 190 (Coordinated Practice in Phlebotomy).

		Credits
		1st Semester
ENG	111 College Composition I or SPD 110 Intro. to Speech Communication	3
MDL	105 Phlebotomy.....	3
MDL	190 Coord. Practice-Phlebotomy	4
PSY	100 Prin. of Applied Psychology	3
Total Credits		13

Total minimum credits for the Phlebotomy career studies certificate = 13.

MEDICAL OFFICE ASSISTING

Career Studies Certificate

(See "Medical Record Technology")

MEDICAL RECORD TECHNOLOGY

Associate in Applied Science Degree Medical Records Degree Program

Purpose: The curriculum is designed to prepare students to work as medical record technicians in a health record service located in hospitals, consulting firms, health centers, pharmaceutical companies, medical research institutions, physicians' offices, and other health-related facilities. Some of the technical functions performed include health data analysis, coding, abstracting, and reporting for patient care quality studies, legal requirements and reimbursement systems. Graduates are eligible to apply to take the national accreditation examination administered by the American Medical Record Association.

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Special Accreditation Status: The program is accredited by the AMA Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with the Council of Education (COE), of the American Medical Record Association (AMRA).

		Credits	
		1st Semester	2nd Semester
First Year			
BIO	141 Human Anatomy & Physiology I .	4	
ENG	111 College Composition I	3	
MDR	113 Med. Term. & Disease Processes I.	3	
MTH	Elective	2	
PED	101 Fundamentals of Physical Activity	1	
—	Social science elective	3	
STD	100 Orientation	1	
BIO	142 Human Anatomy & Physiology II.		4
CIS	150 Intro. to Microcomputer Software		3
MDR	100 Intro./ Health Care Del. Syst.		1
MDR	114 Med. Term./Disease Processes II .		3
PED	Elective		1
—	Social science elective		3
SPD	110 Intro. to Speech Communication .		3
Total Credits		17	18

		Credits	
		1st Semester	2nd Semester
Second Year			
BUS	115 Organizational Behavior	3	
MDR	141 Fund. of Health Inform. Syst. I ..	3	
MDR	142 Fund. of Health Inform. Syst. II..	3	
MDR	215 Health Data Classification Systems	5	
MDR	231 Health Record Applications I	3	
MDR	220 Health Statistics		2
MDR	225 Quality Assurance in Health Care..		2
MDR	226 Legal Aspects of Health Record Doc.....		2
MDR	232 Health Record Applications II.		3
MDR	241 Fund. of Health Inform. Systems II		3
MDR	251 Clinical Practice I.....		4
Total Credits		17	16

Total minimum credits for the Medical Record Technology major (A.A.S. degree) = 68.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

MEDICAL OFFICE ASSISTING

Career Studies Certificate

Purpose: The career studies certificate in Medical Office Assisting is designed to prepare personnel to perform administrative and clinical functions in physicians' offices and clinics. Some examples of these functions include administering first aid, performing sterilization procedures, checking vision and hearing, collecting and processing laboratory specimens, scheduling appointments, maintaining health records, responding to requests for information, coding clinical data and completing health insurance forms. The curriculum includes learning experiences in on-campus laboratories and clinical affiliates.

		Credits 1st Semester
ENG	111 College Composition I or SPD 110 Intro. to Speech Communication	3
HLT	143 Medical Terminology I or MDR 113 Medical Terminology & Disease Processes I	3
MDL	105 Phlebotomy	3
MDL	190 Coordinated Practice	1
MDR	190 Coordinated Practice	1
MDR	198 Seminar and Project	1
MDR	226 Legal Aspects of Health Record Doc.	2
NUR	190 Coordinated Practice	1
Total Credits		15

Total minimum credits for the Medical Office Assisting career studies certificate = 15.

NURSING

Associate in Applied Science Degree Nursing Degree Program

Purpose: The program in Nursing is designed to prepare students to participate as contributing members of the health team, rendering direct care to patients in a variety of health-care facilities and agencies. Upon satisfactory completion of the program, students will be eligible to write the National Council Licensure Examination (NCLEX) leading to state licensure as a Registered Nurse (R.N.) and are qualified to assume registered nurse positions in hospitals, nursing homes, clinics, physicians' offices, HMOs and other comparable health-care facilities.

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Admission Requirements:

1. Students must have a high school diploma or GED.
2. One additional unit of high school-level science (2 units total required, 1 unit of biology and 1 unit of chemistry) with a grade of "C" or better.
3. Applicants for the Nursing program must take the NLN Pre-Admission Examination. Applicants with deficiencies may qualify for admission through satisfactory completion of a prescribed developmental and/or pre-nursing program.
4. A basic first aid course must have been completed prior to admission.

Special Program Continuation Requirements:

1. Students must pass all natural science courses with a "C" grade or higher.
2. All of the following courses must be completed by the end of the first academic year: ENG 111, NAS 161 and 162, PSY 201 and 202. Students will not be admitted to NUR 211 until those courses have been completed.

Special Program Completion Requirements: The Virginia State Board of Nursing reserves the right to deny licensure to any candidate who has been convicted of a crime or any offense relating to the abuse of alcohol and/or use or sale of controlled substances in Virginia or any other state. Any applicant to the Nursing program who has been found guilty of a misdemeanor or felony must consult with the program head prior to placement into the Nursing program.

Re-Enrollment: Students seeking re-enrollment must have satisfactorily completed any prescribed developmental courses.

Transfer and Advanced Placement: Nursing credits earned at other institutions are reviewed by the program head to determine if the courses in question apply to the curriculum and/or if substitution may be made within the curriculum.

Students who are exempt from MTH 126 and/or students who received a grade of less than "C" in MTH 126 must complete a NUR 135 Drug Dosage course.

Advanced placement examinations are available for Licensed Practical Nurses (LPNs) wishing to enter the Nursing program with advanced standing. See the counselor for details.

Program Accreditation: The Nursing program is approved by the Virginia State Board of Nursing and accredited by the National League for Nursing.

		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
First Year				
ENG	111 College Composition I	3		
NAS	161 Health Science I	4		
NUR	111 Nursing I	7		
PSY	201 Intro. to Psychology I	3		
STD	100 Orientation	1		
MTH	126 Math for Allied Health		2	
NAS	162 Health Science II		4	
NUR	112 Nursing II		8	
PSY	202 Intro. to Psychology II		3	
NUR	211 Nursing III			8
SPD	110 Intro. to Speech Communication or SPD 126 Interpersonal Communication			3
Total Credits		18	17	11

		Credits	
		1st Semester	2nd Semester
Second Year			
NUR	212 Nursing IV	10	
NUR	295 Topics In: Computers in Nursing	1	
PED	101 Fund. of Physical Activity	1	
—	Social science elective	3	
NUR	213 Nursing V		10
NUR	220 Nursing Dimensions		1
PED	Elective		1
—	Social science elective		3
Total Credits		15	15

Total minimum credits for the Nursing major (A.A.S. degree) = 76.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

PHLEBOTOMY

Career Studies Certificate
(See "Medical Laboratory Technology.")

PHYSICAL THERAPIST ASSISTANT

Associate in Applied Science Degree
Physical Therapy Degree Program

Purpose: This curriculum is designed to prepare students as skilled technical health workers who possess the knowledge and abilities that are necessary to assist the physical therapist in providing specific patient services for the prevention or alleviation of physical impairments. Upon successful completion of the program, students are eligible to take the Virginia state licensing examination leading to licensure as a Physical Therapist Assistant.

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Admission Requirements:

1. One additional unit of high school-level mathematics (2 units total required, including 1 unit of algebra) with a grade of "C" or higher.
2. One unit of high school-level science is required: biology or chemistry is recommended.
3. Four hours clinic observation or volunteer experience, including an interview with a physical therapist or physical therapist assistant.

Special Curriculum Completion Requirements: Students must earn a "C" or better in BIO 141-142 or NAS 161-162.

Special Accreditation Status: The program is accredited by the American Physical Therapy Association.

First Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
¹ BIO	141 Human Anatomy & Phys. I	4		
PTH	100 Intro. to Phys. Therapist Assist.	1		
PTH	106 Emergency Situations & Proced.	1		
PTH	121 Therapeutic Proc. I	9		
STD	100 Orientation	1		
¹ BIO	142 Human Anatomy & Phys. II		4	
ENG	111 College Composition I		3	
PED	101 Fund. of Physical Activity		1	
PTH	110 Medical Reporting		2	
PTH	115 Kinesiology for the Physical Therapist Assistant		5	
PTH	131 Clinical Education I		3	
MTH	Elective			3
PED	Elective			1
PTH	122 Therapeutic Proc. II			5
SPD	110 Intro. to Speech Communication			3
Total Credits		16	18	12

Second Year		Credits	
		1st Semester	2nd Semester
PSY	201 Intro. to Psych. I	3	
PTH	225 Rehab. Procedures	5	
PTH	231 Clinical Education II	7	
PTH	210 Psych. Aspects of Therapy		2
PTH	227 Pathological Conditions		2
PTH	232 Clinical Education III		8
PTH	245 Professional Issues		3
² —	Social science elective		3
Total Credits		15	18

Total minimum credits for the Physical Therapist Assistant major (A.A.S. degree) = 79.

In addition to the courses outlined above, CIS 116 is strongly encouraged.

¹ NAS 161-162 may be substituted for BIO 141-142.

² Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

RADIOGRAPHY

**Associate in Applied Science Degree
Radiography Degree Program**

Purpose: The curriculum is designed to prepare students to produce diagnostic images of the human body through safe application of x-radiation. The radiographer is a central member of the health-care team and assists the radiologist, a physician specialized in body image interpretation. Upon successful completion of degree requirements, the student will be eligible to take The American Registry of Radiologic Technology examination leading to certification as a Registered Technologist in Radiography: A.S., R.T.(R).

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Admission Requirements:

1. One additional unit of high school-level science (2 units total required in biology, chemistry, or physics) with grades of "C" or better.
2. Completion of college placement tests and qualification for English 111 and Mathematics 120.
3. The American Registry of Radiologic Technology requires an applicant to be of good moral character. "Generally, the conviction of either (a) a felony, or (b) any offense, misdemeanor or felony involving moral turpitude, indicates a lack of good moral character for registry purposes. Those who have been convicted of a crime may be eligible for registration if they have served their entire sentence, including probation and parole, and have had their civil rights restored!"

Special Program Continuation Requirements:

1. Students must pass the required biology courses with a grade of "C" or better.
2. As required by the Joint Review Committee on Radiologic Education, students who become pregnant while attending the Radiography program must notify the program head immediately. Under no circumstances may a pregnant student continue instruction in a radiation environment when she has exceeded the safe limits as specified by the maximum permissible dose level for a pregnant occupationally exposed student.
3. All incomplete grades ("I") must be resolved prior to taking the next course in the sequence.

Special Accreditation Status: The Radiography program is accredited by the AMA Committee on Allied Health Education and Accreditation (CAHEA) in cooperation with the Joint Review Committee on Education in Radiologic Technology.

		Credits		
First Year		1st Sem.	2nd Sem.	3rd Sem.
BIO	141 Human Anatomy & Phys. I or NAS 161 Health Science I.....	4		
MTH	Elective.....	3		
PED	Elective.....	1		
RAD	100 Intro. to Radiology and Protection.....	2		
RAD	121 Radiographic Procedures I.....	4		
RAD	125 Patient Care Procedures.....	2		
STD	100 Orientation.....	1		
BIO	142 Human Anatomy & Phys. II or NAS 162 Health Science II.....		4	
RAD	111 Radiologic Science I.....		4	
RAD	131 Elem. Clinical Procedures I.....		3	
RAD	221 Radiographic Procedures II.....		4	
PED	101 Fund. of Physical Activity.....			1
RAD	132 Elem. Clinical Procedures II.....			3
—	Social science elective.....			3
Total Credits		17	15	7

		Credits		
Second Year		1st Sem.	2nd Sem.	3rd Sem.
ENG	111 College Composition I.....	3		
RAD	112 Radiologic Science II.....	4		
RAD	205 Radiation Prot. & Radiobiology..	3		
RAD	231 Adv. Clinical Procedures I.....	5		
RAD	246 Special Procedures.....	2		
RAD	232 Adv. Clinical Procedures II.....		5	
RAD	240 Radiographic Pathology.....		3	
RAD	255 Radiographic Equipment.....		3	
—	Social science elective.....		3	
SPD	110 Intro. to Speech Communication..		3	
RAD	290 Coordinated Practice.....			3
RAD	299 Supervised Study.....			1
Total Credits		17	17	4

Total minimum credits for the Radiography major (A.A.S. degree) = 77.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).

RESPIRATORY THERAPY

**Associate in Applied Science Degree
Respiratory Therapy Degree Program**

Purpose: The curriculum is designed to prepare students as effective members of the health-care team in assisting with diagnosis, treatment, management, and preventive care of patients with cardio-pulmonary problems. Upon successful completion of the program and specific employment experiences, students may be eligible to take the registry examination leading to registration as a Registered Respiratory Therapist (R.R.T.)

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Admission Requirements:

1. Science requirement: one additional unit of high school-level science (2 units required from biology, chemistry or physics) with a grade of "C" or higher.
2. A visit to a respiratory therapy department prior to entering respiratory therapy courses is recommended. Program faculty will assist in scheduling this experience.
3. Developmental work or testing may be advised for credits earned more than ten years ago.

Completion Requirements: Students must pass the natural sciences sequences with at least a "C" grade. All incomplete grades ("I") in RTH courses must be resolved prior to taking the next course in sequence.

Special Accreditation Status: The program is accredited by the AMA Committee on Allied Health Education and Accreditation (CAHEA), in cooperation with the Joint Review Committee for Respiratory Therapy Education.

First Year		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
CIS	Elective	1		
MTH	Elective	2		
NAS	161 Health Science I	4		
RTH	121 Cardiopulmonary Science I	3		
RTH	131 Resp. Care Theory & Proced. I	4		
RTH	145 Pharmacology for Resp. Care I	2		
STD	100 Orientation	1		
ENG	111 College Composition I		3	
NAS	162 Health Science II		4	
RTH	132 Resp. Care Theory & Proced. II		4	
RTH	151 Fund. Clinical Procedures I		4	
RTH	222 Cardiopulmonary Science II		3	
PED	101 Fundamentals of Physical Activity			1
RTH	135 Diagnostic & Therapeutic Proc. I			2
RTH	152 Fundamental Clinical Proc. II			4
RTH	195 Topics In: Respiratory Care			1
—	Social science elective			3
Total Credits		17	18	11

Second Year		Credits	
		1st Semester	2nd Semester
CHM	101 General Chemistry	4	
RTH	223 Cardiopulmonary Science III	2	
RTH	235 Diagnostic & Therapeutic Proc. II	3	
RTH	245 Pharmacology for Resp. Care II	2	
RTH	253 Advanced Clinical Proc. III	4	
PED	Elective		1
RTH	226 Theory of Neonatal & Pediat. Resp. Care		2
RTH	254 Advanced Clinical Proc. IV		4
RTH	265 Current Issues in Respiratory Care		2
—	Social science elective		3
SPD	110 Intro. to Speech Communication		3
Total Credits		15	15

Total minimum credits for the Respiratory Therapy major (A.A.S. degree) = 76.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology). PSY 201-202 recommended.

RESPIRATORY THERAPY

Certificate

Purpose: The curriculum is designed to prepare students as effective members of the health care team in assisting with diagnosis, treatment, management, and preventive care of patients with cardio-pulmonary problems. Upon successful completion of the program and specific employment experiences, students may be eligible to take the national entry level examination leading to credentialing as a Certified Respiratory Therapy Technician (C.R.T.T.). Classroom and clinical work completed in the certificate program may be transferred into the associate degree program.

Students must comply with all General Requirements for Health Technologies as specified in Section I.

Admission Requirements:

1. Science Requirement: One unit of high school-level biology.
2. A visit to a respiratory therapy department prior to entering respiratory therapy courses is recommended. Program faculty will assist in scheduling this experience.
3. Developmental work or testing may be advised for credits earned more than ten years ago.

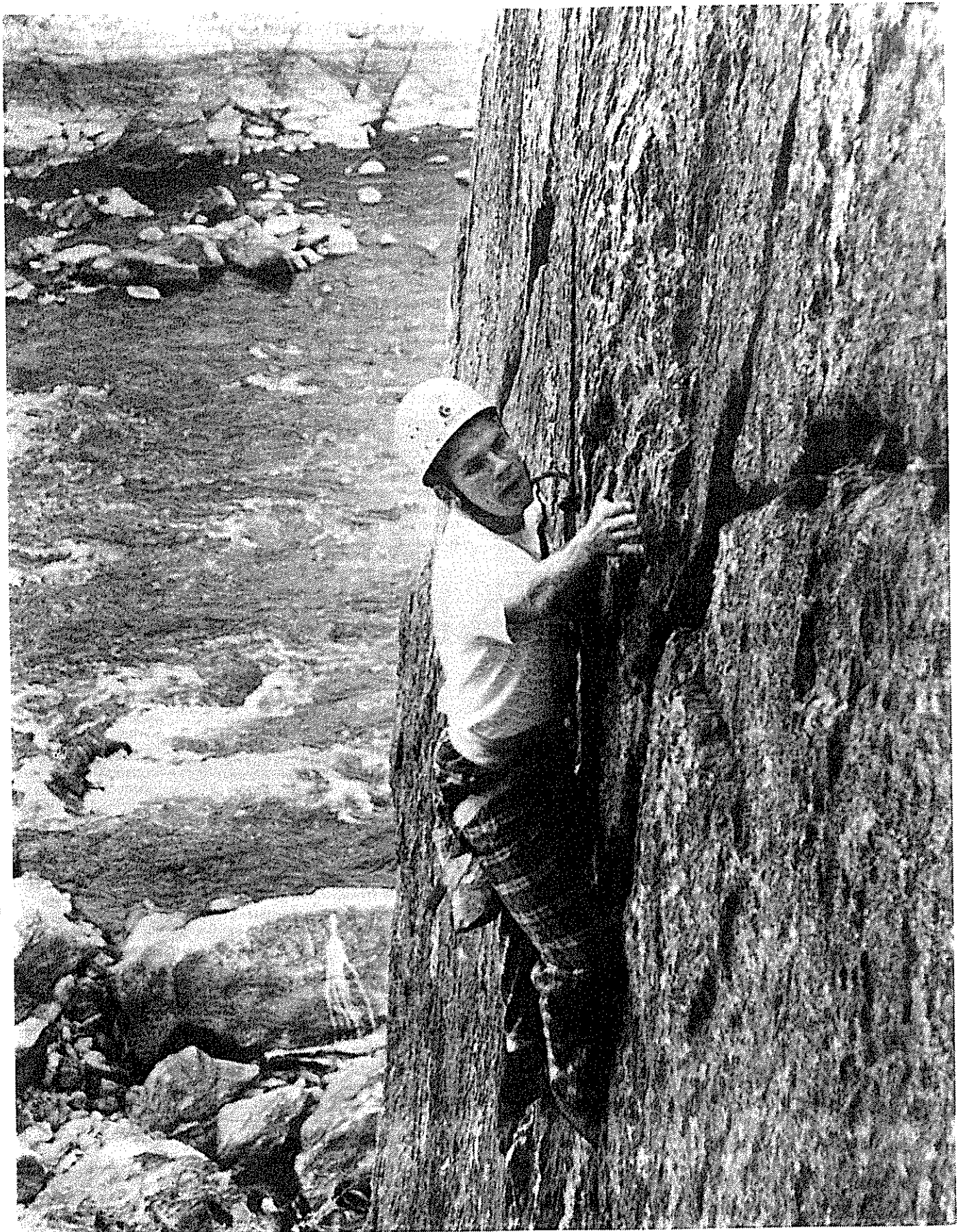
Completion Requirements: Students must pass the natural sciences sequences with at least a "C" grade. All incomplete grades ("I") in RTH courses must be resolved prior to taking the next course in sequence.

Special Accreditation Status: The program is accredited by the AMA Committee on Allied Health Education and Accreditation (CAHEA), in cooperation with the Joint Review Committee for Respiratory Therapy Education.

		Credits		
		1st Sem.	2nd Sem.	3rd Sem.
CIS	Elective	1		
MTH	Elective	2		
NAS	161 Health Science I	4		
RTH	121 Cardiopulmonary Science I	3		
RTH	131 Resp. Care Theory & Proced. I	4		
RTH	145 Pharmacology for Resp. Care I	2		
ENG	111 College Composition I		3	
NAS	162 Health Science II		4	
RTH	132 Resp. Care Theory & Proced. II		4	
RTH	151 Fundamental Clinical Proc. I		4	
RTH	222 Cardiopulmonary Science II		3	
PED	101 Fund. of Physical Activity			1
RTH	135 Diagnostic & Therapeutic Proc. I			2
RTH	152 Fundamental Clinical Proc. II			4
RTH	195 Topics In: Respiratory Care			1
—	Social science elective			3
Total Credits		16	18	11

Total minimum credits for the Respiratory Therapy certificate = 45.

¹ Social science courses may be selected from the following: economics, geography, history, political science, psychology, or sociology (includes anthropology).



Rock climbing recreation and parks students aim for new heights.

Course Numbers

Courses numbered 001-009 are developmental courses (see "Developmental Studies Program"). The credits earned in these courses are not applicable toward a degree or a certificate.

Courses numbered 010-099 are freshman level courses which may apply to certificate programs. The credits earned in these courses are not applicable toward an associate degree.

Courses numbered 100-299 are applicable toward an associate degree and certificate programs.

Course Credits

The credit for each course is indicated in parentheses after the title in the course description. One credit is equivalent to one collegiate semester-hour credit.

Course Hours

The number of lecture hours in class each week (including lecture, seminar and discussion hours) and/or the number of laboratory hours in each week (including laboratory shop, supervised practice, and cooperative work experiences) are indicated for each course in the course description. The number of lecture and laboratory hours in class each week are also called "contact" hours because it is time spent under the direct supervision of a faculty member. In addition to the lecture and laboratory hours in class each week, each student must spend some time on out-of-class assignments under his own direction. Usually each credit per course requires an average of three hours of in-class and out-of-class work each week.

Prerequisites and Corequisites

If any prerequisites are required before enrolling in a course, they will be identified in the course description. Courses in sequences (usually identified by the numerals I-II) require that the preceding course in the sequence (or equivalent) be completed before one can enroll in the next course in the sequence. Usually corequisites must be taken at the same time. The prerequisites or their equivalent must be completed satisfactorily before enrolling in a course unless special permission is obtained from the division. The NVCC Schedule of Classes lists additional information on special enrollment requirements.

Frequency of Offerings

The College is not obligated to offer, nor can it offer, all courses every semester. Courses are usually offered in the semesters indicated in the degree or certificate outline given in the Instructional Programs chapter of this catalog. The NVCC Schedule of Classes lists the courses being offered for the respective semester.

General Usage Courses

The following "General Usage Courses" apply to multiple curricula and may carry a

variety of prefix designations. The descriptions of the courses are identical for each different prefix and are as follows:

090-190-290 Coordinated Practice (1-5 CR.)

Supervised practice in selected health agencies coordinated by the College. Credit/practice ratio maximum 1:5 hrs. May be repeated for credit. Variable hrs.

090-190-290 Coordinated Internship (1-5 CR.)

Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/work ratio maximum 1:5 hrs. May be repeated for credit. Variable hrs.

095-195-295 Topics In: (1-5 CR.)

Exploration of topical areas of interest to or needed by students. May be used also for special honors courses. May be repeated for credit. Variable hrs.

096-196-296 On-Site Training In: (1-5 CR.)

Career orientation and training program without pay in selected businesses and industry, supervised and coordinated by the College. Credit/work ratio not to exceed 1:5 hrs. May be repeated for credit. Variable hrs.

097-197-297

Cooperative Education (1-6 CR.)

Supervised on-the-job training for pay in approved business and government organizations. Applicable to all curricula at the discretion of the College. Credit/work ratio not to exceed 1:5 hrs. May be repeated for credit. Variable hrs.

098-198-298 Seminar and Project (1-5 CR.)

Completion of a project or research report related to the student's occupational objective and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hrs.

099-199-299 Supervised Study (1-5 CR.)

Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hrs.

ACCOUNTING

ACC 115 APPLIED ACCOUNTING (3 CR.)

Presents practical accounting procedures for retail stores, professional individuals in firms, and personal service occupations. Covers the accounting cycle, journals, ledgers, preparation of financial statements and payrolls, and checking account management. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ACC 211-212 PRINCIPLES OF ACCOUNTING I-II (3 CR.) (3 CR.)

Presents accounting principles and their application to various businesses. Covers income determination, asset valuation, and financial reporting. Studies services, merchandising, and manufacturing operation, including internal controls, analysis of financial statements, cost accounting systems, and managerial concepts. Lecture 3 hours per week.

ACC 215 COMPUTERIZED ACCOUNTING (3 CR.)

Prerequisite or corequisite ACC 211 or equivalent. Introduces the computer in solving accounting problems. Focuses on operation of

computers. Presents the accounting cycle and financial statement preparation in a computerized system and other applications for financial and managerial accounting. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ACC 219 GOVERNMENTAL AND NOT-FOR-PROFIT ACCOUNTING (3 CR.)

Prerequisite ACC 212 or equivalent. Introduces fund accounting as used by governmental and nonprofit entities. Stresses differences between accounting principles of for-profit and not-for-profit organizations. Lecture 3 hours per week.

ACC 221-222 INTERMEDIATE ACCOUNTING I-II (3 CR.) (3 CR.)

Prerequisite ACC 212 or equivalent. Analyzes principal elements of accounting systems and statements. Lecture 3 hours per week.

ACC 231-232 COST ACCOUNTING I-II (3 CR.) (3 CR.)

Prerequisite ACC 212 or equivalent. Presents cost accounting methods and reporting as applied to job order, process, and standard cost accounting systems. Includes cost control, profit analysis, and other topics. Lecture 3 hours per week.

ACC 241-242 AUDITING I-II (3 CR.) (3 CR.)

Prerequisite ACC 212 or equivalent. Presents techniques of investigating, interpreting, and appraising accounting records and assertions. Studies internal control design and evaluation, evidence-gathering techniques and other topics. Lecture 3 hours per week.

ACC 261-262 PRINCIPLES OF FEDERAL TAXATION I-II (3 CR.) (3 CR.)

Presents the study of federal taxation as it relates to individuals and other tax entities. Includes tax planning, compliance and reporting. Lecture 3 hours per week.

ACC 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ACQUISITIONS

ACQ 121-122 INTRODUCTION TO PROCUREMENT AND ACQUISITION MANAGEMENT I-II (3 CR.) (3 CR.)

Emphasizes contracting with the government. Covers entire government/industry contracting cycle including funding, procurement methods, types of contracts, source selection, negotiations, and contract administration. Satisfies requirements of the mandatory Department of Defense course: Management of Defense Acquisition Contracts (Basic) when combined with DOD materials. Lecture 3 hours per week.

ACQ 215 CONTRACT LAW (3 CR.)

Provides an introduction to government contract law. Covers legal aspects associated with contracting and the administration of contracts. Emphasizes the dispute process, including administrative and judicial methods of resolution of contract disputes. Satisfies the requirements of the mandatory Department of Defense

course, Government Contract Law, when combined with DOD materials. Lecture 3 hours per week.

ACQ 216 COST AND PRICE ANALYSIS (3 CR.)

Covers establishment and administration of pricing arrangement resulting in fair and reasonable pricing for goods and/or services. Analyzes the total price (cost plus profit) and the individual elements of cost (labor, materials, indirect costs, and profit). Satisfies requirements of mandatory Department of Defense course: Defense Cost and Price Analysis when combined with DOD materials. Lecture 3 hours per week.

ACQ 218 NEGOTIATIONS OF CONTRACTS AND CONTRACT MODIFICATION (3 CR.)

Includes organization/operation of procurement negotiation teams. Covers preparation and conduct of negotiations for contracts and contract modifications. Emphasizes interactions prior to/during negotiations and methods of dealing with situations under different types of negotiations. Satisfies requirements of mandatory Department of Defense course, Defense Contract Negotiation Workshop, when combined with DOD materials. Lecture 3 hours per week.

ACQ 221-222 ADVANCED PROCUREMENT AND ACQUISITION MANAGEMENT I-II (3 CR.) (3 CR.)

Covers advanced areas of contract management, accounting principles, contractor controls, contract administration, organizations, terminations, disputes, subcontractor controls and relationships. Satisfies requirements of the mandatory Department of Defense course: Management of Defense Acquisition Contracts (Advanced) when combined with DOD materials. Lecture 3 hours per week.

ADMINISTRATION OF JUSTICE

ADJ 100 SURVEY OF CRIMINAL JUSTICE (3 CR.)

Presents an overview of the United States criminal justice system; introduces the major system components—law enforcement, judiciary, and corrections. Lecture 3 hours per week.

ADJ 105 THE JUVENILE JUSTICE SYSTEM (3 CR.)

Presents the evolution, philosophy, structures and processes of the American juvenile delinquency system; surveys the rights of juveniles, dispositional alternatives, rehabilitation methods and current trends. Lecture 3 hours per week.

ADJ 107 SURVEY OF CRIMINOLOGY (3 CR.)

Surveys the volume and scope of crime; considers a variety of theories developed to explain the causation of crime and criminality. Lecture 3 hours per week.

ADJ 110 INTRODUCTION TO LAW ENFORCEMENT (3 CR.)

Studies the philosophy and history of law enforcement, presenting an overview of the crime problem and policy response issues. Surveys the jurisdictions and organizations of local, state, and federal law enforcement agencies. Examines the qualification require-

ments and career opportunities in the law enforcement profession. Lecture 3 hours per week.

ADJ 111-112 LAW ENFORCEMENT ORGANIZATION AND ADMINISTRATION I-II (3 CR.) (3 CR.)

Prerequisite for ADJ 112, divisional approval or ADJ 111. Teaches the principles of organization and administration of law enforcement agencies. Studies the management of line operations, staff and auxiliary services, investigative and juvenile units. Introduces the concept of data processing; examines policies, procedures, rules, and regulations pertaining to crime prevention. Surveys concepts of protection of life and property, detection of offenses, and apprehension of offenders. Lecture 3 hours per week.

ADJ 116 SPECIAL ENFORCEMENT TOPICS (3 CR.)

Considers contemporary issues, problems, and controversies in modern law enforcement. Lecture 3 hours per week.

ADJ 117 POLICE COMMUNICATIONS AND RECORDS (3 CR.)

Introduces the principles for the organization and administration of law enforcement communications and records. Examines relationships of custody, central services, and agency logistics to the communications and records operation. Lecture 3 hours per week.

ADJ 120 INTRODUCTION TO COURTS (3 CR.)

Presents an overview of the American judiciary—the federal and 50 state judicial systems—with emphasis on criminal court structures, functions, and personnel; surveys the judicial system in the Commonwealth of Virginia. Lecture 3 hours per week.

ADJ 127 FIREARMS AND MARKSMANSHIP (3 CR.)

Prerequisite permission of instructor. Surveys lethal weapons in current use and current views on weapon types and ammunition design. Examines the legal guidelines as to use of deadly force, safety in handling of weaponry, and weapon care and cleaning; marksmanship instruction under standard range conditions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ADJ 138 DEFENSIVE TACTICS (2 CR.)

Surveys and demonstrates the various types of non-lethal force tools and tactics for use by criminal justice personnel in self-defense, arrest, search, restraint and transport of those in custody. Lecture 2 hours per week.

ADJ 139 PRIVATE DETECTIVES/INVESTIGATORS (3 CR.)

Instructs the student in investigative techniques, criminal law and procedure, rules of evidence, the techniques and mechanics of arrest. Meets state certification requirements for private investigators licensing. Lecture 3 hours per week.

ADJ 140 INTRODUCTION TO CORRECTIONS (3 CR.)

Focuses on societal responses to the offender. Traces the evolution of practices based on philosophies of retribution, deterrence, and rehabilitation. Reviews contemporary correctional activities and their relationships to other aspects

of the criminal justice system. Lecture 3 hours per week.

ADJ 145 CORRECTIONS AND THE COMMUNITY (3 CR.)

Studies and evaluates the relationships and interactions between correctional organizations and free society. Focuses on the shared responsibility of the community and corrections agencies to develop effective programs for management and treatment of criminal offenders. Lecture 3 hours per week.

ADJ 147 LOCAL ADULT DETENTION FACILITIES (3 CR.)

Studies security procedures in adult detention facilities, the criteria for effective supervision of inmates, the correctional aspects of inmate discipline, and the handling of 'special inmates.' Presents concepts, programs, and planning considerations for jail management and the operation of adult detention facilities. Lecture 3 hours per week.

ADJ 150 INTRODUCTION TO SECURITY ADMINISTRATION (3 CR.)

Introduces the student to the field of private security—its history, structures, functions, and personnel; surveys the principles and practices of security administration. Lecture 3 hours per week.

ADJ 154 SPECIAL SECURITY TOPICS (3 CR.)

Considers contemporary issues, problems, trends and controversies in the modern private security field. Lecture 3 hours per week.

ADJ 156 LEGAL ASPECTS OF SECURITY (3 CR.)

Exposes the student to the legal guidelines and restrictions the modern security officer must operate within; examines liability concerns arising from private security job performance. Lecture 3 hours per week.

ADJ 159 PHYSICAL SECURITY (3 CR.)

Studies the various forms of perimeter barriers which impact upon security operations; examines insurance considerations, underwriters licensing certification, fire prevention and fire code regulations, and the general health and safety requirements for all employees and contact persons within the organization. Lecture 3 hours per week.

ADJ 200 CRIMINAL BEHAVIOR (3 CR.)

Introduces and evaluates the concepts of normal and abnormal behavior; focuses on the psychological and sociological aspects of criminal and other deviant behavior patterns. Lecture 3 hours per week.

ADJ 211-212 CRIMINAL LAW, EVIDENCE AND PROCEDURES I-II (3 CR.) (3 CR.)

Teaches the elements of proof for major and common crimes and the legal classification of offenses. Studies the kinds, degrees and admissibility of evidence and its presentation in criminal proceedings with emphasis on legal guidelines for methods and techniques of evidence acquisition. Surveys the procedural requirements from arrest to final disposition in the various American court systems with focus on the Virginia jurisdiction. Lecture 3 hours per week.

ADJ 215 REPORT WRITING (3 CR.)

Prerequisite ENG 111. Introduces the basic mechanics and procedures of report writing;

emphasizes clear, concise and accurate writing of communications as they relate to law enforcement records, investigations, and research. Lecture 3 hours per week.

ADJ 216 ORGANIZED CRIME AND CORRUPTION (3 CR.)

Addresses judicial efforts against and involvement in corruption, drug, vice, and white-collar crimes, both individual and organized. Lecture 3 hours per week.

ADJ 228 NARCOTICS AND DANGEROUS DRUGS (3 CR.)

Surveys the historical and current usage of narcotics and dangerous drugs. Teaches the identification and classification of such drugs and emphasizes the symptoms and effects on their users. Examines investigative methods and procedures utilized in law enforcement efforts against illicit drug usage. Lecture 3 hours per week.

ADJ 229 LAW ENFORCEMENT AND THE COMMUNITY (3 CR.)

Considers current efforts by law enforcement personnel to achieve an effective working relationship with the community. Surveys and analyzes various interactive approaches of law enforcement agencies and the citizenry they serve. Lecture 3 hours per week.

ADJ 236 PRINCIPLES OF CRIMINAL INVESTIGATION (3 CR.)

Surveys the fundamentals of criminal investigation procedures and techniques. Examines crime scene search, collecting, handling and preserving of evidence. Lecture 3 hours per week.

ADJ 237 ADVANCED CRIMINAL INVESTIGATION (3 CR.)

Prerequisite ADJ 236 or divisional approval. Introduces specialized tools and scientific aids used in criminal investigation. Applies investigative techniques to specific situations and preparation of trial evidence. Lecture 3 hours per week.

ADJ 241 CORRECTIONAL LAW I (3 CR.)

Studies the legal rights and obligations of the convict-probationer, inmate, and parolee. Surveys methods of enforcing both rights and obligations and the responsibilities of corrections agencies and personnel under correctional law (constitutional, statutory, and regulatory provisions). Lecture 3 hours per week.

ADJ 245 MANAGEMENT OF CORRECTIONAL FACILITIES (3 CR.)

Describes management options and operational implications for staffing, security, safety, and treatment. Considers impact of changes in public policy on corrections. Lecture 3 hours per week.

ADJ 246 CORRECTIONAL COUNSELING (3 CR.)

Presents concepts and principles of interviewing and counseling as applied in the correctional setting. Lecture 3 hours per week.

ADJ 248 PROBATION, PAROLE, AND TREATMENT (3 CR.)

Surveys the philosophy, history, organization, personnel and functioning of traditional and innovative probation and parole programs; considers major treatment models for clients. Lecture 3 hours per week.

ADJ 255 SECURITY MANAGEMENT (3 CR.)

Examines the major management operations of planning, organizing, staffing, directing and controlling the private security unit. Reviews the functions of management, implementation of institutional programs and development of staff. Lecture 3 hours per week.

ADJ 256 INFORMATION SECURITY (3 CR.)

Studies the means of protecting both government classified and private business information. Surveys techniques of storing, transmitting, destroying and controlling access to sensitive information. Lecture 3 hours per week.

ADJ 257 LOSS PREVENTION (3 CR.)

Studies internal and external theft that affects all private and public operations, with focus on retail businesses. Examines and evaluates major loss prevention programs used by security operations, again with focus on retail security. Lecture 3 hours per week.

ADJ 258 SUBSTANCE ABUSE IN SECURITY (3 CR.)

Reviews the use and abuse of prescription and non-prescription drugs and their impact on security operations. Teaches the student to recognize the symptoms of drug abuse and what response techniques security can utilize for internal and external occurrences. Lecture 3 hours per week.

ADJ 289 COMPARATIVE SYSTEMS OF CRIMINAL JUSTICE (3 CR.)

Surveys administration of justice in a variety of nations, comparing workings and results of different law enforcement, judicial, and correctional components. Lecture 3 hours per week.

ADJ 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AGRICULTURE

AGR 215 ANIMAL NUTRITION (2 CR.)

Emphasizes the principles of nutrition and feeding practices for small and large animal species. Lecture 2 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AIR CONDITIONING AND REFRIGERATION

AIR 101 PRINCIPLES OF REFRIGERATION I (4 CR.)

Presents refrigeration principles and systems, characteristics of refrigerants, temperatures and pressure. Teaches basic theory of compressors, evaporators, condensers and refrigerant flow controls; the use and care of refrigeration tools, tubing and equipment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 102 PRINCIPLES OF REFRIGERATION II (4 CR.)

Prerequisite AIR 101. Presents charging and

evaluation of systems and leak detection. Explores servicing the basic system. Uses and applies refrigeration controls (temperature, low pressure, high pressure, oil pressure, etc.). Explains use and care of oils and additives and troubleshooting of small commercial systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 110 PRINCIPLES OF AIR CONDITIONING (3 CR.)

Introduces calculations, psychometrics, and systems for control of temperature and humidity. Lecture 3 hours per week.

AIR 111 AIR CONDITIONING AND REFRIGERATION CONTROLS I (3 CR.)

Presents electron theory, magnetism, Ohm's Law, resistance, current flow, instruments for electrical measurement, A.C. motors, power distribution controls and their application. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 134 CIRCUITS AND CONTROLS I (3 CR.)

Prerequisite AIR 111. Presents circuit diagrams for heating units, reading and drawing of circuit diagrams, types of electrical controls, house wiring circuits. Includes analysis of heating circuits, components, analysis and characteristics of circuits and controls, testing and servicing. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

AIR 155 HEATING SYSTEMS II (4 CR.)

Studies commercial gas and oil boilers to include troubleshooting, preventive maintenance and servicing. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 205 HYDRONICS AND ZONING (4 CR.)

Presents installation, servicing, troubleshooting, and repair of hydronic systems for heating and cooling. Includes hot water and chilled water systems using forced circulation as the transfer medium. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

AIR 207 HEAT LOADS AND PSYCHOMETRICS (4 CR.)

Prerequisite AIR 102. Studies air and its properties, characteristics and measurements as they apply to human comfort. Considers control of temperature, humidity and distribution of air and air mixtures. Studies heat loss and heat gain factors. Considers the effect, the selection and layout of residential air conditioning and refrigeration systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 211 AIR CONDITIONING CONTROLS I (4 CR.)

Prerequisite AIR 134. Introduces electrical, pneumatic and electronic control circuits as applied to year-round air conditioning systems. Teaches reading wiring and schematic diagrams, troubleshooting, and designing high and low voltage control systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AIR 218 HEAT LOAD ESTIMATION (3 CR.)

Studies heat loss and heat gain factors. Considers the effect, the selection and layout of both residential and commercial air conditioning and refrigeration systems. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**AIR 238
ADVANCED TROUBLESHOOTING
AND SERVICE (3 CR.)**

Prerequisite AIR 251. Presents advanced service techniques on wide variety of equipment used in refrigeration, air conditioning, and phases of heating and ventilation and controls. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**AIR 245 ELECTRIC HEAT
AND HEAT PUMPS (4 CR.)**

Prerequisites AIR 102 and AIR 134. Studies electric heating, basic constructions, application, calculation, installation wiring, troubleshooting and repair. Introduces the operating principles, installation, servicing, problem isolation, and repair of packaged and split heat pump systems. Stresses troubleshooting and repair of these units. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**AIR 251
AIR CONDITIONING SYSTEMS I (4 CR.)**

Prerequisite AIR 102. Studies equipment used in air component sizing, selection, and application, servicing, repairing of coils and compressors. Includes troubleshooting the cooling system. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**AIR 252
AIR CONDITIONING SYSTEMS II (4 CR.)**

Prerequisite AIR 251. Studies piping design and sizing, installation, condensers and water towers. Includes valves, strainers and accessories, duct systems and air distribution design and their relationship with volume, static pressure and velocity. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**AIR 257 GAS-FIRED WARM AIR
FURNACES (4 CR.)**

Prerequisite AIR 155. Covers the study of mid- and high-efficiency gas-fired warm air furnaces and their components. Includes equipment components, installation, servicing and maintenance. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**AIR 297
COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ARCHITECTURE**ARC 106 INTRODUCTION TO
MODERN ARCHITECTURE (2 CR.)**

Outlines history and impact of architecture. Emphasizes dynamics and social aspects of architecture and society, focusing on Western architectural forms. Lecture 2 hours per week.

**ARC 115
ARCHITECTURAL GRAPHICS (2 CR.)**

Covers various types of presentation techniques associated with architecture, including rendered plans and elevations, pictorial drawings and perspectives, and the use of drawing media. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**ARC 121
ARCHITECTURAL DRAFTING I (3 CR.)**

Introduces techniques of architectural draft-

ing, including lettering, dimensioning, and symbols. Requires production of plans, sections, and elevations of a simple building. Studies use of common reference material and the organization of architectural working drawings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ARC 122
ARCHITECTURAL DRAFTING II (3 CR.)**

Prerequisite ARC 121 or equivalent. A continuation of Architectural Drafting I. Requires development of a limited set of working drawings, including a site plan and related details, and pictorial drawings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**ARC 133 MATERIALS AND METHODS
OF CONSTRUCTION I (3 CR.)**

Studies materials used in construction of buildings, covering foundations to structural framing systems. Includes appropriate use of materials for various construction types. Lecture 3 hours per week.

**ARC 134 MATERIALS AND METHODS
OF CONSTRUCTION II (3 CR.)**

Studies materials and systems for building construction. Includes specification of materials and installation procedures; types of specifications and writing procedures; bidding procedures, contract documents. Lecture 3 hours per week.

**ARC 140 PRINCIPLES
OF CONSTRUCTION SAFETY (2 CR.)**

Covers construction industry operations and hazards control. Includes principles and practices of accident prevention, cost analysis, investigation techniques, reporting, first aid, protection equipment and general safety principles. Lecture 2 hours per week.

**ARC 200
HISTORY OF ARCHITECTURE (4 CR.)**

Surveys architecture from ancient times to the 20th century, with emphasis on philosophy of design, form and structure. Lecture 4 hours per week.

**ARC 210 INTRODUCTION TO
COMPUTER AIDED DRAFTING (2 CR.)**

Gives overview of use of computers as applied to architectural drawing. Covers software capability of the system by generating, moving, editing, or deleting the basic elements. Uses CRT keyboard, table/menu, and other items that make up the system. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**ARC 216 ARCHITECTURAL
RENDERING
AND PRESENTATION (3 CR.)**

Prerequisite ARC 122 or equivalent. Presents techniques of rendering and principles of art as related to architectural presentation. Covers architectural lettering and layout, free-hand sketching, and perspective drawing in various media, including pencil, ink and tempera. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

**ARC 225 SITE PLANNING
AND TECHNOLOGY (3 CR.)**

Studies the impact of building codes and zoning ordinances on site design; storm drainage, grading design, erosion and flood control; site materials for paving and retaining walls; site utilities. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

**ARC 231 ADVANCED
ARCHITECTURAL DRAFTING I (4 CR.)**

Prerequisite ARC 122 or equivalent. Provides fundamental knowledge of the principles and techniques of architectural drawing procedures. Familiarizes student with design process. Provides a better understanding of the relation between architectural design and structural systems. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

**ARC 232 ADVANCED
ARCHITECTURAL DRAFTING II (4 CR.)**

Prerequisite ARC 231 or equivalent. Requires development of complete set of working drawings and details according to principles and techniques of architectural drawings and procedures used in professional firms. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

**ARC 243
ENVIRONMENTAL SYSTEMS (4 CR.)**

Studies energy sources and strategies for use in buildings; heat loss and heat gain; heating and cooling equipment and system; water supply, distribution and waste systems and equipment; principles of electricity, electrical systems and equipment. Lecture 4 hours per week.

**ARC 259 CONSTRUCTION
(PLANNING AND CRITICAL PATH
METHODS) (3 CR.)**

Covers preparation of material and labor quantity surveys for plans and specifications; approximate and detailed estimates of costs, and bid and contract procedures. Uses working knowledge of critical path methods programming and its implication for the building industry as a vehicle for control of project construction. Lecture 3 hours per week.

**ARC 297
COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ARTS**ART 100 ART APPRECIATION (3 CR.)**

Introduces art from prehistoric times to the present day. Describes architectural styles, sculpture, photography, printmaking, and painting techniques. Lecture 3 hours per week.

**ART 101-102 HISTORY AND
APPRECIATION
OF ART I-II (3 CR.) (3 CR.)**

Presents the history and interpretation of architecture, sculpture, and painting. Begins with prehistoric art and follows the development of western civilization to the present. Lecture 3 hours per week.

**ART 103-104 HISTORY OF
FAR EASTERN ART I-II (3 CR.) (3 CR.)**

Surveys the history of Far Eastern art from the prehistoric period to the present. Part I focuses on the art of India and Southeast Asia. Part II focuses on the art of China, Japan, and Korea. Emphasizes architecture, painting and sculpture with some instruction in printmaking and decorative arts. Lecture 3 hours per week.

ART 247 PAINTING TECHNIQUE FOR ILLUSTRATORS (4 CR.)

Prerequisite ART 121 or divisional approval. Introduces materials and techniques used by the illustrator. Includes water-soluble paints (watercolor, acrylic, gouache), oil-based paints, and mixed media. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 250 HISTORY OF DESIGN (3 CR.)

Surveys the development of graphic design and illustration with emphasis on the 19th and 20th centuries. Analyzes the work of outstanding designers and illustrators. Lecture 3 hours per week.

ART 251-252 COMMUNICATION DESIGN I-II (4 CR.) (4 CR.)

Prerequisites ART 131, ART 140, and ART 141. Studies the principles of visual communications as applied to advertising in newspapers, magazines, direct mail advertising, house organs, etc. Analyzes the influence of contemporary art on design. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 253-254 DESIGN III-IV (4 CR.) (4 CR.)

Prerequisites ART 132 or divisional approval. Applies basic design concepts to complex problems. Introduces related research as appropriate. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

ART 255 MAGAZINE DESIGN (4 CR.)

Prerequisites ART 131, ART 140 and ART 141. Examines the concept, design, and production of visual or literary arts publications. Presents theory of magazine design. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 257 DESIGN STUDIO (4 CR.)

Prerequisites ART 121, ART 131, and ART 251. Focuses on advanced communication design in a studio situation. Teaches design concepts based on client needs. Includes art direction, contract writing, client contact. Also explores the inter-relationship of design, illustration and photography. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 258 LITHOGRAPHY (4 CR.)

Prerequisites Drawing I and Fundamentals of Design I or divisional permission. Introduces lithographic processes and techniques with emphasis on stone lithography. Includes field trips where applicable. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 261-262 ILLUSTRATION I-II (4 CR.) (4 CR.)

Prerequisites ART 122, 132, 135, and 140. Studies of methods and materials used in various types of illustration, including editorial, institutional, and advertising. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 265 GRAPHIC TECHNIQUES (4 CR.)

Prerequisite ART 140. Applies the study of printing processes to the preparation of art work. Teaches printing processes, terminology, and related materials. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 273 SILKSCREEN PRINTING I (4 CR.)

Develops skills in silkscreen stencil techniques with emphasis on design. Includes field trips when applicable. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 275 RELIEF PRINTMAKING (4 CR.)

Introduces relief printmaking techniques including woodcut, linocut, and collograph. Includes field trips when applicable. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 277 ADVANCED PRINTMAKING (4 CR.)

Provides additional opportunity for individual exploration in selected printmaking processes. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 283-284 COMPUTER GRAPHICS I-II (4 CR.) (4 CR.)

Introduces microcomputers and software used to produce computer graphics. Employs techniques learned to solve studio projects which reinforce instruction and are appropriate for portfolio use. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 288 THESIS: ILLUSTRATION (3 CR.)

Focuses on an individual comprehensive portfolio project culminating in a formal presentation. Recommended for final semester with approval of instructor. Lecture 2 hours. Studio instruction 3 hours. Total 5 hours per week.

ART 289 THESIS: COMMUNICATION DESIGN (4 CR.)

Focuses on an individual comprehensive portfolio project culminating in a formal presentation. Recommended for final semester with approval of instructor. Lecture 2 hours. Studio instruction 4 hours. Total 6 hours per week.

ART 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AUTO BODY**AUB 106 BASIC SHEET METAL OPERATIONS (4 CR.)**

Teaches the use of metal straightening tools, basic straightening operations, shrinking, filling, sheet metal damage and repair procedures. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 116 AUTO BODY REPAIR (4 CR.)

Teaches collision straightening procedures and use of equipment, planning repair procedures, disassembly techniques, body fastening systems, glass removal and replacement and panel repair and alignment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 117 AUTOMOTIVE FRAME REPAIR (4 CR.)

Teaches frame and unit design and construction straightening processes and equipment used for measuring, pushing and pulling to obtain frame alignment and body checking. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 118 AUTOMOTIVE PAINT PREPARATION (4 CR.)

Teaches auto body preparation for painting, using the materials, processes, and equipment

required to prepare metal and old finishes. Includes sanding, cleaning, solvents, special materials, fillers and primers. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 119 AUTOMOTIVE PAINTING (4 CR.)

Teaches theory and application of painting and the use of painting equipment and materials including paints, thinners, primers, rubbing compounds and cleaners. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUB 125 AUTO BODY WELDING (4 CR.)

Presents the principles involved in using heat to relieve stress in shrinking metal, as well as the processes used in joining high and low strength steels. Includes oxyacetylene welding, cutting, brazing, and soldering, resistance spot welding, and MIG welding. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AUTOMOTIVE**AUT 100 INTRODUCTION TO AUTOMOTIVE SHOP PRACTICES (2 CR.)**

Introduces shop practices for automotive laboratory and shop safety, identification and use of hand tools, general power equipment and maintenance of automotive shop. Explains basic operation procedures of standard shop equipment. Presents Occupational Safety and Health Act standards pertaining to the automotive field. Lecture 2 hours per week.

AUT 107 AUTOMOTIVE DISASSEMBLY AND INSPECTION TECHNIQUES (2 CR.)

Studies disassembly procedures, cleaning methods, and inspection techniques, including use of measuring devices. Emphasizes familiarization with shop manuals and specification requirements along with proper parts identification and ordering. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUT 108 AUTOMOTIVE SHOP FABRICATION TECHNIQUES (2 CR.)

Presents methods of fabricating equipment and fixtures for automotive repair and machine shop. Includes project planning, layout work, gas welding, arc welding, fasteners, and tool and fixture making. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUT 111-112 AUTOMOTIVE ENGINES I-II (4 CR.) (4 CR.)

Presents analysis of power, cylinder condition, valves and bearings in the automotive engine to establish the present condition, repairs or adjustments. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 113 CYLINDER BLOCK SERVICE (3 CR.)

Studies basic cylinder block reconditioning, including boring, resleeving, line-boring and deck resurfacing. Includes repair techniques for damaged block and cylinder head castings to include cold welding, brazing, welding and epoxy. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 116 AUTOMOTIVE TURNING OPERATIONS (3 CR.)

Presents principles and methods of lathe operations for fabrication, modifications and tool making. Includes brake drum and disc lathes. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 117 CRANKSHAFT, CAMSHAFT, & CONNECTING ROD SERVICE (3 CR.)

Studies techniques of crankshaft and camshaft reconditioning to include grinding, polishing, straightening, welding and balancing. Teaches connecting rod service to include installing and reaming bushings, straightening, aligning, and balancing. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 120 INTRODUCTION TO AUTOMOTIVE MACHINE SHOP (3 CR.)

Prerequisite or corequisite for all other machinist courses. Introduces automotive machining operations emphasizing shop safety and the safe use of machine shop tools. Surveys basic machining operations and specialized auto machining techniques necessary for reconditioning engine and chassis components. Requires basic set of machinist's hand tools. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 121-122 AUTOMOTIVE FUEL SYSTEMS I-II (4 CR.) (4 CR.)

Analyzes major domestic and foreign automotive fuel systems to include carburetors and fuel injection systems. Includes detailed inspection and discussion of fuel tanks, connecting lines, instruments, filters, fuel pumps, superchargers, and turbo charger. Also includes complete diagnosis, troubleshooting, overhaul and factory adjustment procedures of all major carbureted and fuel injection systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 125 ANTI-POLLUTION SYSTEMS (3 CR.)

Studies various anti-pollution systems used on modern automobiles, installation, inspection, repair and service. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 130 INTRODUCTION TO AUTO MECHANICS (2 CR.)

Introduces auto mechanics, covering auto shop safety, tool identification and use. Explains automobile system theory and function. Stresses quality work practices and job opportunities. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUT 135 CONSUMER AUTO REPAIR (2 CR.)

Introduces basic study and practice of home maintenance and repair of automotive vehicles. Includes basic theory of the automobile, hand tool selection and use, and repair tasks able to be accomplished in the home garage without power equipment. Designed for non-automotive degree and certificate students only. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

AUT 141-142 AUTO POWER TRAINS I-II (4 CR.) (4 CR.)

Presents operation, design, construction and repair of power train components, standard and automatic transmission. Includes clutches, propeller shaft, universal joints, rear axle assemblies, fluid couplings, torque converters as well as 2, 3, and 4 speed standard, overdrive and

automatic transmissions. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 156 SMALL GASOLINE ENGINES (2 CR.)

Studies small gasoline engine operating principles, construction, design, variety, and their many purposes. Gives instruction on two-cycle and four-cycle small gas engines, their construction, design, fuel system, ignition system, and lubricating systems. Demonstrates disassembly, reconditioning, overhaul and reassembly in the lab. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

AUT 161 AUTOMOTIVE DIAGNOSIS I (3 CR.)

Introduces principles of automotive maintenance using modern diagnostic methods. Uses theory and laboratory experiments designed to explain and illustrate scientific basis of modern electronic and mechanical diagnostic procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 215 EMISSIONS SYSTEMS DIAGNOSIS AND REPAIR (2 CR.)

Presents logical diagnostic paths to identify vehicle HC-CO failure areas. Teaches a progression of failure detection from most likely to more complex causes. Emphasizes use of infrared analyzer and manufacturer's specified adjustments. Lecture 2 hours per week.

AUT 217 COMPUTERIZED FUEL SYSTEMS (3 CR.)

Introduces devices which sense the engine condition and control fuel mixture to produce economical fuel consumption. Teaches theory of operation, testing, adjustment and repair or replacement of these devices. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 225 AUTOMOTIVE EMISSIONS INSPECTION (1 CR.)

Provides training for certified inspectors in the Virginia State Emissions Inspection Program. Emphasizes current legislation and inspection techniques using industry standard emission analyzers. Lecture 1 hour per week.

AUT 236 AUTOMOTIVE CLIMATE CONTROL (4 CR.)

Introduces principles of refrigeration, air conditioning controls, and adjustment and general servicing of automotive air conditioning systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 241-242 AUTOMOTIVE ELECTRICITY I-II (4 CR.) (4 CR.)

Introduces electricity and magnetism, symbols and circuitry as applied to the alternators, regulators, starters, lighting systems, instruments and gauges. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 245 AUTOMOTIVE ELECTRONICS (4 CR.)

Introduces field of electronics as it applies to the modern automobile. Emphasizes basic circuit operation, diagnosis and repair of digital indicator and warning systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 251-252 AUTOMATIC TRANSMISSIONS I-II (4 CR.) (4 CR.)

Studies several types of automatic transmissions, torque converters, and their principles of operation. Includes adjustment, maintenance,

and rebuilding. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 266 AUTO ALIGNMENT, SUSPENSION AND STEERING (4 CR.)

Introduces use of alignment equipment in diagnosing, adjusting, and repairing front and rear suspensions. Deals with repair and servicing of power and standard steering systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 267 AUTOMOTIVE SUSPENSION AND BRAKING SYSTEMS (4 CR.)

Presents the operation, design, construction, repair and servicing of braking and suspension systems. Explains use of tools and test equipment, evaluation of test results, estimation and repair cost, front and rear suspension alignment, power and standard steering, and power, standard and disc brakes. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 273-274 AUTOMOTIVE DRIVEABILITY AND TUNE-UP I-II (3 CR.) (3 CR.)

Presents diagnostic and service procedures for automatic electrical and mechanical systems. Teaches use of tools and test equipment, evaluation of test results, estimation of repair cost. Emphasizes performance of required service. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

AUT 276 SHOP MANAGEMENT (3 CR.)

Studies shop layout, personnel and management, cost analysis, record keeping and quality control. Discusses shop manager, service salesman, and service writer's roles in customer relations. Lecture 3 hours per week.

AUT 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

AVIATION**ARO 100 AVIATION IN THE UNITED STATES (3 CR.)**

Presents a study of evolution of air transportation in the United States. Includes study of growth of American aviation and the national airspace system and increasing role of government in aviation. Includes Air Commerce Act of 1926 to the present FAA. Lecture 3 hours per week.

ARO 111 FLIGHT I (1 CR.)

Commences flight training. Teaches aeronautical skills necessary to meet the requirements for private pilot certificate. Consists of thirty-two hours of flight training. Requires a special fee. Laboratory 2 hours per week.

ARO 112 FLIGHT II (1 CR.)

Continues flight training for attaining private pilot certificate. Commences flight training toward the instrument rating. Consists of thirty-two-hours of flight training. Laboratory 2 hours per week.

ARO 113 FLIGHT III (1 CR.)

Continues flight training toward the time instrument rating. Consists of thirty-two hours of flight training. Laboratory 2 hours per week.

**ARO 121 PRIVATE PILOT
GROUND SCHOOL****(4 CR.)**

Presents the fundamental principles of flight including theory of flight, aircraft standards and specifications, basic aircraft construction, weight and balance, navigation, meteorology, principles of radio communication and application of aerophysics. Prepares students for the FAA examination for private pilot rating. Lecture 4 hours per week.

**ARO 122 INSTRUMENT
PILOT GROUND SCHOOL****(4 CR.)**

Covers principles applicable to instrument aviation requirements. Includes study of aerodynamics pertaining to instrument flight, flight instruments and airways. Prepares students for the FAA examination for instrument pilot rating. Lecture 4 hours per week.

**ARO 123 COMMERCIAL
PILOT GROUND SCHOOL****(3 CR.)**

Presents advanced theory of flight covering navigation, meteorology, radio communication, aerophysics and performance. Studies federal aviation regulations. Prepares students for the FAA Examination for the commercial pilot rating. Lecture 3 hours per week.

**ARO 130 HISTORY
OF AIR TRANSPORTATION****(3 CR.)**

Studies the history of manned flight, development of aircraft, milestones in aviation, noted pioneers, and socio-economic impact of flight upon modern civilization. Lecture 3 hours per week.

ARO 140 AVIATION SAFETY**(3 CR.)**

Presents fundamentals essential to safe flight, instruments used and the evaluation and interpretation of their indications. Deals with weight and balance problems. Discusses federal aviation regulations pertaining to safe flight. Lecture 3 hours per week.

**ARO 141 FLIGHT ATTENDANT'S
INTRODUCTION****(3 CR.)**

Introduces the flight attendant's role in aviation from the beginning to the present day. Includes the advantages and disadvantages of the career. Discusses environment including bidding and scheduling, food and beverage service, emergency procedures, and post-flight responsibilities. Lecture 3 hours per week.

**ARO 142 FLIGHT ATTENDANT'S
DUTIES AND RESPONSIBILITIES****(3 CR.)**

Presents study of the flight attendant's image. Emphasizes health and appearance. Provides instruction and practice in interview preparation and communication skills. Lecture 3 hours per week.

ARO 210 AVIATION LAW**(3 CR.)**

Provides insight into federal agencies, as well as international, federal and local laws forming the present structure of aviation law. Lecture 3 hours per week.

ARO 220 METEOROLOGY**(3 CR.)**

Presents an introduction to interpretation of meteorological phenomena affecting flight. Studies basic concepts of aviation meteorology: temperature, pressure, moisture, stability, clouds, air masses, fronts, thunderstorms, icing, fog. Analyzes the weather data for flight planning and safe flying. Teaches interpretation of national weather service maps, reports, and forecast. Lecture 3 hours per week.

ARO 230 AIR NAVIGATION**(3 CR.)**

Covers basic elements of air navigation, fundamentals and practical application of pilotage and dead reckoning, including use of plotter, computer, aerial charts and navigation systems. Lecture 3 hours per week.

**ARO 240 AIRCRAFT
SUPPORT OPERATIONS****(3 CR.)**

Presents logistics and services necessary to insure and support safe, efficient flight operations. Discusses aviation supply and maintenance, loading and unloading, preflight checks and services, and logistical support en route. Lecture 3 hours per week.

**ARO 245 AIRPORT OPERATIONS
AND MANAGEMENT****(3 CR.)**

Studies airports as integral parts of the national airspace system. Includes major functions of airport management, organization, financing, operations, safety and airport and airline security. Discusses role of governments in airport construction, modernization, certification and operation, and the airport and its socio-economic effect on the community. Lecture 3 hours per week.

**ARO 257 CERTIFIED FLIGHT
INSTRUCTOR - AIRPLANE****(5 CR.)**

Prerequisite FAA Commercial Pilot Certificate and Instrument Airplane Rating. Provides instruction and flight training in preparation for flight instructor certification. Includes training syllabus and lesson plan development, teaching methods, flight instruction methods, performance evaluation, instructor responsibilities, and instructing private and commercial flight students. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

ARO 297**COOPERATIVE EDUCATION****(1-6 CR.)**

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

BIOLOGY**BIO 001****FOUNDATIONS OF BIOLOGY****(4 CR.)**

Develops a basic understanding of plant and animal form, function, and relationships. Prepares students who have a deficiency in high school biology. May be repeated for credit. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

BIO 100 BASIC HUMAN BIOLOGY**(3 CR.)**

Presents basic principles of human anatomy and physiology. Discusses cells, tissues, and selected human systems. Lecture 3 hours per week.

BIO 101-102**GENERAL BIOLOGY I-II****(4 CR.) (4 CR.)**

Explores fundamental characteristics of living matter from the molecular level to the ecological community with emphasis on general biological principles. Introduces the diversity of living organisms, their structure, function and evolution. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 110 GENERAL BOTANY**(4 CR.)**

Emphasizes plant life cycles, anatomy, mor-

phology, taxonomy, and evolution. Considers the principles of genetics, ecology, and physiology. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 120 GENERAL ZOOLOGY**(4 CR.)**

Presents basic biological principles, and emphasizes structure, physiology and evolutionary relationships of invertebrates and vertebrates. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 141-142 HUMAN ANATOMY
AND PHYSIOLOGY I-II****(4 CR.) (4 CR.)**

Integrates anatomy and physiology of cells, tissues, organs, and systems of the human body. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 146 HUMAN HEREDITY**(3 CR.)**

Surveys basic principles of classical and molecular genetics as applied to humans. Lecture 3 hours per week.

**BIO 150 INTRODUCTORY
MICROBIOLOGY****(4 CR.)**

Studies the general characteristics of microorganisms. Emphasizes their relationships to individual and community health. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 205**GENERAL MICROBIOLOGY****(4 CR.)**

Prerequisites one year of college biology and one year of college chemistry or divisional approval. Examines morphology, genetics, physiology, ecology, and control of microorganisms. Emphasizes application of microbiological techniques to selected fields. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 206 CELL BIOLOGY**(4 CR.)**

Prerequisite one year of college biology or one year of college chemistry. Introduces the ultrastructure and functions of cells. Emphasizes cell metabolism, cell division, and control of gene expression. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 226 VERTEBRATE ZOOLOGY**(4 CR.)**

Prerequisites BIO 101-102. Focuses on structure, embryology, function, ecology, classification, and evolution of vertebrate animals. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

**BIO 231-232 HUMAN ANATOMY
AND PHYSIOLOGY I-II****(4 CR.) (4 CR.)**

Prerequisites one year of college biology and one year of college chemistry or divisional approval. Integrates the study of gross and microscopic anatomy with physiology, emphasizing the analysis and interpretation of physiological data. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 245 COMPARATIVE**ANATOMY OF VERTEBRATES****(4 CR.)**

Prerequisites BIO 101-102 or equivalent. Compares the gross morphology of larger taxonomic groups of chordates with emphasis on their evolution. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 256 GENERAL GENETICS**(4 CR.)**

Prerequisites BIO 101-102 or equivalent. Explores the principles of genetics ranging from classical Mendelian inheritance to the most re-

cent advances in the biochemical nature and function of the gene. Includes experimental design and statistical analysis. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 265 BIOLOGY OF NON-VASCULAR PLANTS (4 CR.)

Prerequisites BIO 101-102 or equivalent. Covers lower plants and fungi. Studies major taxonomic groups, their morphology, life cycles, ecology, physiology, and economic importance. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 270 GENERAL ECOLOGY (4 CR.)

Prerequisites BIO 101-102 or divisional approval. Studies interrelationships between organisms and their natural and cultural environments with emphasis on populations, communities, and ecosystems. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 275 MARINE ECOLOGY (4 CR.)

Prerequisites BIO 101-102 or divisional approval. Applies ecosystem concepts to marine habitats. Includes laboratory and field work. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 276 FRESHWATER ECOLOGY (4 CR.)

Prerequisites BIO 101-102 or divisional approval. Applies ecosystem concepts to freshwater habitats. Includes laboratory and field work. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

BIO 277 REGIONAL FLORA (3 CR.)

Stresses family characteristics of vascular plants including identification and classification of local flora. Lecture 2 hours. Recitation and laboratory 3 hours. Total 5 hours per week.

BIO 297

COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

BUILDING

BLD 100 CONSTRUCTION INSPECTION, PLAN REVIEW AND CODES (4 CR.)

Introduces the construction inspection profession, qualifications of the inspector, methods and procedures for field report writing, records on public relations, safety on construction sites, and the legal aspects governing the construction inspector. Includes study and interpretation of the basic building codes as they relate to construction of residential, commercial, and public facilities. Interprets working drawings and construction specifications for compliance with basic building codes. Lecture 4 hours per week.

BLD 101 CONSTRUCTION MANAGEMENT I (3 CR.)

Presents overviews of all phases of construction project management. Introduces students to philosophy, responsibilities, methodology, and techniques of the construction process. Introduces topics related to the construction and design industries, organizations, construction contracts, bidding procedures, insurance, taxes, bonding, cost accounting, business methods, in-

cluding basic computer usage, safety and general project management procedures. Lecture 3 hours per week.

BLD 102 CONSTRUCTION MANAGEMENT II (3 CR.)

Emphasizes advanced management techniques and methodology. Includes engineering economics, accounting principles, life cycle costing, value engineering, systems analysis with computer applications, work improvement, quality control, and a broad overview of the construction management profession. Lecture 3 hours per week.

BLD 103 PRINCIPLES OF RESIDENTIAL BUILDING CONSTRUCTION INSPECTION (3 CR.)

Corequisite BLD 100. Introduces general principles of residential building inspection including materials, foundations, framing, finishing, and building codes. Lecture 3 hours per week.

BLD 104 PRINCIPLES OF CONCRETE AND STEEL FRAME INSPECTION (4 CR.)

Introduces fundamentals of concrete and new developments that directly apply to modern construction technology. Develops an understanding of the ingredients of concrete, properties of concrete, mix proportions and testing procedures which result in quality controlled product, concrete form use and removal. Teaches fundamentals of modern steel framing methods and non-destructive testing methods. Introduces principles, techniques and materials used in the fireproofing of steel structural elements utilized in construction projects to comply with national fire protection standards and local codes. Lecture 4 hours per week.

BLD 112 PRINCIPLES OF ELECTRICAL INSPECTION (3 CR.)

Teaches fundamentals of electrical wiring systems used in residential, commercial and industrial buildings. Introduces principles of computing loads on circuits, services and feeders, and the use and procedures of using measuring and testing equipment. Includes national and local electrical codes for safe installation of wiring systems. Lecture 3 hours per week.

BLD 113 PRINCIPLES OF MECHANICAL AND PLUMBING INSPECTION (4 CR.)

Presents fundamentals and theory of heating, cooling and refrigeration terminology and the fundamentals of sanitary plumbing systems terminology and symbols as used in layout of the various systems. Introduces the code and inspections problems for commercial, industrial and residential public and private sanitary systems. Lecture 4 hours per week.

BLD 165 CONSTRUCTION FIELD OPERATIONS (2 CR.)

Introduces areas of construction field management which relate directly to on-the-job requirements of construction operations viewed from the construction superintendent's standpoint. Includes theories of project management and field supervision; utilization of equipment, labor and material; construction site development; requirements of field scheduling; management input requirements; job recording and documentation; supervision responsibility. May include field trips to project sites. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

BLD 210 BUILDING STRUCTURES (3 CR.)

Introduces analysis and design of steel, wood, and reinforced concrete structural members including loads, reactions, bending moments, stresses, and deflection for selection of beam and column sizes. Considers bolted and welded connections in steel design. Introduces determination of reinforcing steel sizes and arrangements in concrete members. Lecture 3 hours per week.

BLD 231 CONSTRUCTION ESTIMATING I (3 CR.)

Focuses on materials take-off and computing quantities from working drawings and specifications. Includes methods for computing quantities of concrete, steel, masonry, roofing, excavation. Deals with pricing building components, materials and processes, as well as transportation and handling costs, mark-up discount procedures, equipment cost and labor rates. Lecture 3 hours per week.

BLD 232 CONSTRUCTION ESTIMATING II (3 CR.)

Prerequisite BLD 231. Presents an introduction to computer programs for construction estimating. Produces a cost estimate for a major project with the aid of a computer program. Lecture 3 hours per week.

BLD 241 CONSTRUCTION MANAGEMENT I (3 CR.)

Presents fundamentals of construction supervision including responsibilities of the construction superintendent, operations manager, general superintendent and project engineer, with factors relating to their work and that of their subordinates, aspects of job leadership and effective human relations as related to efficient supervision. Lecture 3 hours per week.

BLD 242 CONSTRUCTION MANAGEMENT II (3 CR.)

Presents a comprehensive overview of all aspects of construction law and labor relations, exposing the students to responsibilities and requirements. Includes history of labor relations in the United States, trade unionism, federal labor laws and their direct effect on construction, OSHA (Occupational Safety and Health Act) laws and regulations that apply. Lecture 3 hours per week.

BLD 247 CONSTRUCTION PLANNING AND SCHEDULING (3 CR.)

Introduces principles of planning and scheduling of a construction project. Includes sequence of events and processes on a construction site. Studies scheduling techniques including the critical path method. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

BUSINESS MANAGEMENT AND ADMINISTRATION

BUS 100 INTRODUCTION TO BUSINESS (3 CR.)

Presents a broad introduction to the functioning of business enterprise within the U.S. economic framework. Introduces economic systems, essential elements of business organi-

zation, finance, marketing, production, and risk and human resource management. Lecture 3 hours per week.

BUS 111 PRINCIPLES OF SUPERVISION I (3 CR.)

Teaches the fundamentals of supervision, including the primary responsibilities of the supervisor. Introduces factors relating to the work of supervisor and subordinates. Covers aspects of leadership, job management, work improvement, training and orientation, performance evaluation, and effective employee/supervisor relationships. Lecture 3 hours per week.

BUS 115 ORGANIZATIONAL BEHAVIOR (3 CR.)

BUS 115 and PSY 126 cannot both be taken for credit toward graduation. Presents a behaviorally oriented course combining the functions of management with the psychology of leading and managing people. Focuses on the effective use of human resources through understanding human motivation and behavior patterns, conflict management and resolution, group functioning and process, the psychology of decision-making, and the importance of recognizing and managing change. Lecture 3 hours per week.

BUS 116 ENTREPRENEURSHIP (3 CR.)

Presents the various steps considered necessary when going into business. Includes areas such as product-service analysis, market research evaluation, setting up books, ways to finance startup, operations of the business, development of business plans, buyouts versus starting from scratch, and franchising. Uses problems and cases to demonstrate implementation of these techniques. Lecture 3 hours per week.

BUS 121 BUSINESS MATHEMATICS I (3 CR.)

Prerequisite MTH 120. Applies mathematics to business processes and problems such as checkbook records and bank reconciliation, simple interest notes, present value, bank discount notes, wage and payroll computations, depreciation, sales and property taxes, commercial discounts, markup and markdown, and inventory turnovers and valuation. Lecture 3 hours per week.

BUS 122 BUSINESS MATHEMATICS II (3 CR.)

Applies mathematical operations to business problems, such as insurance, distribution of profit and loss in partnerships, distribution of corporate dividend; overhead, financial statements and ratios, sinking funds, compound interest, amortization, annuities, present value, basic statistics, break-even analysis, and multiple payment plans. Lecture 3 hours per week.

BUS 125 APPLIED BUSINESS MATHEMATICS (3 CR.)

Prerequisite MTH 120. Applies mathematics to business process and problems such as checkbook records and bank reconciliation, simple interest, present value, bank discount notes, depreciation, commercial discounts, markup and markdown, distribution of profit and loss in partnerships, distribution of corporate dividends, sinking funds, compound interest, amortization, annuities, and multiple payment plans. Lecture 3 hours per week.

BUS 150 PRINCIPLES OF MANAGEMENT (3 CR.)

Teaches management and the management functions of planning, organizing, directing and controlling. Focuses on application of management principles to realistic situations managers encounter as they attempt to achieve organizational objectives. Lecture 3 hours per week.

BUS 155 APPLIED MANAGEMENT PRINCIPLES (3 CR.)

Prerequisite BUS 150. Focuses on management practices and issues. May use case studies and/or management decision models to analyze and develop solutions to management problems. Lecture 3 hours per week.

BUS 157 WOMEN IN MANAGEMENT (3 CR.)

Introduces responsibilities, functions and decisions required in or preparing for a management position, and impact of these decisions on women. Presents a comprehensive view of how women may establish and maintain their effectiveness as managers at all levels within an organization. Lecture 3 hours per week.

BUS 165 SMALL BUSINESS MANAGEMENT (3 CR.)

Identifies management concerns unique to small businesses. Introduces the requirements necessary to initiate a small business, and identifies the elements comprising a business plan. Presents information establishing financial and administrative controls, developing a marketing strategy, managing business operations, and the legal and government relationships specific to small businesses. Lecture 3 hours per week.

BUS 205 HUMAN RESOURCE MANAGEMENT (3 CR.)

Introduces employment, selection, and placement of personnel, usage levels and methods, job descriptions, training methods and programs, and employee evaluation systems. Includes procedures for management of human resources and uses case studies and problems to demonstrate implementation of these techniques. Lecture 3 hours per week.

BUS 215 PURCHASING AND MATERIALS MANAGEMENT (3 CR.)

Prerequisite ACC 211. Teaches the principles of effective purchasing and management of materials and equipment. Includes determination of requirements, source selection, pricing, value analysis, contracting, inventory management, and equipment requisition decisions. Lecture 3 hours per week.

BUS 221 BUSINESS STATISTICS I (3 CR.)

Prerequisite MTH 165 or divisional approval. Focuses on statistical methodology in the collection, organization, presentation, and analysis of data; concentrates on measures of central tendency, dispersion, probability concepts and distribution, sampling, statistical estimation, normal and T distribution and hypotheses for means and proportions. Lecture 3 hours per week.

BUS 222 BUSINESS STATISTICS II (3 CR.)

Prerequisite BUS 221 or divisional approval. Continues study of inferential statistics and application of statistical techniques and methodology in business. Includes analysis of variance, regression and correlation measurement of business and economic activity through the use

of index numbers, trend, cyclical, and seasonal effects and the Chi-Square distribution and other non-parametric techniques. Lecture 3 hours per week.

BUS 225 APPLIED BUSINESS STATISTICS (3 CR.)

Introduces statistics as a tool in decision making. Emphasizes ability to collect, present, and analyze data. Employs measures of central tendency and dispersion, statistical inference, index number, and time series analysis. Lecture 3 hours per week.

BUS 226 MICROCOMPUTER APPLICATION IN BUSINESS (3 CR.)

Prerequisite keyboarding competence. Provides a practical application of software packages. Offers a working knowledge of spreadsheets, word processing, database management, outlining and graphics. Includes the use of programs in accounting techniques, word processing, and management science application. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

BUS 241 BUSINESS LAW I (3 CR.)

Presents a broad introduction to legal environment of U.S. business. Develops a basic understanding of contract law and agency and government regulation. Lecture 3 hours per week.

BUS 242 BUSINESS LAW II (3 CR.)

Prerequisite BUS 241 or divisional approval. Develops a basic understanding of the uniform commercial code relating to business organization bankruptcy, and personal and real property. Lecture 3 hours per week.

BUS 265 ETHICAL ISSUES IN MANAGEMENT (3 CR.)

Examines the legal, ethical, and social responsibilities of management. May use cases to develop the ability to think and act responsibly. Lecture 3 hours per week.

BUS 266 PRODUCTION AND OPERATIONS MANAGEMENT (3 CR.)

Examines the process by which both goods and services producing businesses, many not-for-profit institutions, and governmental agencies transform resources into an end product to meet the demands of customers or clients. Includes a survey of some of the quantitative methods involved in the process. Lecture 3 hours per week.

BUS 280 INTRODUCTION TO INTERNATIONAL BUSINESS (3 CR.)

Studies the problems, challenges, and opportunities which arise when business operations or organizations transcend national boundaries. Examines the functions of international business in the economy, international and transnational marketing, production, and financial operations. Lecture 3 hours per week.

BUS 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

CHEMISTRY

CHM 001 CHEMISTRY I (1-5 CR.)

Presents basic inorganic and organic princi-

ples to students with little or no chemistry background. Can be taken in subsequent semesters as necessary until course objectives are completed. Variable hours per week.

CHM 101-102 GENERAL CHEMISTRY I-II (4 CR.) (4 CR.)

Designed for the non-science major. Emphasizes experimental and theoretical aspects of inorganic, organic, and biological chemistry. Discusses general chemistry concepts as they apply to issues within our society and environment. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHM 111-112 COLLEGE CHEMISTRY I-II (4 CR.) (4 CR.)

Requires a strong background in mathematics. Designed primarily for science and engineering majors. Explores the fundamental laws, theories, and mathematical concepts of chemistry. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHM 121-122 HEALTH SCIENCE CHEMISTRY I-II (4 CR.) (4 CR.)

Introduces the health science student to concepts of inorganic, organic, and biological chemistry as applicable to the allied health profession. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHM 135 HORTICULTURAL CHEMISTRY (3 CR.)

Introduces inorganic and organic structures and the pH concept. Applies these principles to selected topics in horticulture. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHM 140 SURVEY OF ORGANIC CHEMISTRY (3 CR.)

Prerequisite high school chemistry or equivalent. Introduces fundamentals of organic chemistry for students not intending to specialize in chemistry. Focuses on nomenclature, classification, and reactions of organic compounds. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHM 241-242 ORGANIC CHEMISTRY I-II (3 CR.) (3 CR.)

Prerequisite CHM 112 or equivalent. Introduces fundamental chemistry of carbon compounds, including structures, physical properties, syntheses, and typical reactions. Emphasizes reaction mechanisms. Lecture 3 hours per week.

CHM 243-244 ORGANIC CHEMISTRY LABORATORY I-II (1 CR.) (1 CR.)

Prerequisite CHM 112. May be taken concurrently with or following CHM 241-242. Laboratory 3 hours per week.

CHM 245-246 SPECIAL ORGANIC CHEMISTRY LABORATORY I-II (2 CR.) (2 CR.)

Prerequisite CHM 112. May be taken concurrently with or following CHM 241-242. Is taken by chemistry and chemical engineering majors. Includes qualitative organic analysis. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

CHM 251 QUANTITATIVE ANALYSIS I (4 CR.)

Prerequisite CHM 112 or equivalent. Develops the theory and methods of volumetric and gravimetric analysis. Teaches specific analytical procedures involving instrumental meth-

ods of analysis. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

CHM 255 INSTRUMENTAL ANALYSIS (3 CR.)

Prerequisite CHM 112 or equivalent. Introduces general principles and applications of specific instrumental methods. Emphasizes practical analysis of everyday and/or industrial substances. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CHM 260 INTRODUCTORY BIOCHEMISTRY (3 CR.)

Prerequisite CHM 112 or divisional approval. Explores fundamentals of biological chemistry. Includes study of macromolecules, metabolic pathways, and biochemical genetics. Lecture 3 hours per week.

CHM 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

CHILDHOOD DEVELOPMENT

CHD 105 INTERPERSONAL SKILLS FOR NANNIES (4 CR.)

Introduces fundamental concepts of nannyship: family dynamics, multi-cultural awareness, legal aspects of child care, family communications, home life skills, etiquette, and dress. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHD 106 HEALTH EDUCATION FOR NANNIES (4 CR.)

Develops skills and attitudes for creating a healthy and safe home atmosphere. Topics include sick child care, safety of the young child, nutrition, cardio-pulmonary resuscitation, first aid, and sanitation practices in the home. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

CHD 109 METHODS IN MOVEMENT AND MUSIC EDUCATION FOR CHILDREN (3 CR.)

Emphasizes theory and practice in movement and music education and the integration of these skills in a curriculum. Designed for teachers and aides in child care, preschool, nursery, or primary schools. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 118 METHODS AND MATERIALS IN THE LANGUAGE ARTS FOR CHILDREN (3 CR.)

Presents techniques and methods for encouraging the development of language and perceptual skills in young children. Stresses improvement of vocabulary, speech and methods to stimulate discussion. Surveys children's literature, examines elements of quality story telling and story reading, and stresses the use of audiovisual materials. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 121-122 CHILDHOOD EDUCATIONAL DEVELOPMENT I-II (3 CR.) (3 CR.)

Focuses attention on the observable characteristics of children from birth through adolescence. Concentrates on cognitive, physical,

social, and emotional changes that occur. Emphasizes the relationship between development and child's interactions with parents, siblings, peers, and teachers. Lecture 3 hours per week.

CHD 125 CREATIVE ACTIVITIES FOR CHILDREN (3 CR.)

Prepares individuals to work with young children in the arts and other creative age-appropriate activities. Investigates effective classroom experiences and open-ended activities. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CHD 126 METHODS AND MATERIALS FOR DEVELOPING SCIENCE AND MATHEMATICAL CONCEPTS IN CHILDREN (3 CR.)

Teaches selecting developmentally appropriate learning activities using materials to develop logical thinking skills in the child. Lecture 3 hours per week.

CHD 131 CHILD DEVELOPMENT ASSOCIATE I (3 CR.)

Provides an overview of employment settings, requirements, and roles of the CDA candidate and an introduction to the 13 functional areas of assessment. The coursework will demonstrate continuity of theory and practice; show varying ways to implement functional areas; and provide for the possibility of changing roles within the field of Early Childhood Education. Lecture 3 hours per week.

CHD 132 CHILD DEVELOPMENT ASSOCIATE II (3 CR.)

Prerequisite CHD 131. Provides in-depth study of each of the 13 functional areas as established by the Child Development Associate Credential, focusing on theoretical justification, as well as practical implementation for various settings and age groups. This course will coordinate with the portfolio sessions. Student outcomes from this course will be demonstrated in the portfolio Theories and Applications course. Lecture 3 hours per week.

CHD 165 OBSERVATION AND PARTICIPATION IN EARLY CHILDHOOD/ PRIMARY SETTINGS (3 CR.)

Observes and participates in early childhood settings such as child care centers, pre-schools, Montessori schools or public school settings. Kindergarten through 3rd grade. Students spend one hour each week in a seminar session in addition to 60 clock hours in the field. May be taken again for credit. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

CHD 166 INFANT AND TODDLER PROGRAMS (3 CR.)

Examines the fundamentals of infant and toddler development, including planning and implementing programs in group care. Emphasizes meeting physical, social, emotional, and cognitive needs: scheduling, preparing age-appropriate activities, health and safety policies, record keeping, and reporting to parents. Lecture 3 hours per week.

CHD 167 RESOURCE DEVELOPMENT FOR THE CHILD DEVELOPMENT ASSOCIATE (CDA) CANDIDATE (3 CR.)

Supports the CDA candidate in organizing and developing a portfolio for presentation at local assessment team meeting. Lecture 3 hours per week.

CHD 205 GUIDING**THE BEHAVIOR OF CHILDREN (3 CR.)**

Explores positive ways to build self-esteem in children and help them develop self-control. Presents practical ideas for encouraging pro-social behavior in children and emphasizes basic skills and techniques in classroom management. Lecture 3 hours per week.

CHD 210 INTRODUCTION**TO EXCEPTIONAL CHILDREN (3 CR.)**

Reviews the history of education for exceptional children. Studies the characteristics associated with exceptional children. Explores positive techniques for managing behavior and adapting materials for classroom use. Lecture 3 hours per week.

CHD 215 MODELS**OF EARLY CHILDHOOD****EDUCATION PROGRAMS (3 CR.)**

Studies and discusses the various models and theories of early childhood education programs including current trends and issues. Presents state licensing and staff requirements. Lecture 3 hours per week.

CHD 297**COOPERATIVE EDUCATION (1-6 CR.)**

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

CHINESE**CHI 101-102 BEGINNING****SPOKEN CHINESE I-II (5 CR.) (5 CR.)**

Introduces beginning student to spoken Chinese (Mandarin) with major emphasis on learning to comprehend and speak the Chinese language within a limited context of vocabulary and structure. Lecture 5 hours per week.

CHI 111-112 BEGINNING CHINESE**READING AND WRITING I-II (3 CR.) (3 CR.)**

Introduces the reading and writing of modern standard Chinese. Emphasizes vocabulary build-up and practice in reading and writing. May be taken in conjunction with Beginning Spoken Chinese. Lecture 3 hours per week.

CHI 201-202**CONVERSATIONAL CHINESE****(MANDARIN) I-II (4 CR.) (4 CR.)**

Prerequisite CHI 102. Offers intensive practice in comprehending and speaking Chinese, with emphasis on developing structure and fluency. Lecture 4 hours per week.

CIVIL ENGINEERING TECHNOLOGY**CIV 115 CIVIL****ENGINEERING DRAFTING (3 CR.)**

Introduces terminology and drafting procedures related to civil engineering. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 116**TOPOGRAPHIC DRAFTING (3 CR.)**

Focuses on the development of techniques for topographic data computation, topographic

map preparation and interpretation. Includes preparation of maps from survey field data, terrestrial and aerial photography, and techniques for the use of color in topographic presentations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 145 APPLIED SOIL EROSION**AND SEDIMENT CONTROL (2 CR.)**

Focuses on the implementation of erosion and sediment control plans and inspection of construction sites based on local programs in accordance with Virginia law and the Virginia Erosion and Sediment Control Handbook. Lecture 2 hours per week.

CIV 171 SURVEYING I**(3 CR.)**

Introduces surveying equipment, procedures and computations including adjustment of instruments, distance measurement, leveling, angle measurement, traversing, traverse adjustments, area computations and introduction to topography. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 172 SURVEYING II**(3 CR.)**

Introduces surveys for transportation systems including the preparation and analysis of topographic maps, horizontal and vertical curves, earthwork and other topics related to transportation construction. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 201**SUBURBAN DEVELOPMENT I (3 CR.)**

Presents the preparation of preliminary plans, subdivision computations and preparation of record plats for residential areas. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIV 202**SUBURBAN DEVELOPMENT II (3 CR.)**

Focuses on calculating flow quantities, design of sanitary sewer laterals, street grades and storm sewers pertinent to Virginia "3-B" land surveyor registration laws. Teaches preparation of plans and profiles, preparation of residential development plans and commercial site plans, and flood plain studies. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIV 210 STRUCTURAL SYSTEMS (5 CR.)

Prerequisite EGR 130 or equivalent. Introduces the application of the principles of mechanics and strength of materials to the analysis and design of civil engineering structures, specifically in the areas of building and highway construction, timber, steel and concrete structures. Lecture 5 hours per week.

CIV 217**STRUCTURAL DRAFTING (2 CR.)**

Presents the fundamentals of structural drafting including the design and fabrication of frame connections, column detailing, welding connections, shop details, and general drafting room procedure. Laboratory includes drawings of timber, steel, and reinforced concrete structures. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

CIV 225 SOIL MECHANICS**(2 CR.)**

Focuses on soil in its relationship to engineering construction. Includes soil composition and structure, weight-volume relationships, sampling procedures, classification systems, water in soil, stresses, strains, bearing capacity, settlement and expansion, compaction, stabilization,

and introduction to foundations and retaining walls. Lecture 2 hours per week.

CIV 226 SOIL MECHANICS**LABORATORY (1 CR.)**

Introduces practical soil sampling; classification of unified, ASTM and ASSHTO specifications; laboratory testing of soils to predict engineering performance. Laboratory 2 hours per week.

CIV 227 CONCRETE**AND SOIL TECHNOLOGY (3 CR.)**

Teaches properties of portland cement concrete, methods of mix design, use and placement of concrete, soil and its relationship to engineering construction. Includes properties of soil with introduction to retaining walls, piles, underground conduits, and earth dams. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 228**CONCRETE TECHNOLOGY (2 CR.)**

Introduces properties of portland cement concrete, methods of mix design and adjustment, transportation, placement and curing in accordance with ACI and PCA recommended procedures. Lecture 2 hours per week.

CIV 229**CONCRETE LABORATORY (1 CR.)**

Focuses on mixing, curing, testing and quality control of concrete. Laboratory 2 hours per week.

CIV 241 APPLIED HYDRAULICS AND DRAINAGE I**(3 CR.)**

Presents the basic fundamentals of hydrology and hydraulics to the practical problems of drainage design. The use of design aids with supportive theory is stressed to insure an understanding of the background, the theory of development, basic assumptions and limitations of the various methods of estimating storm water run off and hydraulic structure design. Lecture 3 hours per week.

CIV 261**ADVANCED SURVEYING I (3 CR.)**

Prerequisite CIV 172 or equivalent. Introduces layout of curves under complex field conditions. Explores route surveying, vertical curves, slope boundaries, legal aspects of surveying, original surveys and resurveys, public land surveys. Discusses topics in surveying, astronomy, and celestial observations. Provides drills in the use of theodolite and electronic equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 262**ADVANCED SURVEYING II (3 CR.)**

Presents topics in surveying astronomy and celestial observations, precise leveling and triangulation, introduction to photogrammetry and electronic surveying, and use of related surveying equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

CIV 270 COMPUTER APPLICATIONS FOR SURVEYORS AND TECHNICIANS (3 CR.)

Prerequisite CIV 172 or equivalent. Introduces the computer applications for conventional coordinate-geometry (COGO) calculations. Studies and evaluates numerous COGO software and their associated drafting packages. Topics include calculations and draft-

ing of traverse adjustment, subdivision, curves, and others. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIV 297**COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

COMPUTER INFORMATION SYSTEMS**CIS 100 INTRODUCTION TO INFORMATION SYSTEMS (3 CR.)**

Introduces students to general concepts of processing data on computer information systems. Presents terminology and effects of computers on daily life. Discusses available hardware and software as well as their applications. Exposes students to the system development process. May include "hands on" experience. Lecture 3 hours per week.

CIS 106 INTRODUCTION TO INTERACTIVE COMPUTING (1 CR.)

Introduces time sharing for the Virginia Community College System computer network. Includes procedures for signing on and off, creating, compiling, debugging and executing programs, entering and updating files, and directing output to a printer. Provides knowledge of editor and batch concepts. Lecture 1 hour per week.

CIS 116 COMPUTERS AND INFORMATION SYSTEMS (1 CR.)

Introduces terminology, concepts and methods of using computers in information systems. Is a computer literacy course, not intended for Computer Information System majors. Lecture 1 hour per week.

CIS 121 COMPUTER PROGRAMMING: BASIC I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing BASIC programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 125 COMPUTER PROGRAM DESIGN (3 CR.)

Corequisite MTH 120 or divisional approval. Teaches design of programming solutions to common processing problems in information systems. Surveys methods and styles of structured modular design, using recognized design tools. May include "hands-on" experience. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 131 COMPUTER PROGRAMMING: COBOL I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing COBOL programs from stated problems or specifications and applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 141 COMPUTER PROGRAMMING: PASCAL I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing Pascal programs from stated problems or specifications and applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 145 COMPUTER APPLICATIONS (1 CR.)

Introduces design, coding, testing, and debugging of application programs. Includes "hands on" use of computers and a high-level computer language. Lecture 1 hour per week.

CIS 150 INTRODUCTION TO MICROCOMPUTER SOFTWARE (3 CR.)

Provides a working introduction to microcomputer software, fundamentals, and applications. Includes operating systems, word processing spreadsheet and database software. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 151 COMPUTER PROGRAMMING: FORTRAN I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing FORTRAN programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 155 MICROCOMPUTER WORD PROCESSING SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides hands-on introduction to microcomputer word processing software. Teaches creation, modification, reformatting, and printing of text. Offers a working knowledge of a commercial word processing package. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 157 MICROCOMPUTER SPREADSHEET SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides hands-on introduction to microcomputer spreadsheet software. Includes creating a spreadsheet for data analysis, integrating information from database, displaying results in graphic format, techniques for "what if" analyses, and introduction to macros. Offers a working knowledge of a commercial spreadsheet package. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 158 MICROCOMPUTER DATABASE MANAGEMENT SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides hands-on introduction to microcomputer software for database management. Teaches planning, defining, and using a database; performing queries; producing reports; working with multiple files; and concepts of database programming. Offers a working knowledge of a commercial database package. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 159 BUSINESS GRAPHICS SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides a working knowledge of several microcomputer business graphics packages. Includes techniques for evaluation and selection of graphics software. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 161 COMPUTER PROGRAMMING: ASSEMBLER I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing ASSEMBLER programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 166 MICROCOMPUTER INTEGRATED SOFTWARE (3 CR.)

Prerequisite CIS 150 or divisional approval. Provides hands-on introduction to integrated software packages for microcomputers. Teaches integration of spreadsheet database management with word processing and telecommunication software. Includes import/export facilities. Offers working knowledge of an integrated software package. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 173 COMPUTER PROGRAMMING: PL/1 (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing PL/1 programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 175 COMPUTER PROGRAMMING: ADA I (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing ADA programs from stated problems or specifications, applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 176 COMPUTER PROGRAMMING: "C" I (4 CR.)

Prerequisite CIS 125 and knowledge of a high-level computer language or divisional approval. Teaches writing "C" programs from stated problems or specifications and applying structured programming methods to produce satisfactory results. Provides specific skills for modifying and maintaining existing programs. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 197 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)**CIS 205 JOB CONTROL LANGUAGE (3 CR.)**

Prerequisite CIS 125 or divisional approval. Focuses on task flow, job flow and operating systems communication through use of Job Control Language. Teaches the JCL statements, catalog procedures, symbolics and load module/file interfaces. Lecture 3 hours per week.

CIS 225 COMPUTER INFORMATION SYSTEM DEVELOPMENT (3 CR.)

Prerequisite CIS 100 or divisional approval. Presents a structured approach to defining needs, creating specifications, and implementing new information systems. Emphasizes business-oriented, computer-based systems. Defines common processes and procedures. Includes data modelling, report generation, life cycle methodology, and traditional and structured tools for development. Lecture 3 hours per week.

CIS 227 COMPUTER SYSTEMS SELECTION AND ACQUISITION (3 CR.)

Prerequisite CIS 225 or divisional approval. Provides a study of selection and acquisition of a computer system's hardware and software components. Compares features and capabilities of available hardware and software. Studies selection criteria and methods of acquisition and procurement. Lecture 3 hours per week.

CIS 228 MICROCOMPUTERS: OPERATING SYSTEMS, ARCHITECTURE, AND HARDWARE (3 CR.)

Prerequisite or corequisite a high-level programming language or divisional approval. Focuses on microcomputer architecture, operating systems, internal functions, and peripheral equipment interfaces. Teaches memory segmentation, instruction and data formats, and interaction with user software. Lecture 3 hours per week.

CIS 229 MAINFRAMES: OPERATING SYSTEMS ARCHITECTURE AND HARDWARE (3 CR.)

Prerequisite or corequisite a high-level programming language or divisional approval. Focuses on mainframe computer operating systems and their interaction with user programs. May include interrupt handling, virtual storage, dynamic address translation, dump reading, task management, performance considerations, and basic operating system control blocks. Lecture 3 hours per week.

CIS 230 INTRODUCTION TO TELECOMMUNICATIONS (3 CR.)

Prerequisite CIS 100 or divisional approval. Surveys data transmission systems, communication lines, data sets, network, modes of transmission. Emphasizes multiplexing in a network structure. Focuses on both intelligent and non-intelligent terminals. Lecture 3 hours per week.

CIS 231 COMPUTER PROGRAMMING: COBOL II (4 CR.)

Prerequisite CIS 131 or divisional approval. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 235 TELECOMMUNICATION SOFTWARE (3 CR.)

Prerequisite CIS 230 or divisional approval. Surveys components, functions and relationships of telecommunication software. Introduces network control programs, network architecture, line protocols and communication access methods. Lecture 3 hours per week.

CIS 241 COMPUTER PROGRAMMING: PASCAL II (4 CR.)

Prerequisite CIS 141. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 245 DATABASE MANAGEMENT (3 CR.)

Prerequisite a course in a high-level language. Focuses on the basic models and capabilities of standard database management systems (DBMS) packages. Teaches database principles, file-level models, data-level models, operation implementation, maintenance, and security of database systems. Covers methods of DBMS selection and evaluation. Lecture 3 hours per week.

CIS 259 MICROCOMPUTER GRAPHICS (4 CR.)

Prerequisite a high-level programming language or divisional approval. Teaches the programming of computer graphics using a high level language. Includes low resolution graphics with demonstrations on simple figures, "ball-bouncing" programs and bar charts, refinements over low resolution programs, use of animation, setting up binary-shaped tables and x-y graphics. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 265 COMPUTER PROGRAMMING: MICRO ASSEMBLER (4 CR.)

Prerequisite CIS 125 or divisional approval. Teaches writing and debugging of programs in a manufacturer's assembly language for micro-computer. Focuses on the principles of debugging and core-dump reading. Uses a micro-assembly language in a total programming system. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 275 COMPUTER PROGRAMMING: ADA II (4 CR.)

Prerequisite CIS 175 or divisional approval. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 276 COMPUTER PROGRAMMING: "C" II (4 CR.)

Prerequisite CIS 176 or divisional approval. Emphasizes advanced structured programming techniques and procedures for more complex problems. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

CIS 285 DATA PROCESSING MANAGEMENT (3 CR.)

Focuses on management of data processing functions. Offers various techniques involved in planning, estimating and analyzing requirements and selecting systems. Includes costing of benefits, contractual considerations and lease/purchase studies. Lecture 3 hours per week.

CIS 287 SYSTEM DEVELOPMENT PROJECT (3 CR.)

Prerequisite CIS 225 or divisional approval. Applies life cycle system development methodologies in a case study. Incorporates feasibility study, system analysis, system design, program specification, and implementation planning. Involves assigning project to students as members of system development teams. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

CIS 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

COMPUTER SCIENCE**CSC 100 INTRODUCTION TO COMPUTER USAGE (1 CR.)**

Corequisites CSC 201 and MTH 173 or equivalent or divisional approval. Teaches fundamental skills of computer operation. Examines hardware (processor, keyboard, disk drives, and printers) and operating systems and editors. Lecture 1 hour per week.

CSC 110 INTRODUCTION TO COMPUTING (3 CR.)

Introduces problem solving through computer applications and via a programming language. Examines development of computers, social and ethical implications of computers, and properties of programming languages. Covers input, storage, data manipulation, software and hardware. Lecture 3 hours per week.

CSC 130 SCIENTIFIC PROGRAMMING (3 CR.)

Prerequisite CSC 110 or permission of the instructor. Introduces a science-oriented, high level programming language. Studies the language and its application. Lecture 3 hours per week.

CSC 201 COMPUTER SCIENCE I (4 CR.)

Corequisite CSC 100 or equivalent and MTH 173 or equivalent or divisional approval. Introduces algorithm and problem solving methods. Emphasizes structured programming concepts, elementary data structures and the study and use of a high level programming language. Lecture 4 hours per week.

CSC 202 COMPUTER SCIENCE II (4 CR.)

Prerequisite CSC 201. Corequisite MTH 174. Examines data structures and algorithm analysis. Covers data structures (including sets, strings, stacks, queues, arrays, records, files, linked lists, and trees), abstract data types, algorithm analysis (including searching and sorting methods), and file structures. Lecture 4 hours per week.

CSC 205 COMPUTER ORGANIZATION (3 CR.)

Prerequisite CSC 202. Examines the hierarchical structure of computer architecture. Focuses on multi-level machine organization used with a simple assembler language. Includes processors, instruction execution, addressing techniques, data representation and digital logic. Lecture 3 hours per week.

CSC 206 ASSEMBLY LANGUAGE (3 CR.)

Prerequisite CSC 205 or permission of instructor. Examines assembly language programming. Includes the use of macros, linkers, loaders, assemblers and interfacing of assembly language with hardware components. Lecture 3 hours per week.

CSC 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

DENTAL HYGIENE

DNH 112 ORAL ANATOMY AND TOOTH MORPHOLOGY (3 CR.)

Studies the anatomy, morphology and functions of the oral structures, including primary and permanent dentition. Laboratory procedures include identification, eruption sequence, tooth drawings or carvings, principles of occlusion and intra-arch relationships. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DNH 113 GENERAL AND ORAL HISTOLOGY (2 CR.)

Studies minute structure of the tissues of the body with particular reference to the teeth and the supporting tissues. Explains morphology of different tissues, early embryonic development, histologic features of the structures of the oral cavity. Lecture 2 hours per week.

DNH 114 HEAD AND NECK ANATOMY (2 CR.)

Studies the anatomy and physiology of the structures of the head and neck. Lecture 2 hours per week.

DNH 130 ORAL RADIOGRAPHY FOR THE DENTAL HYGIENIST (3 CR.)

Studies radiation physics, biology, safety, and exposure techniques for intra- and extra-oral radiographic surveys. Laboratory provides practice in exposure, processing methods, mounting, and interpretation of normal findings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNH 141 DENTAL HYGIENE I (5 CR.)

Introduces clinical knowledge and skills for the performance of dental hygiene services; basic skill components, lab manikins, and patient practice. Lecture 3 hours. Clinic 6 hours. Total 9 hours per week.

DNH 142 DENTAL HYGIENE II (5 CR.)

Prerequisite DNH 141. Exposes students to instrument sharpening, time management, and patient education techniques and methods. Provides supervised clinical practice in the dental hygiene clinic with emphasis on developing patient treatment and instrument skills. Introduces the student to dental assisting skills. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

DNH 143 DENTAL HYGIENE III (4 CR.)

Introduces dental health care for patients with special needs. Includes introduction to computer concepts and applications. Provides supervised clinical practice in the dental hygiene clinic with emphasis on refining patient treatment and instrumentation skills, including oral radiographs. Lecture 2 hours. Clinic 6 hours. Total 8 hours per week.

DNH 145 GENERAL AND ORAL PATHOLOGY (2 CR.)

Introduces general pathology with consideration of the common diseases affecting the human body. Particular emphasis is given to the study of pathological conditions of the mouth, teeth and their supporting structures. Lecture 2 hours per week.

DNH 146 PERIODONTICS FOR THE DENTAL HYGIENIST (2 CR.)

Introduces the theoretical and practical study of various concepts and methods used in describing, preventing, and controlling periodontal disease. Presents etiology, microbiology, diagnosis, treatment and prognosis of diseases. Lecture 2 hours per week.

DNH 147 ORAL MICROBIOLOGY (1 CR.)

Presents the microbiology of various dental diseases. Lecture 1 hour per week.

DNH 150 NUTRITION (2 CR.)

Studies nutrition as it relates to dentistry and general health. Emphasizes the principles of nutrition as applied to the clinical practice of dental hygiene. Lecture 2 hours per week.

DNH 215 DENTAL MATERIALS (3 CR.)

Studies the physical and chemical properties of the materials used in dentistry. Laboratory experiences emphasize proper manipulation of materials. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNH 216 PHARMACOLOGY (2 CR.)

Studies the chemical and therapeutic agents used in dentistry, including their preparation, effectiveness, and specific application. Lecture 2 hours per week.

DNH 220 COMMUNITY DENTAL HEALTH (2 CR.)

Introduces the student to community health problems, public health, and related institutions. Lecture 2 hours per week.

DNH 225 COMMUNITY DENTAL HEALTH EDUCATION (2 CR.)

Exposes students to the principles, practices, methods, and audiovisual materials used for group dental health instruction. Laboratory experience provides an opportunity for students to assume responsibility for designing, implementing and assessing community dental health programs. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

DNH 230 OFFICE PRACTICE AND ETHICS (1 CR.)

Studies the principles of dental ethics and economics as they relate to the dental hygienist. The course also includes a study of jurisprudence and office procedures. Lecture 1 hour per week.

DNH 244 DENTAL HYGIENE IV (5 CR.)

Prerequisite DNH 143. Introduces advanced skills and the dental hygienist's role in dental specialties. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasizes treatment of patients demonstrating periodontal involvement, stressing application and correlation of knowledge and skills from previous semesters. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

DNH 245 DENTAL HYGIENE V (5 CR.)

Prerequisite DNH 244. Exposes student to current advances in dentistry. Includes supervised clinical practice in the dental hygiene clinic and/or off-campus clinical rotations at various community facilities. Emphasis is placed on synthesis of knowledge from previous semesters, treatment of patients with moderate to advanced periodontal involvement and improving

clinical speed while maintaining quality in preparation for practice. Lecture 1 hour. Clinic 12 hours. Total 13 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

DENTAL LABORATORY

DNL 100 PROFESSIONAL ETHICS AND DENTAL HISTORY (3 CR.)

Introduces students to dental profession and supporting personnel; history and development of dentistry; the role of the dental auxiliaries in clinical settings and to members of dental laboratory craft and others of the dental health team; dental ethics and jurisprudence; professional and educational opportunities. Lecture 3 hours per week.

DNL 110 DENTAL LABORATORY MATERIALS (3 CR.)

Studies the chemical composition, physical properties, and uses of metallic and non-metallic dental materials, dentures and tooth resins, porcelain, waxes and duplicating materials. The laboratory exercises are designed to illustrate the properties and uses of the materials studied, including their inherent limitations. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNL 120 DENTAL ANATOMY AND PHYSIOLOGY (3 CR.)

Introduces students to human anatomy and physiology. Emphasizes regions of the head and neck and the primary and permanent teeth. Laboratory exercises include accurate scale drawings of the permanent teeth and tooth carvings of the permanent teeth. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNL 130 INTRODUCTION TO COMPLETE DENTURES (6 CR.)

Introduces the student to the basic principles, knowledge, and skills involved in the proper construction of complete dentures. Includes introduction to articulation and occlusal harmony followed by repair, relining, and reconstruction techniques. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

DNL 135 INTRODUCTION TO REMOVABLE PARTIAL DENTURES (6 CR.)

Introduces students to the principles of surveying and designing of removable partial denture frameworks followed by the fabrication and repair of removable partial dentures. Students will observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

DNL 136 PRINCIPLES OF OCCLUSION (3 CR.)

Provides a general overview of the masticatory

tory system and the dynamics of mandibular movement. Occlusal restorations are fabricated in wax on a semi-adjustable articulator according to functional criteria. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNL 137 ORTHODONTIC AND PEDODONTIC APPLIANCES (3 CR.)

Develops the student's ability to fabricate and repair pedodontic and orthodontic appliances. This laboratory-didactic course utilizes programmed instruction augmented by individualized assistance and demonstration. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DNL 138 INTRODUCTION TO FIXED PROSTHODONTICS (6 CR.)

Introduces students to fixed prosthodontic restorations. The student practices the techniques of die preparation and the fabrication of inlays, crowns, and fixed partial dentures utilizing gold alloy, shaded acrylic and composite materials. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

DNL 205 INFECTION CONTROL AND CROSS CONTAMINATION (3 CR.)

Studies infection control as applied to dental personnel and dental appliances. Discusses the wide variety of microorganisms in blood and saliva. Demonstrates techniques for preventing cross contamination by Hepatitis B, Acquired Immune Deficiency Syndrome, and other highly contagious diseases in a clinical and laboratory environment. Lecture 3 hours per week.

DNL 210 INTRODUCTION TO MAXILLOFACIAL PROSTHETICS (3 CR.)

Introduces maxillofacial design and production. Emphasizes maxillofacial procedures and techniques commonly utilized in health care institutions. Lecture 3 hours per week.

DNL 215 SPECIALIZATION IN DENTAL LABORATORY TECHNOLOGY (9 CR.)

Provides advanced instruction in laboratory specialty techniques, including fabrication of fixed prosthodontic appliances, removable prosthodontic appliances (partial and complete dentures), orthodontic/pedodontic appliances and dental ceramics. Written authorization form, clinical responsibility, and experience are emphasized. Lecture 5 hours. Laboratory 12 hours. Total 17 hours per week.

DNL 220 INTRODUCTION TO DENTAL CERAMICS (6 CR.)

Introduces students to ceramic and porcelain-fused-to-metal dental restorations. Includes techniques of design and fabrication of metal substructures followed by ceramic firing techniques. Discusses various ceramic alloy techniques. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 9 hours. Total 12 hours per week.

DNL 231 ADVANCED DENTAL LABORATORY TECHNIQUES I (3 CR.)

Introduces the theory of advanced dental laboratory techniques and new technological developments that are currently used in dentistry. Lecture 3 hours per week.

DNL 232 ADVANCED DENTAL LABORATORY TECHNIQUES II (4 CR.)

Studies theory and laboratory application of advanced techniques and current technological developments in dentistry. Students fabricate prostheses such as precision attachments, light-cured composite restorations and other advanced appliances. Students observe fabrication procedure demonstrations and receive one-on-one instruction during part of the laboratory sessions. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

DNL 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

DIETETICS

DIT 100 INTRODUCTION TO DIETETICS (1 CR.)

Orients the student to the field of dietetics, role responsibilities and relationships within the professions, and interrelationships with other health professionals. Explains standards and ethics of professional conduct. Lecture 1 hour per week.

DIT 105 DIETETICS AND THE HEALTH FIELD (3 CR.)

Studies the role of dietetics in the health care field, the history of the profession, and the techniques of effective interaction with patients and other healthcare team members. Explains ethics and standards of professional conduct. Addresses the use of computers in dietetics and educational and career opportunities. Lecture 3 hours per week.

DIT 121 NUTRITION I (3 CR.)

Studies food composition, dietary guidelines, and nutrients essential to healthy human life. Analyzes nutrient function and metabolism. Lecture 3 hours per week.

DIT 122 NUTRITION II (3 CR.)

Includes current topics such as fad diets, preventive nutrition, weight control, and exercise. Lecture 3 hours per week.

DIT 125 CURRENT CONCEPTS IN DIET AND NUTRITION (3 CR.)

Studies the importance of diet to health and well-being in daily life. Addresses current controversies over food practices and information, food facts and fiction, fad diets, vegetarianism, diet and heart disease, and sound guidelines for maintaining good health with wise food choices. Applies computer technology for nutritional analysis. Intended especially for the non-Dietetics major. Lecture 3 hours per week.

DIT 130 FOOD MANAGEMENT SYSTEMS (3 CR.)

Studies the principles of food service delivery systems in institutional and other health care facilities. Includes fundamentals of menu plan-

ing, recipe standardization, food preparation, equipment, sanitation and safety, role of computers in food service, and concepts of food service management. Lecture 3 hours per week.

DIT 221 THERAPEUTIC NUTRITION I (4 CR.)

Applies nutrition principles to the treatment of persons with special dietary needs. Lecture 4 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

DRAFTING

DRF 127 GEOMETRIC TOLERANCING (1 CR.)

Teaches use of a positional tolerance system, its relationship to coordinate tolerance systems, and other aspects of U.S. standard drafting practices. Lecture 1 hour per week.

DRF 151-152 ENGINEERING DRAWING FUNDAMENTALS I-II (3 CR.) (3 CR.)

Introduces technical drafting from the fundamentals through advanced drafting practices. Includes lettering, geometric construction, technical sketching, orthographic projection, sections, intersections, development, fasteners. Teaches theory and application of dimensioning and tolerances, pictorial drawing, and preparation of drawings. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

DRF 153 TECHNICAL ILLUSTRATION I (3 CR.)

Prerequisite DRF 152 or equivalent. Teaches the development of axonometric pictorial projections, perspectives, exploded illustrations, industrial shading, inking techniques, and instrument lettering. Includes use of CAD and other advanced presentations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DRF 165 ARCHITECTURAL BLUEPRINT READING (3 CR.)

Emphasizes reading, understanding and interpreting standard types of architectural drawings including plans, elevation, sections and details. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DRF 231 COMPUTER AIDED DRAFTING I (3 CR.)

Prerequisite DRF 151 or divisional approval. Teaches computer aided drafting concepts and equipment. Designed to develop a general understanding of components and the operation of a typical CAD system. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DRF 232 COMPUTER AIDED DRAFTING II (3 CR.)

Prerequisite DRF 231. Teaches advanced operation in computer aided drafting. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DRF 233**COMPUTER AIDED DRAFTING III (3 CR.)**

Prerequisite DRF 232. Introduces programming skills and exposes student to geometric modeling. Focuses on proficiency in production drawing using a CAD system. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

DRF 237 CADD SYSTEMS MANAGEMENT (3 CR.)

Prerequisite DRF 233. Studies the principles and practices of CADD database use, design and programming for a CADD environment. Topics include: attributes manipulation and revision; CADD database extraction and management; basic techniques of data conversion and communication protocol between CADD systems. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

DRF 245 ELECTRONIC DRAFTING (2 CR.)

Presents fundamental principles, practices and methods of electro-mechanical information through the graphic language principle of projection fastening, materials and finishes, electronic symbology, schematic diagrams, printed circuit drawings and checking of electronic drawings. Explains CAD applications. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

DRF 297**COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ECONOMICS**ECO 120****SURVEY OF ECONOMICS (3 CR.)**

Presents a broad overview of economic theory, history, development, and application. Introduces terms, definitions, policies, and philosophies of market economies. Provides some comparison with other economic systems. Includes some degree of exposure to microeconomic and macroeconomic concepts. Lecture 3 hours per week.

ECO 201-202 PRINCIPLES**OF ECONOMICS I-II (3 CR.) (3 CR.)**

Introduces macroeconomic and microeconomic principles and considers their bearing on present conditions. Describes structural and functional aspects of the economy. Analyzes the organization of business, labor, and governmental institutions and their economic stability and growth. Presents measures of economic activity. Discusses private enterprise, economic growth and stabilization policies, monetary and fiscal policy. Considers international economic relationships and alternative economic systems. Lecture 3 hours per week.

ECO 230 SURVEY**OF MONEY AND BANKING (3 CR.)**

Reviews history of American banking institutions, principles, and practices. Emphasizes the relationship of finances to business structure, operation, and organization. Examines present-day financial structures, agents, problems and institutions. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as de-

scribed in the "Description of Courses" section.

EDUCATION**EDU 100 INTRODUCTION TO EDUCATION (1 CR.)**

Provides an overview of teaching as a career with orientation to theories, practices, responsibilities, guidelines, current trends and issues in education. Lecture 1 hour per week.

EDU 155 PARENT EDUCATION (3 CR.)

Focuses on an introduction to effective parent/child communication and interaction, with special emphasis on listening skills, responsibility, encouragement, growth, problem solving process, and discipline. Lecture 3 hours per week.

EDU 156**SINGLE PARENT FAMILIES (3 CR.)**

Discusses issues surrounding single-parent families and the causal factor including: separation, divorce, death, and teenage pregnancies. Explores the effects on both the parent and the child. Familiarizes students with services available in the community which support the single-parent family. Lecture 3 hours per week.

EDU 160 TECHNIQUES OF OBSERVATION**IN EARLY EDUCATION (3 CR.)**

Introduces formal and informal methods of gathering data on children. Emphasis on understanding developmental patterns and implications for diagnostic teaching. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EDU 235 HEALTH, SAFETY, AND NUTRITION EDUCATION (3 CR.)

Focuses on the physical needs of children and explores strategies to meet these needs. Emphasizes positive health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety. Places emphasis on the development of food habits and concerns in food and nutrition. Describes symptoms and reporting procedures for child abuse. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ELECTRONICS TECHNOLOGY**ETR 113-114 D.C. AND A.C.****FUNDAMENTALS I-II (4 CR.) (4 CR.)**

For ETR 113, prerequisite or corequisite is MTH 115. For ETR 114, prerequisite is ETR 113 and the prerequisite or corequisite is MTH 116. Studies D.C. and A.C. circuits, basic electrical components, instruments, network theorems, and techniques used to predict, analyze and measure electrical quantities. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 115 D.C. AND A.C.**FUNDAMENTALS (4 CR.)**

Studies current flow in direct and alternating current circuits with emphasis upon practical problems. Reviews the mathematics used in circuit calculations. Introduces concepts of resistance, capacitance, inductance and magnetism. ETR 115 does not apply towards the degree or certificate in Electronics. Lecture 4 hours per week.

ETR 144**DEVICES AND APPLICATIONS II (4 CR.)**

Teaches theory of active devices and circuits such as diodes, power supplies, transistors (BJT'S), amplifiers and their parameters, fets, and op amps. May include UJT'S, oscillators, RF amplifiers, thermionic devices, and others. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 158 ELECTRONIC**CIRCUITS FOR COMPUTERS (4 CR.)**

Studies the basic electrical and electronic principles used in repair and troubleshooting of computer systems. Includes Ohm's and Kirchoff's laws, capacitor and diode circuit analysis, power supply circuits, and transistor fundamentals. Use of the laboratory equipment (oscilloscope and DMM) is stressed. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 159**COMPUTER PERIPHERALS (4 CR.)**

Prerequisites ETR 158 and ETR 229. Provides the student with basic knowledge of the typical peripheral devices found in a microcomputer system. The devices covered are printer, disk drive, CRT monitor, and keyboard. Emphasis is placed on troubleshooting techniques. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 167 LOGIC CIRCUITS**AND SYSTEMS I (4 CR.)**

Studies digital switching and logic circuits, number systems, Boolean algebra, logic gates and families. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 221**ELECTRONIC CONTROLS I (4 CR.)**

Prerequisites or corequisites ETR 250 or ETR 261. Discusses characteristics and performance of linear control systems with one or more feedback loops. Includes functions and properties of various components encountered in control systems including servo-amplifiers and error detectors, machine synchronization for automatic operations. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 228 COMPUTER**TROUBLESHOOTING AND REPAIR (4 CR.)**

Prerequisites ETR 158 and ETR 229. Provides the student with a basic knowledge of each of the functional units of the microcomputer system. Emphasis is placed on troubleshooting and repair techniques. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 229 DIGITAL LOGIC**AND MICROPROCESSOR FUNDAMENTALS (4 CR.)**

Prerequisite or corequisite ETR 158. Teaches digital logic fundamentals and microcomputer operation. Emphasis is placed on troubleshooting techniques. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 232 PRINCIPLES OF**LASERS AND FIBER OPTICS (4 CR.)**

Studies the theory and application of lasers and fiber optics. Includes optics, fiber optic cables and connectors, photo detectors, optical pulse generation, sensors, multiplexers, and la-

ser safety. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 241-242 ELECTRONIC COMMUNICATIONS I-II (4 CR.) (4 CR.)

Prerequisite or corequisite for ETR 241 is ETR 250. Prerequisite for ETR 242 is ETR 241. Studies noise, information and bandwidth, modulation and demodulation, transmitters and receivers, wave propagation, antennas and transmission lines. May include broad band communication systems, microwave, both terrestrial and satellite, fiber optics, multiplexing and associated hardware. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 247 DISPLAY SYSTEMS (3 CR.)

Prerequisite or corequisite ETR 242. Teaches principles, circuits, and devices for producing, transmitting, receiving, storing, reproducing, processing and displaying video and other visual information. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

ETR 250 INTERMEDIATE ELECTRONICS (4 CR.)

Prerequisites ETR 144 and MTH 116. Teaches theory and application of amplifiers and oscillators. Includes amplifier circuit configurations, amplifier classes, operational amplifiers, power amplifiers, bandwidth distortion, and principles of feedback. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 261-262 MICROPROCESSOR APPLICATION I-II (4 CR.) (4 CR.)

Prerequisite ETR 167. Teaches the fundamentals of microprocessors, including architecture, internal operations, memory, I/O devices machine level programming and interfacing. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 269 ASSEMBLY LANGUAGE (2 CR.)

Prerequisite MEC 126. Corequisite or prerequisite ETR 167. Introduces assembly language programming including the basic concepts, machine language, CPU architecture, and an overview of instruction sets, memory maps and practical programming. Lecture 2 hours per week.

ETR 277 COMPUTER INTERFACING (3 CR.)

Studies computer peripherals and serial and parallel interfaces. May require preparation of a report as out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ETR 284 DIGITAL COMMUNICATION (4 CR.)

Prerequisite ETR 167. A study of information theory, pulse communication A/D and D/A conversion, coding and error detection and interconnection requirements of digital techniques to voice, video and data communication. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 285 FUNDAMENTALS OF MICROCOMPUTER REPAIR (4 CR.)

Provides the student with an exposure to the various techniques and procedures used to troubleshoot a microcomputer. May include an overview of a particular microprocessor system, use of isolation flow charts, test point charts, prints, diagnostic routines, component testing and fault isolation labs. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

ETR 286 PRINCIPLES AND APPLICATIONS OF ROBOTICS (3 CR.)

Provides an overview of terminology, principles, practices, and applications of robotics. Studies development, programming; hydraulic, pneumatic, electronic controls; sensors, and system troubleshooting. May require preparation of a report as an out-of-class activity. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

ETR 297 COOPERATIVE EDUCATION (1-6 CR.) (see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

EMERGENCY MEDICAL TECHNOLOGY

EMT 106 BASIC EMERGENCY MEDICAL TECHNICIAN/AMBULANCE (6 CR.)

Prepares student for certification as a Virginia and National Registry EMT/A. Includes all aspects of pre-hospital basic life support as defined by the Department of Transportation's National Curriculum for Basic Emergency Medical Technicians/Ambulance. Lecture 4 hours. Laboratory 4 hours. Total 8 hours per week.

EMT 155 BASIC EMT/A REFRESHER (3 CR.)

Prerequisite current EMT/A certification. Reviews material covered in the basic emergency medical technician/ambulance course. Emphasizes critique of basic skills and recent developments in the area of pre-hospital basic life support. Required for Virginia recertification as an EMT/A. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EMT 215 PRINCIPLES OF EXTRICATION (4 CR.)

Prerequisite EMT/A certification. Focuses on the practical evolutions utilized for vehicle extrication, basic and light duty rescue. Includes techniques of vehicle, water, vertical, and trench rescue, as well as electrical emergencies, bus, aircraft, and subway crashes, radiation hazards, and elevator accidents. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

EMT 216 PRE-HOSPITAL PHYSIOLOGICAL ASSESSMENT (2 CR.)

Prerequisite EMT 106 or equivalent. May be taken concurrently with EMT 231 or EMT 232. Focuses on the application of normal anatomy and physiological phenomena to ill and injured individuals. Emphasizes the analysis and interpretation of physiological data to assist in patient assessment and management. Lecture 2 hours per week.

EMT 225 CLINICAL EXPERIENCES FOR THE CARDIAC CARE TECHNICIAN (3 CR.)

Runs concurrent with EMT 231. Deals with in-hospital clinical rotations in emergency department, intensive and coronary care units, operating and recovery rooms, level one trauma center, and intravenous team. Required for cer-

tification as Virginia EMT-cardiac and/or paramedic. Laboratory 6 hours per week.

EMT 226 DYSRHYTHMIA RECOGNITION AND MANAGEMENT (3 CR.)

Prerequisite EMT/A certification or equivalent. Focuses on interpretation of normal electrocardiogram and recognition and management of basic dysrhythmias. Also covers basic anatomy and physiology of cardiovascular system and pathophysiology and management of a cardiovascular disfunction. Required for Virginia certification as an EMT-Cardiac and/or Paramedic. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EMT 231 PARAMEDIC PROCEDURES I (5 CR.)

Corequisite EMT 226. Prepares for functioning as advanced life support provider defined by Department of Transportation's National Paramedic Curriculum. Includes assessment, pathophysiology and treatment for shock, calculation of drug dosages and drip rates, and respiratory emergencies. Required for Virginia certification as EMT-cardiac and paramedic. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

EMT 232 PARAMEDIC PROCEDURES II (6 CR.)

Prerequisites EMT 231, EMT 225. Continues DOT's National Paramedic Curriculum from EMT 231. Includes pathophysiology, assessment, and management of neurological, musculoskeletal, psychiatric, and obstetrical/gynecological emergencies. Required for certification as Virginia and/or National Registry paramedic. Lecture 5 hours. Laboratory 2 hours. Total 7 hours per week.

EMT 235 CLINICAL EXPERIENCES FOR THE PARAMEDIC (4 CR.)

Runs concurrent with EMT 232. Deals with in-hospital clinical rotations in labor and delivery, newborn nursery, pediatric unit, burn center, psychiatric unit or mobile crisis team, and pathology. Required for certification as a Virginia and National Registry paramedic. Laboratory 8 hours per week.

EMT 251 ADVANCED CARDIAC LIFE SUPPORT PROVIDER COURSE (1 CR.)

Prerequisite EMT-cardiac certification, RN or equivalent. Prepares for certification as an Advanced Cardiac Life Support Provider. Follows course as defined by the American Heart Association. Lecture 1 hour per week.

EMT 252 ADVANCED CARDIAC LIFE SUPPORT INSTRUCTOR COURSE (1 CR.)

Prerequisite current certification as ACLS Provider. Prepares for certification as Advanced Cardiac Life Support Provider Course Instructor. Follows course as defined by the American Heart Association. Lecture 1 hour per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ENGINEERING

EGR 115 ENGINEERING GRAPHICS (2 CR.)

Applies principles of orthographic projection and multi-view drawings. Teaches descriptive

geometry including relationships of points, lines, planes and solids. Introduces sectioning, dimensioning and computer graphic techniques. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

EGR 120 INTRODUCTION TO ENGINEERING (2 CR.)

Corequisites MTH 173 and ENG 111. Introduces the engineering profession, professional concepts, ethics, and responsibility. Reviews hand calculators, number systems, and unit conversions. Introduces the personal computer, operating systems and processing; engineering problem solving; and graphic techniques. Lecture 2 hours per week.

EGR 126 COMPUTER PROGRAMMING FOR ENGINEERS (3 CR.)

Prerequisites MTH 173 and EGR 120. Introduces computers, their architecture and software. Teaches program development using flowcharts. Solves engineering problems involving programming in languages such as FORTRAN and Pascal. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EGR 130 STATICS AND STRENGTH OF MATERIALS FOR ENGINEERING TECHNOLOGY (5 CR.)

Presents principles and applications of free-body diagrams of force systems in equilibrium. Analyzes frames and trusses. Presents principles and applications to problems in friction, centroids and moments of inertia. Includes properties of materials, stress, strain, elasticity, design of connections, shear and bending in statically determinate beams, and axially loaded columns. Lecture 5 hours per week.

EGR 140 ENGINEERING MECHANICS - STATICS (3 CR.)

Corequisites MTH 277 and PHY 241. Introduces mechanics of vector forces and space, scalar mass and time, including S.I. and U.S. customary units. Teaches equilibrium, free-body diagrams, moments, couples, distributed forces, centroids, moments of inertia analysis of two-force and multi-force members. Lecture 3 hours per week.

EGR 206 ENGINEERING ECONOMY (2 CR.)

Presents economic analysis of engineering alternatives. Studies economic and cost concepts, calculation of economic equivalence, comparison of alternatives, replacement economy, economic optimization in design and operation, depreciation, and after tax analysis. Lecture 2 hours per week.

EGR 225 NUMERICAL METHODS IN ENGINEERING (3 CR.)

Prerequisites MTH 277, PHY 241, EGR 126 and EGR 140. Teaches numerical methods using main frame and/or personal computers, applied to engineering problems such as kinematics, space mechanics, vibrations and electric circuit analysis. Applies matrix algebra, Gaussian elimination, differential equation and curve fitting techniques. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

EGR 245 ENGINEERING MECHANICS-DYNAMICS (3 CR.)

Prerequisites MTH 277 and EGR 140. Presents approach to kinematics of

particles in linear and curvilinear motion. Includes kinematics of rigid bodies in plane motion. Teaches Newton's second law, work-energy and power, impulse and momentum, and problem solving using computers. Lecture 3 hours per week.

EGR 246 MECHANICS OF MATERIALS (3 CR.)

Prerequisite EGR 140. Teaches concepts of stress, strain, deformation, internal equilibrium, and basic properties of engineering materials. Analyzes axial loads, torsion, bending, shear and combined loading. Studies stress transformation and principle stresses, column analysis and energy principles. Lecture 3 hours per week.

EGR 248 THERMODYNAMICS FOR ENGINEERING (3 CR.)

Prerequisites MTH 277 and PHY 241. Studies formulation of the first and second law of thermodynamics. Presents energy conversion, concepts of energy, temperature, entropy, and enthalpy, equations of state of fluids. Covers reversibility and irreversibility in processes, closed and open systems, cyclical processes and problem solving using computers. Lecture 3 hours per week.

EGR 250 ELECTRICAL THEORY (3 CR.)

Corequisites MTH 285 and MTH 292. Designed for non-electrical engineering majors. Presents fundamentals of electric circuits; circuit laws and network theorems; response of first- and second-order circuits; feedback; two-part network. Lecture 3 hours per week.

EGR 251-252 BASIC ELECTRIC CIRCUITS I-II (3 CR.) (3 CR.)

Prerequisite MTH 291. Corequisites MTH 285 and MTH 292 and PHY 242. Teaches fundamentals of electric circuits. Includes circuit quantities of charge, current, potential, power and energy. Teaches resistive circuit analysis; Ohm's and Kirchoff's laws; nodal and mesh analysis; network theorems; RC, RL and RLC circuit transient response with constant forcing functions. Teaches AC steady-state analysis, power, three-phase circuits. Presents frequency domain analysis, resonance, Fourier series, inductively coupled circuits, Laplace transform applications, and circuit transfer functions. Introduces problem solving using computers. Lecture 3 hours per week.

EGR 255 ELECTRIC CIRCUITS LABORATORY (1 CR.)

Prerequisite EGR 250 or EGR 251. Teaches principles and operation of laboratory instruments such as VOM, electronic voltmeters, digital multimeters, oscilloscopes, counters, wave generators and power supplies. Presents application to circuit measurements, including transient and steady-state response of simple networks with laboratory applications of laws and theories of circuits plus measurement of AC quantities. Laboratory 3 hours per week.

EGR 265 DIGITAL ELECTRONICS AND LOGIC DESIGN (4 CR.)

Prerequisite EGR 250 or EGR 251 or departmental approval. Teaches number representation in digital systems; Boolean algebra; design of digital circuits, including gates, flip-flops, counters, registers, architecture, microproces-

sors, input-output devices. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

EGR 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ENGLISH

ENG 001 PREPARING FOR COLLEGE WRITING I (1-6 CR.)

Helps students discover and develop writing processes needed to bring their proficiency to the level necessary for entrance into their respective curricula. Guides students through the process of starting, composing, revising, and editing. Variable hours per week.

ENG 002 SPELLING AND VOCABULARY STUDY (1-6 CR.)

Helps students to improve spelling and develop vocabulary. Reviews common spelling patterns. Familiarizes the student with basic prefixes, suffixes, root words, and other word formations. Teaches effective use of the dictionary and thesaurus. Stresses recognizing words in reading context and using them effectively in writing. Variable lecture/laboratory hours per week.

ENG 003 PREPARING FOR COLLEGE WRITING II (1-6 CR.)

Emphasizes strategies within the writing process to help students with specific writing situations. Develops techniques to improve clarity of writing and raise proficiency to the level necessary for entrance into particular curricula. Variable hours per week.

ENG 004 READING IMPROVEMENT I (1-6 CR.)

Helps students improve their reading processes to increase their understanding of reading materials. Includes word forms and meanings, comprehension techniques, and ways to control reading pace. Variable hours per week.

ENG 005 READING IMPROVEMENT II (1-6 CR.)

Helps students read critically and increase appreciation of reading. Guides students in making inferences, drawing conclusions, detecting relationships between generalizations and supporting details. Includes interpreting graphic aids and basic library skills. Variable hours per week.

ENG 007 WRITING AND READING IMPROVEMENT I (6-12 CR.)

Provides an integrated approach to developing students' writing and reading processes. Prepares students to complete college assignments successfully by providing them with reading and writing strategies. Variable hours per week.

ENG 008 WRITING AND READING IMPROVEMENT II (6-12 CR.)

Emphasizes strategies within the writing and critical reading processes to help students with specific writing and reading assignments. Encourages an appreciation for clear writing and practical reading applications. Variable hours per week.

ENG 009 INDIVIDUALIZED INSTRUCTION IN WRITING (1-3 CR.)

Focuses on individual writing needs as determined by student and instructor. Provides support for students simultaneously enrolled in other courses or who want additional writing instruction in a tutorial setting. Variable hours per week.

ENG 100 BASIC OCCUPATIONAL COMMUNICATION (3 CR.)

Develops ability to communicate in occupational situations. Involves writing, reading, speaking, and listening. Builds practical skills such as handling customer complaints, writing various types of letters, and preparing for a job interview. (Intended for certificate and diploma students.) Lecture 3 hours per week.

ENG 106 SPEED READING (3 CR.)

Emphasizes reading faster with comprehension. Includes controlling pace through scanning for specific details, skimming for main ideas, and reading quickly but completely. Presents common ways reading material is organized and techniques for processing information rapidly. Lecture 3 hours per week.

ENG 107 CRITICAL READING (3 CR.)

Helps students refine their reading processes. Emphasizes applying and synthesizing ideas. Includes ways to detect organization, make inferences, draw conclusions, evaluate generalizations, recognize differences between facts and opinions, and other advanced comprehension, strategies. May include comprehensive library skills. Lecture 3 hours per week.

ENG 108 CRITICAL READING AND STUDY SKILLS (3 CR.)

Helps students improve their reading and learning processes. Includes advanced comprehension strategies and study skills such as time management, note-taking, studying from textbooks and other reading materials, taking examinations, and using the library. Lecture 3 hours per week.

ENG 111-112 COLLEGE COMPOSITION I-II (3 CR.) (3 CR.)

Prerequisite satisfactory score on appropriate English proficiency examinations and four units of high school English or equivalent. Develops writing ability for study, work, and other areas of writing based on experience, observation, research, and reading of selected literature. Guides students in learning writing as a process: understanding audience and purpose, exploring ideas and information, composing, revising, and editing. Supports writing by integrating experiences in thinking, reading, listening, and speaking. Lecture 3 hours per week.

ENG 115 TECHNICAL WRITING (3 CR.)

Prerequisite ENG 111 or divisional approval. Develops ability in technical writing through extensive practice in composing technical reports and other documents. Guides students in achieving voice, tone, style, and content in for-

matting, editing, and graphics. Introduces students to technical discourse through selected reading. Lecture 3 hours per week.

ENG 116 WRITING FOR BUSINESS (3 CR.)

Prerequisite ENG 111 or divisional approval. Develops ability in business writing through extensive practice in composing business correspondence and other documents. Guides students in achieving voice, tone, style, and content appropriate to a specific audience and purpose. Includes instruction in formatting and editing. Introduces students to business discourse through selected readings. Lecture 3 hours per week.

ENG 120 SURVEY OF MASS MEDIA (3 CR.)

Examines radio, television, newspapers, magazines, books and motion pictures. Emphasizes the nature of change in, and the social implications of, communications media today. Lecture 3 hours per week.

ENG 121-122 INTRODUCTION TO JOURNALISM I-II (3 CR.) (3 CR.)

Prerequisite ENG 111 or 112 or divisional approval. Introduces students to all news media, especially news gathering and preparation for print. Lecture 3 hours per week.

ENG 131 TECHNICAL REPORT WRITING I (3 CR.)

Offers a review of organizational skills including paragraph writing and basic forms of technical communications, various forms of business correspondence, and basic procedures for research writing. Includes instruction and practice in oral communication skills. Lecture 3 hours per week.

ENG 132 TECHNICAL REPORT WRITING II (2 CR.)

Completes technical report writing sequence. Presents report and letter writing skills appropriate for presenting somewhat complex technical ideas clearly and concisely. Stresses editing and proofreading skills. Offers instruction and practice in advanced forms of oral communication. Lecture 2 hours per week.

ENG 135 APPLIED GRAMMAR (3 CR.)

Develops ability to edit and proofread correspondence and other documents typically produced in business and industry. Instructs the student in applying conventions of grammar, usage, punctuation, spelling, and mechanics. Lecture 3 hours per week.

ENG 139 COLLEGE GRAMMAR (3 CR.)

Studies formal English grammar and effective expression with attention to recognizing and employing appropriately the various levels of English usage, thinking logically, speaking and writing effectively, editing, evaluating content and intent of both spoken and written English, and punctuating correctly. Lecture 3 hours per week.

ENG 141 LANGUAGES AND CULTURES I (3 CR.)

Examines the cultural bases and significance of the varieties of human language. Explores some features of different languages and dialects. Introduces questions about the nature of human languages, their meaning and structure. Lecture 3 hours per week.

ENG 150 CHILDREN'S LITERATURE (3 CR.)

Surveys the history of children's literature, considers learning theory and developmental factors influencing reading interests, and uses bibliographic tools in selecting books and materials for recreational interests and educational needs of children. Lecture 3 hours per week.

ENG 197 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)**ENG 210 ADVANCED COMPOSITION (3 CR.)**

Prerequisite ENG 112 or divisional approval. Helps students refine skills in writing non-fiction prose. Guides development of individual voice and style. Introduces procedures for publication. Lecture 3 hours per week.

ENG 211-212 CREATIVE WRITING I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Introduces the student to the fundamentals of writing imaginatively. Students write in forms to be selected from poetry, fiction, drama, and essays. Lecture 3 hours per week.

ENG 220 THEORIES OF GRAMMAR (3 CR.)

Surveys traditional, structural, and transformational grammar. Includes syntax, morphology, and phonology. Lecture 3 hours per week.

ENG 221-222 ADVANCED JOURNALISM I-II (3 CR.) (3 CR.)

Prerequisite ENG 122. Provides instruction in news and feature writing and other aspects of journalism. Lecture 3 hours per week.

ENG 231-232 SURVEY OF DRAMA I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major works of dramatic literature. Considers plays as literary and as staged works. Involves critical reading and writing. Lecture 3 hours per week.

ENG 235 INTRODUCTION TO THE NOVEL (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected novels emphasizing the history of the genre. Involves critical reading and writing. Lecture 3 hours per week.

ENG 236 INTRODUCTION TO THE SHORT STORY (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected short stories emphasizing the history of the genre. Involves critical reading and writing. Lecture 3 hours per week.

ENG 237 INTRODUCTION TO POETRY (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected poetry, emphasizing the history of the genre. Involves critical reading and writing. Lecture 3 hours per week.

ENG 241-242 SURVEY OF AMERICAN LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines American literary works from colonial times to the present, emphasizing the ideas and characteristics of our national literature. Involves critical reading and writing. Lecture 3 hours per week.

ENG 243-244 SURVEY OF ENGLISH LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies major English works from the Anglo-Saxon period to the present, emphasizing ideas and characteristics of the British literary tradition. Involves critical reading and writing. Lecture 3 hours per week.

ENG 245 MAJOR ENGLISH WRITERS (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major writers in English literary history. Involves critical reading and writing. Lecture 3 hours per week.

ENG 246 MAJOR AMERICAN WRITERS (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major writers of American literary history. Involves critical reading and writing. Lecture 3 hours per week.

ENG 251-252 SURVEY OF WORLD LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major works of world literature. Involves critical reading and writing. Lecture 3 hours per week.

ENG 253-254 SURVEY OF AFRO-AMERICAN LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected works by Black American writers from the colonial period to the present. Involves critical reading and writing. Lecture 3 hours per week.

ENG 255 MAJOR WRITERS IN WORLD LITERATURE (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines major writers selected from a variety of literary traditions. Involves critical reading and writing. Lecture 3 hours per week.

ENG 256 LITERATURE OF SCIENCE FICTION (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines the literary and social aspects of science fiction, emphasizing development of ideas and techniques through the history of the genre. Involves critical reading and writing. Lecture 3 hours per week.

ENG 257 MYTHOLOGY (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies selected mythologies of the world, emphasizing their common origins and subsequent influence on human thought and expression. Involves critical reading and writing. Lecture 3 hours per week.

ENG 261-262 ADVANCED CREATIVE WRITING I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Guides the student in imaginative writing in selected genres on an advanced level. Lecture 3 hours per week.

ENG 265 THE MODERN SHORT STORY (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies the modern short story as a literary form. Emphasizes appreciation and interpretation of selected stories. Requires critical reading and writing. Lecture 3 hours per week.

ENG 266 MODERN POETRY (3 CR.)

Studies modern poetry. Emphasizes appreciation and interpretation of selected poems. Requires critical reading and writing. Lecture 3 hours per week.

ENG 267 THE MODERN NOVEL (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies the modern novel. Emphasizes appreciation and interpretation of selected novels. Requires critical reading and writing. Lecture 3 hours per week.

ENG 268 THE MODERN DRAMA (3 CR.)

Prerequisite ENG 112 or divisional approval. Studies the modern drama. Emphasizes the understanding and enjoyment of dramatic literature. Requires critical reading and writing. Lecture 3 hours per week.

ENG 271-272 THE WORKS OF SHAKESPEARE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines selected works of Shakespeare. Involves critical reading and writing. Lecture 3 hours per week.

ENG 273-274 WOMEN IN LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines literature by and about women. Involves critical reading and writing. Lecture 3 hours per week.

ENG 276 SOUTHERN LITERATURE (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines the themes and techniques of selected writers dealing with the American South as a distinctive cultural entity. Involves critical reading and writing. Lecture 3 hours per week.

ENG 279 FILM AND LITERATURE (3 CR.)

Prerequisite ENG 112 or divisional approval. Examines the translation of literature into film viewing and writing. Lecture 3 hours per week.

ENG 291-292 WRITING FOR THE COLLEGE NEWSPAPER I-II (3 CR.) (3 CR.)

Prerequisite ENG 111 or 112 or divisional approval. Provides instruction in news and feature writing and other aspects of journalism. Lecture 3 hours per week.

ENG 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ENGLISH AS A SECOND LANGUAGE**ESL 001 ENGLISH AS A SECOND LANGUAGE I (9-20 CR.)**

Provides intensive instruction at the beginning level. Includes (1) listening comprehension, pronunciation and oral production of basic grammatical structure (2) reading and vocabulary development (3) introduction to the writing process. Variable hours per week.

ESL 002 ENGLISH AS A SECOND LANGUAGE II (9-20 CR.)

Provides intensive instruction and practice at the low intermediate level. Provides an introduction to the sound system, stress, intonational and rhythmic patterns of English through

listening and speaking exercises. Includes individualized instruction to improve basic reading comprehension. Requires practice in writing with emphasis on building basic sentence structures, grammar and sentence-level writing. Variable hours per week.

ESL 003 ENGLISH AS A SECOND LANGUAGE III (9-20 CR.)

Provides intensive instruction and practice at the intermediate level. Includes (1) practice in oral communication skills needed in common situations (2) instruction to increase reading comprehension and vocabulary (3) practice in the writing process, emphasizing sentence structure, grammar and paragraph writing. Variable hours per week.

ESL 004 ENGLISH AS A SECOND LANGUAGE IV (9-20 CR.)

Provides instruction at the high intermediate level. Emphasizes reading and writing skills needed for successful completion of college work. Includes instruction to improve reading comprehension, study skills and reading rate. Introduces written academic English through practice in the writing process emphasizing summary writing, short essays and advanced language patterns. Variable hours per week.

ESL 005 ENGLISH AS A SECOND LANGUAGE: READING I (3-6 CR.)

Helps students improve word attack skills and basic comprehension. Variable hours per week.

ESL 006 ENGLISH AS A SECOND LANGUAGE: READING II (3-6 CR.)

Helps students improve their reading process by building such skills as finding and remembering facts, making inferences, drawing conclusions and getting meaning from context. Variable hours per week.

ESL 007 ENGLISH AS A SECOND LANGUAGE: ORAL COMMUNICATION (3-6 CR.)

Helps students master the skills needed for functioning successfully in academic and professional settings. Emphasizes clear communication in large or small groups through formal and informal presentations. Variable hours per week.

ESL 008 ENGLISH AS A SECOND LANGUAGE: PRONUNCIATION (3-6 CR.)

Provides individualized instruction and practice to improve speaking ability. Includes assessment of students' oral skills. Provides exercises and other types of practice to overcome specific problems in pronunciation. Variable hours per week.

ESL 011 ENGLISH AS A SECOND LANGUAGE: COMPOSITION I (3-6 CR.)

Provides instruction and practice in the writing process, emphasizing development of fluency in sentence level and paragraph writing and competence in structural and grammatical patterns of written English. Variable hours per week.

ESL 012 ENGLISH AS A SECOND LANGUAGE: COMPOSITION II (3-6 CR.)

Provides further instruction and practice in the writing process, emphasizing writing summaries and short essays, and introducing ad-

vanced language patterns. Includes practice in developing and improving writing strategies. Variable hours per week.

ESL 013 ENGLISH AS A SECOND LANGUAGE: COMPOSITION III (3-6 CR.)

Prepares for college-level writing by practice in the writing process, emphasizing development of thought in essays of greater length and complexity. Variable hours per week.

ESL 014 ENGLISH AS A SECOND LANGUAGE: ORAL AND WRITTEN COMMUNICATIONS I (3-6 CR.)

Provides practice in the sound, stress, intonation, structural patterns, grammar, vocabulary, and idioms of beginning-level English in frequently encountered situations. Variable hours per week.

ESL 016 ENGLISH AS A SECOND LANGUAGE: ORAL AND WRITTEN COMMUNICATIONS III (3-6 CR.)

Provides practice in the sound, stress, intonation, structural patterns, grammar, vocabulary, and idioms of advanced-level English in frequently encountered situations, with an emphasis on preparation for college-level English proficiency. Variable hours per week.

ENVIRONMENTAL SCIENCE

ENV 040 BASIC WASTEWATER LICENSURE REVIEW (1 CR.)

Prerequisite divisional approval. Reviews materials which are normally associated with the Wastewater Treatment Plant Operator's Class IV or Class III level certification examinations. Utilizes lecture, audiovisual, and workshop sessions to review required materials and to prepare the trainee to complete the wastewater operator examinations. Laboratory 2 hours per week.

ENV 146 ADVANCED WASTEWATER LICENSURE REVIEW (1 CR.)

Prerequisite divisional approval. Reviews the materials associated with the Wastewater Treatment Plant Operator's Class II or Class I level certification examinations. Consists of lecture, audiovisual, and workshop sessions to review the required material and to prepare the trainee to complete the wastewater operator's examination. Laboratory 2 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

FINANCIAL SERVICES

FIN 107 PERSONAL FINANCE (3 CR.)

Presents a framework of personal money management concepts, including establishing values and goals, determining sources of income, managing income, preparing a budget, developing consumer buying ability, using credit, understanding savings and insurance, providing for adequate retirement, and estate planning. Lecture 3 hours per week.

FIN 108 PRINCIPLES OF SECURITIES INVESTMENT (3 CR.)

Presents a broad survey of stocks and bonds. Introduces mechanics of stock exchanges, types of securities, kinds of orders, and specific investment objectives. Covers different invest-

ment theories and focuses on management and evaluation of investment portfolios. Lecture 3 hours per week.

FIN 140 INTRODUCTION TO CREDIT UNIONS (3 CR.)

Explores such facets of the credit union as history, operation, powers, and nature of credit union services. Covers role and programs developed by unions. Lecture 3 hours per week.

FIN 141 PRINCIPLES OF CREDIT UNION OPERATIONS I (3 CR.)

Prerequisite FIN 140 or divisional approval. Presents functions of teller transactions, loan approval, financial counseling, and collection procedures and systems. Addresses such topics as delinquency control and current regulations and policies governing credit unions. Lecture 3 hours per week.

FIN 142 PRINCIPLES OF CREDIT UNION OPERATIONS II (3 CR.)

Prerequisite FIN 141 or divisional approval. Examines the financial management skills necessary to operate a credit union. Emphasizes implications of risk management and insurance. Explores investment procedures and teaches use of sound accounting principles. Lecture 3 hours per week.

FIN 215 FINANCIAL MANAGEMENT (3 CR.)

Introduces the process of identifying and solving financial problems confronting the business enterprise. Includes topics such as the basic tools of financial analysis, working capital, capital budgeting, and long-term financing. Uses problems and cases to enhance skills in financial planning and decision making. Lecture 3 hours per week.

FIN 275 INTERNATIONAL BANKING (3 CR.)

Exposes the student to current data on international banking topics of country risk assessment, Edge Act corporations, and foreign exchange activities. Focuses on trend financing, international financial agreements, and instruments used in international financial markets. (AIB Approved). Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

FIRE SCIENCE

FIR 100 INTRODUCTION TO FIRE SCIENCE (3 CR.)

Introduces basic concepts involved in fire suppression including fire behavior, building codes, built-in protection systems and the life safety code. Discusses the history and philosophy of the fire service at the national, state, and local levels and analyzes the overall fire problem. Lecture 3 hours per week.

FIR 106 FIRE SUPPRESSION METHODS AND OPERATIONS (3 CR.)

Prerequisite FIR 100 or divisional permission. Introduces the concepts of emergency management and incident command. Discusses basic concepts of fire suppression and incident control, including the establishment of priorities, size-up, strategic goals and tactical objectives. Lecture 3 hours per week.

FIR 111 HAZARDOUS MATERIALS I (3 CR.)

Introduces the chemistry of hazardous materials including solids, liquids, gases, and methods used in their identification. Examines the use, handling, transportation and environmental problems associated with hazardous materials. Lecture 3 hours per week.

FIR 112 HAZARDOUS MATERIALS II (3 CR.)

Prerequisite FIR 111. Studies hazardous materials storage, standards, and applicable laws designed to protect the public and emergency personnel. Discusses specific methods and techniques used by the emergency worker in the abatement of hazardous materials incidents. Lecture 3 hours per week.

FIR 116 FIRE PREVENTION FUNDAMENTALS (3 CR.)

Examines the functions and objectives of a fire safety organization. Focuses on recognition and correction of fire hazards and necessary control procedures for a preventive maintenance program. Lecture 3 hours per week.

FIR 117 INDUSTRIAL FIRE PROTECTION (3 CR.)

Prerequisite FIR 100 or divisional permission. Studies industrial fire protection that fits needs of business, industry, educational and health care facilities. Deals with organizing for fire safety, hazard control and pre-fire planning, as well as fire detection, alarm and suppression systems. Lecture 3 hours per week.

FIR 125 FIRE SERVICE ADMINISTRATION (3 CR.)

Studies fire service organization and management, administrative procedures and methods, budgeting and reporting, control of resources, and the maintenance of records. Discusses managerial attitudes and decisions, general organizational planning and career development. Lecture 3 hours per week.

FIR 205 FIRE HYDRAULICS AND DISTRIBUTION SYSTEMS (4 CR.)

Teaches mathematics, laws and formulas as applied to fire service hydraulics, including the development of mental ability to solve fire flow requirements and water supply needs. Emphasizes the principles, techniques, and application of water distribution systems used for fire suppression. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

FIR 211 AUTOMATIC SPRINKLER SYSTEM DESIGN I (3 CR.)

Presents a comprehensive study of treatment of automatic sprinkler systems including a study of sprinkler standards, design features, water supply adequacy, sprinkler limitations, and appropriate building and fire code applications. Lecture 3 hours per week.

FIR 212 AUTOMATIC SPRINKLER SYSTEM DESIGN II (3 CR.)

Prerequisite FIR 211. Continues the study of sprinkler system design, implementation and installation. Includes the use of appropriate computer applications in the design of various types of sprinkler systems. Lecture 3 hours per week.

FIR 215 FIRE SUPPRESSION AND DETECTION SYSTEMS (3 CR.)

Introduces fire suppression and detection systems. Includes design of smoke, heat, and flame

detectors, as well as the design and operation of basic control and annunciator panels and multi-plex command and control systems. Lecture 3 hours per week.

FIR 221 BUILDING CONSTRUCTION AND CODES (4 CR.)

Considers effect of fire on structures and inherent dangers of failure due to fire attack as well as ways various types and methods of building construction can influence the tactics and strategy of fire fighting. Discusses the importance of corrective building and fire prevention codes and control of hazards within current legal framework. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

FIR 230 INVESTIGATION PROCEDURES (3 CR.)

Introduces the development and philosophy of fire investigation and detection, including inspection techniques, gathering of evidence and development of a criminal procedure to conform to judicial requirements. Lecture 3 hours per week.

FIR 237 EMERGENCY SERVICE SUPERVISION (3 CR.)

Teaches the history of modern management theories, including scientific management and behavioral scientist approach. Introduces concepts of group dynamics, leadership, communication, stress and time management, and personnel evaluation techniques. Discusses the legal and ethical considerations of personnel management in the emergency service. Lecture 3 hours per week.

FIR 245 URBAN FIRE AND RISK ANALYSIS (3 CR.)

Prerequisite FIR 100 or divisional permission. Presents a study of current urban fire problems with emphasis on solutions based upon current available technology. Includes master planning, as well as methods of identifying, analyzing and measuring accompanying risk and loss possibilities. Lecture 3 hours per week.

FIR 250 FIRE OFFICER II STANDARDS (3 CR.)

Prerequisite FIR 140 or Officer I certificate. Presents the material and testing required for certification as a Fire Officer II under the national Standard for Fire Officer Professional Qualifications. Course elements include psychology, human relations and management, technical math, technical report writing, and unit administration. Traditional classroom lectures are supplemented by group-oriented classroom activities and homework assignments. Lecture 3 hours per week.

FIR 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

FORESTRY

FOR 115 DENDROLOGY (4 CR.)

Studies trees and shrubs botanically and commercially important to the forests of the eastern United States. Emphasizes field characteristics of trees and common shrubs of the eastern United States. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

FOR 135 WILDLIFE AND FISHERIES MANAGEMENT (4 CR.)

Introduces the principles of wildlife and fisheries management. Emphasizes practices in the eastern United States. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

FOR 211 WILDLIFE INVESTIGATIONAL TECHNIQUES I (3 CR.)

Teaches techniques used in wildlife management research including the capturing, sexing, aging and marking of wild animals. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

FRENCH

FRE 106 FRENCH FOR BUSINESS (1-3 CR.)

Introduces the student to French used in business transactions. Lecture 1-3 hours per week.

FRE 107 FRENCH FOR THE TOURIST (1-3 CR.)

Introduces spoken French to people intending to travel in a French-speaking country. Lecture 1-3 hours per week.

FRE 108 FRENCH FOR READING KNOWLEDGE (1-3 CR.)

Develops the ability to translate French texts. Lecture 1-3 hours per week.

FRE 101-102 BEGINNING FRENCH I-II (5 CR.) (5 CR.)

Introduces understanding, speaking, reading, and writing skills and emphasizes basic French sentence structure. Lecture 5 hours per week.

FRE 103-104 BASIC SPOKEN FRENCH I-II (3 CR.) (3 CR.)

Teaches oral communication and introduces cultural mores and customs to students with no prior instruction in the language. Does not fulfill the foreign language requirement for the Associate in Arts degree. Lecture 3 hours per week.

FRE 111-112 CONVERSATION IN FRENCH I-II (3 CR.) (3 CR.)

Prerequisite FRE 102. Emphasizes the spoken language, stressing fluency and correctness of structure, pronunciation, and vocabulary. Lecture 3 hours per week.

FRE 201-202 INTERMEDIATE FRENCH I-II (3 CR.) (3 CR.)

Prerequisite FRE 102 or equivalent. Continues to develop understanding, speaking, reading, and writing skills. French is used in the classroom. Lecture 3 hours per week.

FRE 211-212 INTERMEDIATE FRENCH CONVERSATION I-II (3 CR.) (3 CR.)

Prerequisite FRE 202 or equivalent. Continues to develop fluency through emphasis on idioms and other complex sentence structures. Lecture 3 hours per week.

FRE 233-234 INTRODUCTION TO FRENCH CIVILIZATION AND LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite FRE 201-202 or equivalent. Introduces the student to French culture and literature. Readings and discussions conducted in French. Lecture 3 hours per week.

FRE 241-242 INTERMEDIATE FRENCH COMPOSITION I-II (3 CR.) (3 CR.)

Prerequisite FRE 202 or equivalent. Develops writing skills and stresses French grammar. Lecture 3 hours per week.

GEOGRAPHY

GEO 200 INTRODUCTION TO PHYSICAL GEOGRAPHY (3 CR.)

Studies major elements of the natural environment including earth sun relationship, land forms, weather and climate, natural vegetation and soils. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 210 PEOPLE AND THE LAND: AN INTRODUCTION TO CULTURAL GEOGRAPHY (3 CR.)

Focuses on the relationship between culture and geography. Presents a survey of modern demographics, landscape modification, material and non-material culture, language, race and ethnicity, religion, politics, and economic activities. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 220 WORLD REGIONAL GEOGRAPHY (3 CR.)

Studies physical and cultural characteristics of selected geographical regions of the world. Focuses upon significant problems within each of the regions, and examines the geographical background of those problems. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 221-222 REGIONS OF THE WORLD I-II (3 CR.) (3 CR.)

Presents an overview of physical and cultural characteristics of selected geographical regions of the world. Focuses upon significant problems within each of the regions. Studies the European cultural sphere including Europe, Soviet Union, the Americas and Australia and the emerging nations in Africa, Southwest Asia and the Orient. Introduces the student to types and uses of maps. Lecture 3 hours per week.

GEO 230 POLITICAL GEOGRAPHY (3 CR.)

Emphasizes the influence of geography on political systems and nation states. Discusses historic and current events including campaigns, wars, and treaties as functions of land, resources and energy requirements. Introduces the student to types and uses of maps. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

GEOLOGY

GOL 105 PHYSICAL GEOLOGY (4 CR.)

Introduces the composition and structure of the earth and modifying agents and processes. Investigates the formation of minerals and rocks, weathering, erosion, earthquakes, and crustal deformation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 106 HISTORICAL GEOLOGY (4 CR.)

Traces the evolution of the earth and life through time. Presents scientific theories of the origin of the earth and life and interprets rock and fossil record. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 111-112 OCEANOGRAPHY I-II (4 CR.) (4 CR.)

Examines the dynamics of the oceans and ocean basins. Applies the principles of physical, chemical, biological, and geological oceanography. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 135 FIELD STUDIES IN GEOLOGY (1 CR.)

Investigates geologic phenomena. Includes activities such as observation of regional geology and landforms, collection of samples, and measurement and interpretation of geologic structures. Lecture 1 hour per week.

GOL 206 PALEONTOLOGY (4 CR.)

Prerequisite GOL 106. Surveys the major invertebrate and vertebrate fossil groups. Covers the distribution of fossils through time, evolution and biostratigraphic and paleoecologic significance. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

GOL 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

GERMAN

GER 016 GERMAN FOR BUSINESS (1-3 CR.)

Introduces the student to German used in business transactions. Lecture 1-3 hours per week.

GER 017 GERMAN FOR THE TOURIST (1-3 CR.)

Introduces spoken German to people intending to travel in German speaking countries. Lecture 1-3 hours per week.

GER 101-102 BEGINNING GERMAN I-II (5 CR.) (5 CR.)

Introduces understanding, speaking, reading, and writing skills and emphasizes basic German sentence structures. Lecture 5 hours per week.

GER 103 BASIC SPOKEN GERMAN I (3 CR.)

Teaches oral communication and introduces cultural mores and customs to students with no prior instruction in the language. Does not fulfill the foreign language requirement for the Associate in Arts degree. Lecture 3 hours per week.

GER 111-112 CONVERSATION IN GERMAN I-II (3 CR.) (3 CR.)

Prerequisite GER 102. Emphasizes the spoken language, stressing correctness of structure, pronunciation, fluency, and vocabulary. Lecture 3 hours per week.

GER 201-202 INTERMEDIATE GERMAN I-II (3 CR.) (3 CR.)

Prerequisite GER 102 or equivalent. Continues to develop understanding, speaking, reading, and writing skills. German is used in the classroom. Lecture 3 hours per week.

GER 231-232 INTRODUCTION TO GERMAN LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite Ger 202 or equivalent. Surveys major German literary works and periods. Lecture 3 hours per week.

GER 241 INTERMEDIATE GERMAN COMPOSITION I (3 CR.)

Prerequisite GER 202 or equivalent. Develops skills and practice in written German. Lecture 3 hours per week.

GER 251-252 GERMAN CULTURE AND CIVILIZATION I-II (3 CR.) (3 CR.)

Introduces the student to German thought, culture, and scientific achievement. Classes conducted in English. Lecture 3 hours per week.

GREEK

GRE 101-102 INTRODUCTION TO ANCIENT GREEK I-II (3 CR.) (3 CR.)

Introduces ancient Greek language. Designed to prepare the student for early readings in Hellenic or Hellenistic literature. Lecture 3 hours per week.

GRE 201-202 INTERMEDIATE ANCIENT GREEK I-II (3 CR.) (3 CR.)

Prerequisite GRE 101-102. Introduces the reading of classical and Koine Greek with a review of Greek grammar, forms, and syntax. Lecture 3 hours per week.

HEALTH

HLT 100 FIRST AID AND CARDIOPULMONARY RESUSCITATION (3 CR.)

Focuses on the principles and techniques of safety, first aid, and cardiopulmonary resuscitation. Lecture 3 hours per week.

HLT 105 CARDIOPULMONARY RESUSCITATION (1 CR.)

Provides training in coordinated mouth-to-mouth artificial ventilation and chest compression, choking, life-threatening emergencies, and sudden illness. Lecture 1 hour per week.

HLT 106 FIRST AID AND SAFETY (2 CR.)

Focuses on the principles and techniques of safety and first aid. Lecture 2 hours per week.

HLT 110 CONCEPTS OF PERSONAL AND COMMUNITY HEALTH (3 CR.)

Studies the concepts related to the maintenance of health, safety, and the prevention of illness at the personal and community level. Lecture 3 hours per week.

HLT 135 CHILD HEALTH AND NUTRITION (3 CR.)

Focuses on the physical needs of the preschool child and the methods by which these are met. Emphasizes health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety as related to health growth and development. Lecture 3 hours per week.

HLT 140 ORIENTATION TO HEALTH RELATED PROFESSIONS (2 CR.)

Explores the interrelated roles and functions of various members of the health team. Lecture 2 hours per week.

HLT 141 INTRODUCTION TO MEDICAL TERMINOLOGY (2 CR.)

Focuses on medical terminology for students preparing for careers in the health professions. Lecture 2 hours per week.

HLT 143-144 MEDICAL TERMINOLOGY I-II (3 CR.) (3 CR.)

Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, word stems, and technical terms with emphasis on proper spelling, pronunciation, and usage. Emphasizes more complex skills and techniques in understanding medical terminology. Lecture 3 hours per week.

HLT 240 CONSUMER HEALTH EDUCATION (3 CR.)

Focuses on health fads, myths, misunderstandings, quackeries, deceptions, and fraudulent health practices. Includes selecting and purchasing health products, services, consumer protections, and the planning and financing of medical care. Lecture 3 hours per week.

HLT 250 GENERAL PHARMACOLOGY (3 CR.)

Emphasizes general pharmacology for the health related professions covering general principles of drug actions/reactions, major drug classes, specific agent within each class, and routine mathematical calculations needed to determine desired dosages. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

HISTORY

HIS 101-102 HISTORY OF WESTERN CIVILIZATION I-II (3 CR.) (3 CR.)

Examines the development of western civilization from ancient times to the present. The first semester ends with the seventeenth century; the second semester continues through modern times. Lecture 3 hours per week.

HIS 111-112 HISTORY OF WORLD CIVILIZATION I-II (3 CR.) (3 CR.)

Surveys Asian, African, Latin American, and European civilizations from the ancient period to the present. Lecture 3 hours per week.

HIS 121-122 UNITED STATES HISTORY I-II (3 CR.) (3 CR.)

Surveys United States history from its begin-

ning to the present. Lecture 3 hours per week.

HIS 125 HISTORY OF THE AMERICAN INDIAN (3 CR.)

Examines the history and culture of the native peoples of the Americas. Lecture 3 hours per week.

HIS 126 WOMEN IN WORLD HISTORY (3 CR.)

Studies the role of women and attitudes toward women from ancient times to the present. Lecture 3 hours per week.

HIS 127 WOMEN IN AMERICAN HISTORY (3 CR.)

Studies the role of women and attitudes toward women in American society from colonial times to the present. Lecture 3 hours per week.

HIS 135 HISTORY OF THE CONTEMPORARY WORLD (3 CR.)

Analyzes world developments since World War II. Lecture 3 hours per week.

HIS 141-142 AFRO-AMERICAN HISTORY I-II (3 CR.) (3 CR.)

Surveys the history of black Americans from their African origins to the present. Lecture 3 hours per week.

HIS 201 HISTORY OF AMERICAN CIVILIZATION I (3 CR.)

Surveys the social, cultural, and intellectual development of American society. Lecture 3 hours per week.

HIS 203-204 HISTORY OF AFRICAN CIVILIZATIONS I-II (3 CR.) (3 CR.)

Examines major social, economic, political and religious developments from earliest times to the present. Lecture 3 hours per week.

HIS 211-212 HISTORY OF ENGLAND I-II (3 CR.) (3 CR.)

Surveys the history of the British Isles from pre-Celtic times to the present. Lecture 3 hours per week.

HIS 225-226 TOPICS IN EUROPEAN HISTORY I-II (3 CR.) (3 CR.)

Examines selected topics in the history of Europe from ancient times to the present. Lecture 3 hours per week.

HIS 231-232 HISTORY OF LATIN AMERICAN CIVILIZATIONS I-II (3 CR.) (3 CR.)

Examines Latin American civilizations from pre-Columbian origins to the present. Lecture 3 hours per week.

HIS 241-242 HISTORY OF RUSSIA I-II (3 CR.) (3 CR.)

Surveys history of Russia from earliest times to the present. Includes political, economic, multi-national, social, and cultural aspects of Russian and Soviet history. Lecture 3 hours per week.

HIS 243-244 HISTORY OF THE ANCIENT WORLD I-II (3 CR.) (3 CR.)

Studies the history of the ancient world from the dawn of civilization in the Near East to the fall of Rome. Lecture 3 hours per week.

HIS 251-252 HISTORY OF MIDDLE EAST CIVILIZATION I-II (3 CR.) (3 CR.)

Surveys intellectual, cultural, social, economic and religious patterns in the civilizations of the Middle East. Covers Semitic, Indo-

European, and Turkic-speaking peoples from pre-Islamic to the present. Lecture 3 hours per week.

HIS 253-254 HISTORY OF ASIAN CIVILIZATIONS I-II (3 CR.) (3 CR.)

Surveys the civilizations of Asia from their origins to the present. Lecture 3 hours per week.

HIS 255 HISTORY OF CHINESE CULTURE AND INSTITUTIONS (3 CR.)

Examines traditional Chinese social, political, economic, and military institutions. Also examines major literary, artistic and intellectual achievements from pre-historic times to the present. Lecture 3 hours per week.

HIS 256 HISTORY OF JAPANESE CULTURE AND INSTITUTIONS (3 CR.)

Examines traditional Japanese social, political, economic, and military institutions. Also examines major literary, artistic and intellectual achievements from pre-historic times to the present. Lecture 3 hours per week.

HIS 261 TOPICS IN UNITED STATES HISTORY I (3 CR.)

Examines selected topics in United States history which shaped the American experience. Lecture 3 hours per week.

HIS 266 MILITARY HISTORY OF THE CIVIL WAR (3 CR.)

Analyzes military campaigns of the Civil War, including factors contributing to the defeat of the Confederacy and problems created by the war. May include field trips to Civil War sites in the region. Lecture 3 hours per week.

HIS 269 CIVIL WAR AND RECONSTRUCTION (3 CR.)

Studies factors that led to the division between the States. Examines the war, the home fronts, and the era of Reconstruction. Lecture 3 hours per week.

HIS 271-272 INTELLECTUAL HISTORY I-II (3 CR.) (3 CR.)

Examines important thinkers, their ideas, and their influence. The first semester concentrates on western intellectual history, the second semester on American intellectual history. Lecture 3 hours per week.

HIS 273 HISTORY OF THE CITY I (3 CR.)

Focuses on European, American and Third World cities from their origins to the present. Lecture 3 hours per week.

HIS 276 UNITED STATES HISTORY SINCE WORLD WAR II (3 CR.)

Investigates United States history from 1946 to the present, studying both domestic developments and American involvement in international affairs. Lecture 3 hours per week.

HIS 277 THE AMERICAN EXPERIENCE IN VIETNAM (3 CR.)

Analyzes American involvement in Vietnam from World War I through the Nixon and Ford years. Includes Roosevelt's plan of trusteeship, the Geneva Conference, the American military role, and the search for peace. Lecture 3 hours per week.

HIS 278 UNITED STATES ECONOMIC HISTORY (3 CR.)

Analyzes economic developments from the colonial period to the present. Includes the emergence of the market system, the transition from small scale enterprises to corporate capi-

talism, and the emergence of the contemporary economy. Lecture 3 hours per week.

HIS 279 AGE OF THE AMERICAN REVOLUTION (3 CR.)

Examines the factors that led to the separation of the American colonies from Great Britain. Covers the Revolutionary War, the problems faced by the revolutionary government, and postwar events that led to the adoption of the United States Constitution. Lecture 3 hours per week.

HIS 281-282 HISTORY OF VIRGINIA I-II (3 CR.) (3 CR.)

Examines the cultural, political, and economic history of the Commonwealth from its beginning to the present. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

HORTICULTURE

HRT 100 INTRODUCTION TO HORTICULTURE (3 CR.)

Surveys the commercial horticulture industry with emphasis on career opportunities. Examines plant classification and identification, common insects and diseases, home landscaping and related subjects. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 107 PLANTSCAPING FOR INTERIOR DESIGN (2 CR.)

Surveys principles and practices of interior designing with plants. Includes identification, selection, cultural requirements and design characteristics of plant material. Intended for non-Horticulture Technology majors. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 108 PLANT IDENTIFICATION (2 CR.)

Studies the identification, culture and uses of woody and herbaceous landscape plants commonly used locally. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 115 PLANT PROPAGATION (3 CR.)

Teaches principles and practices of sexual and asexual methods. Examines commercial and home practices. Provides experience in techniques using seed, spores, cuttings, grafting, budding, layering and division. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

HRT 117 TOOLS AND EQUIPMENT (2 CR.)

Introduces tools and equipment used in horticulture. Emphasizes power-operated equipment including lawn mowers, spreaders, sprayers, saws and tractors. Stresses safety, maintenance, minor repair and appropriate tool selection. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 118 TURF PESTS (2 CR.)

Examines turf pests. Covers identification, morphology, and life cycles of insects and other animals, disease agents and weeds. Stresses diagnosis and management of specific turf pests. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

HRT 119 IRRIGATION SYSTEMS FOR TURF AND ORNAMENTALS (3 CR.)

Explains why, when, and how irrigation sys-

- tems are used by the grounds management industry. Includes component selection, system design, installation, operation, and maintenance. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 121 GREENHOUSE CROP PRODUCTION I** (3 CR.)
Examines commercial practices related to production of floricultural crops. Considers production requirements, environmental control and management, cultural techniques affecting seasonal management, and cultural techniques affecting production of seasonal crops. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 127 HORTICULTURAL BOTANY** (3 CR.)
Studies taxonomy, anatomy, morphology, physiology, and genetics of plants. Stresses their importance in plant identification, propagation and culture. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 128 LANDSCAPE TOOLS AND METHODS** (2 CR.)
Emphasizes how to select, use and recognize problems with hand and power tools commonly utilized by landscape technicians. Stresses safety. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- HRT 138 LANDSCAPE PLANTING METHODS** (2 CR.)
Describes the installation and care of landscape plants. Covers materials used at the landscape site, interpretation of landscape plans, planting and transplanting procedures, simple construction techniques and care of new and established landscapes. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- HRT 197 COOPERATIVE EDUCATION** (1-6 CR.)
(see General Usage Courses section)
- HRT 205 SOILS** (3 CR.)
Teaches theoretical and practical aspects of soils and other growing media. Examines media components, chemical and physical properties, and soil organisms. Discusses management and conservation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 206 PESTICIDES IN HORTICULTURE** (2 CR.)
Discusses pesticide selection, mixing, application, storage, and disposal. Stresses safety and environmental considerations. Emphasizes insecticides, legal restrictions of fungicides and herbicides currently used. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- HRT 207 PLANT PEST MANAGEMENT** (3 CR.)
Teaches principles of plant pest management. Covers morphology and life cycles of insects and other small animal pests and plant pathogens. Lab stresses diagnosis, chemical and non-chemical control of specific pests, and pesticide safety. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 231 PLANTING DESIGN I** (3 CR.)
Applies landscape theory and principles of drawing to the planning of landscape designs for residential and small scale commercial projects. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 232 PLANTING DESIGN II** (3 CR.)
Prerequisite HRT 231. Applies landscape theory and principles of drawing to the planning of landscape designs for large-scale projects. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 236 INTERIOR LANDSCAPING** (2 CR.)
Examines principles and practices of interior landscaping in residential and commercial buildings. Covers design, selection, planting, and maintenance of plant materials suitable for indoor use. Includes assessment of client needs, preparation of contracts and specifications, and construction materials. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- HRT 245 WOODY PLANTS** (2 CR.)
Studies identification, culture, and uses of woody plants in landscaping. Includes deciduous and evergreen, native and cultivated shrubs and trees and vines. Teaches scientific and common names of plants. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- HRT 246 HERBACEOUS PLANTS** (2 CR.)
Considers the herbaceous plants used in the landscape. Includes identification, use, culture, and propagation of common bulbs, perennials, and annuals. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- HRT 247 INDOOR PLANTS** (2 CR.)
Considers problems unique to the growth of indoor plants, and their use in interior landscaping. Covers identification, uses, culture, and propagation of specific indoor plants. Teaches scientific and common names of plants. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- HRT 260 INTRODUCTION TO FLORAL DESIGN** (3 CR.)
Serves as a practical introduction to floral designs. Teaches basic methods of design and floral arrangement. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 266 ADVANCED FLORAL DESIGN** (3 CR.)
Teaches skills related to floral designs created by retail florists. Studies wreaths, baskets, sprays, wedding flowers, corsages, and other contemporary arrangements. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 269 PROFESSIONAL TURF CARE** (3 CR.)
Discusses careers in the turf industry. Stresses turfgrass identification, selection, culture, propagation, and pest control from a commercial standpoint. Surveys turf care operations and use of common equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.
- HRT 275 LANDSCAPE CONSTRUCTION AND MAINTENANCE** (3 CR.)
Examines practical applications of construction techniques. Surveys landscape construction materials used in commercial and residential applications. Other topics may include estimating, construction, planting, and maintenance of a landscaping project. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 285 MANAGEMENT OF A HORTICULTURAL BUSINESS** (3 CR.)
Studies the business and selling practices which relate to wholesale and retail horticultural businesses including garden centers, greenhouses, nurseries, and flower shops. Examines planning and layout, suppliers, merchandising, maintenance, and display of horticultural items. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- HRT 297 COOPERATIVE EDUCATION** (1-6 CR.)
(see General Usage Courses section)
- Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.
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- HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT**
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- HRI 101-102 HOTEL-RESTAURANT ORGANIZATION AND MANAGEMENT I-II** (3 CR.) (3 CR.)
Introduces the history, opportunities, problems and trends of the hospitality industry. Covers the organization of the various sectors of the hospitality industry including human resources, general business considerations, and management theory. Lecture 3 hours per week.
- HRI 120 PRINCIPLES OF FOOD PREPARATION** (4 CR.)
Applies scientific principles and techniques to the preparation of food, including carbohydrates, such as fruits, vegetables, sugars and starches; fats, including both animal and vegetable, as well as natural and manufactured; and proteins, such as milk, cheese, eggs, meats, legumes, fish and shellfish. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
- HRI 125 PRINCIPLES OF COMMERCIAL FOOD PREPARATION** (3 CR.)
Prerequisite HRI 120 or departmental approval. Studies the principles related to cooking in large quantities. Includes purchasing, production planning, position assignments and proper use of equipment. Presents and solves problems in expanding and converting recipes, using alternate cooking methods. Considers traditional and computerized methods. Requires field trips. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.
- HRI 126 THE ART OF GARNISHING** (1 CR.)
Focuses on the relationship between colors and shapes and how they pertain to garnishes. Provides student with knowledge to create impressive presentations. Lecture 1 hour per week.
- HRI 150 INTRODUCTION TO HOSPITALITY OWNERSHIP** (3 CR.)
Presents growth, development, present status and trends of the food and lodging industry. Includes special problems of operating small and medium sized establishments. Introduces credit and accounting procedures, management of staff, marketing, advertising, and security, as well as personal attitudes, qualifications, and ethics. Lecture 3 hours per week.
- HRI 157 ADVANCED PRINCIPLES OF FOOD PREPARATION** (4 CR.)
Prerequisite HRI 120. Introduces experimental techniques and procedures applied to the development of standardized recipes for the

food service industry. Emphasizes sensory quality evaluation to determine general palatability and customer acceptance. Presents laboratory applications of scientific principles to international cuisine, microwave cookery, and baking. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**HRI 158
SANITATION AND SAFETY (3 CR.)**

Covers the moral and legal responsibilities of management to insure a sanitary and safe environment in a food service operation. Emphasizes the causes and prevention of foodborne illnesses in conformity with federal, state and local guidelines. Focuses on OSHA standards in assuring safe working conditions. Lecture 3 hours per week.

**HRI 165 HOTEL HOUSEKEEPING AND
ENGINEERING MANAGEMENT (4 CR.)**

Studies housekeeping and engineering departments of a hotel. Emphasizes organization, staffing, scheduling, staff development, cleaning materials and procedures, preventive maintenance, refurbishing, design, safety, and computer applications. Lecture 4 hours per week.

HRI 215 FOOD PURCHASING (3 CR.)

Presents the method and procedures for purchasing food for hotels, restaurants and institutions. Deals with markets, federal and trade grades, governmental regulations, packaging, comparative versions price buying, yields and quality control. Lecture 3 hours per week.

**HRI 217 EQUIPMENT
LAYOUT AND DESIGN (3 CR.)**

Focuses on conceptualization, design, layout, space utilization and specification requirements of a food service operation. Incorporates kitchen and dining room equipment and facilities. Lecture 3 hours per week.

**HRI 225 MENU PLANNING AND DINING
ROOM SERVICE (3 CR.)**

Covers fundamentals of menu writing, types of menus, layout, design and food merchandising, and interpreting a profit and loss statement as it relates to menu pricing. Analyzes menus for effectiveness. Instructs on proper dining room service, customer seating, and dining room management. Emphasizes use of computer in management of food service operations. Lecture 3 hours per week.

**HRI 235 MARKETING OF
HOSPITALITY SERVICES (3 CR.)**

Studies principles and practices of marketing the services of the hotel and restaurant industry. Emphasizes the marketing concept with applications leading to customer satisfaction. Reviews methods of external and internal stimulation of sales. May include a practical sales/marketing exercise and computer applications. Lecture 3 hours per week.

HRI 245 LABOR COST CONTROL (3 CR.)

Focuses on position analysis and description. Considers employee scheduling, forecasting, and staffing needs as related to sales for the labor intensive hospitality industry. Covers interpretation and analysis of payroll to maximize efficiency and productivity. Uses problem solving techniques to illustrate payroll procedures. Includes explanation of payroll deductions, tip credits and tip-sales allocation. Lecture 3 hours per week.

**HRI 251-252 FOOD AND BEVERAGE
COST CONTROL I-II (3 CR.) (3 CR.)**

Presents methods of pre-cost and pre-control as applied to the menu, purchasing, receiving, storing, issuing, production, sales and service which result in achievement of an operation's profit potential. Emphasizes both manual and computerized approaches. Lecture 3 hours per week.

**HRI 255 HUMAN RESOURCES
MANAGEMENT
AND TRAINING FOR
HOSPITALITY AND TOURISM (3 CR.)**

Prepares the students for interviewing, training and developing employees. Covers management skills (technical, human, and conceptual) and leadership. Covers the establishment and use of effective training and evaluative tools to improve productivity. Emphasizes staff and customer relations. Lecture 3 hours per week.

**HRI 256 PRINCIPLES AND
APPLICATIONS OF CATERING (3 CR.)**

Prerequisite divisional approval. Analyzes and compares the principles of on-premise and off-premise catering. Includes student presentations in a series of catered functions where they assume typical managerial/employee positions emphasizing planning, organizing, operating, managing and evaluating. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**HRI 265 HOTEL
FRONT OFFICE OPERATIONS (3 CR.)**

Analyzes hotel front office positions and the procedures involved in reservation registration, accounting for and checking out guests, and principles and practices of night auditing. Covers the complete guest operation in both traditional and computerized operations. Lecture 3 hours per week.

HRI 269 CLUB MANAGEMENT (3 CR.)

Surveys the organization and management of member-owned and proprietary private clubs. Studies relationship between board of directors, management, employees, club committees, and club members. Covers budget preparation, including applicable tax laws. Field trips included. Lecture 3 hours per week.

HRI 275 HOSPITALITY LAW (3 CR.)

Studies the laws applicable to the ownership and operation of food and lodging operations. Includes duties to guests, ejection of undesirable, liabilities for personal injuries, damage, arrest and detention of offenders. Lecture 3 hours per week.

**HRI 297
COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

HUMAN SERVICES

**HMS 109 STRUCTURED
CAREER PLANNING
IN HUMAN SERVICES (3 CR.)**

Overviews human services as a career field. Teaches career development skills for personal career planning and for use with clients. Includes 9 hour computer component (word processing). Lecture 3 hours per week.

**HMS 121
BASIC COUNSELING SKILLS I (3 CR.)**

Develops skills needed to function in a helping relationship. Emphasizes skills in attending, listening and responding. Clarifies personal skill strengths, deficits and goals for skill improvement. Lecture 3 hours per week.

**HMS 122
BASIC COUNSELING SKILLS II (3 CR.)**

Expands the development of counseling skills needed to function effectively in a helping relationship. Emphasizes skills in responding, personalizing, summarizing and initiating. Clarifies personal skill strengths, deficits and goals for skill improvement. Develops plans for achieving personal and program goals. Lecture 3 hours per week.

HMS 141 GROUP DYNAMICS I (3 CR.)

Examines the stages of group development, group dynamics, the role of the leader in a group, and recognition of the various types of group processes. Discusses models of group dynamics that occur as a result of group membership dynamics. Lecture 3 hours per week.

HMS 142 GROUP DYNAMICS II (3 CR.)

Examines group dynamics, group leadership, group cohesion, transference and group helping through experiential involvement in group facilitating and leadership. Increases group skills through active classroom participation in group experiences. Lecture 3 hours per week.

**HMS 145 EFFECTS OF PSYCHOACTIVE
DRUGS (3 CR.)**

Provides information on the biochemical, physiological, and behavioral aspects of substance addiction and will review the symptoms of addiction. Emphasizes areas of chemical dependency, medical epidemiology, physiological threats of addiction and methods of identifying multiple drug abusers. Lecture 3 hours per week.

**HMS 225 FUNCTIONAL
FAMILY INTERVENTION (3 CR.)**

Provides an understanding of functions and dysfunctions within the family. Emphasizes the development of effective skills through an interpersonal/interactional approach to family intervention. Lecture 3 hours per week.

**HMS 226
HELPING ACROSS CULTURES (3 CR.)**

Provides an historical overview of selected cultural and racial groups. Promotes understanding of group differences and the impact on counseling services. Lecture 3 hours per week.

**HMS 227 THE HELPER
AS A CHANGE AGENT (3 CR.)**

Teaches the following skills for implementing alternative models of change and influence: action research, problem-solving, consultation, workshop development, and outreach and advocacy for diverse client populations. Lecture 3 hours per week.

**HMS 228 PRODUCTIVE
PROBLEM-SOLVING (3 CR.)**

Develops problem-solving and program-development skills needed to function in helping relationships. Emphasizes skills-training within the classroom and application of the skills in other settings. Lecture 3 hours per week.

HMS 231-232**GERONTOLOGY I-II (3 CR.) (3 CR.)**

Examines characteristics of the aging process and problems for the elderly. Considers both theoretical and applied perspectives on the following issues: biological, psychological, sociological, economic and political. Lecture 3 hours per week.

HMS 237 HEALTH AND WELL-BEING OF THE ELDERLY (3 CR.)

Focuses on the health of the elderly and teaches preventive health techniques including cardio-pulmonary resuscitation (CPR). CPR certification is awarded upon successful completion of training. Lecture 3 hours per week.

HMS 238**SELECTED TOPICS IN AGING (3 CR.)**

Provides students with an opportunity to explore a variety of major current issues in aging. Topics may include care giving and the elderly, elderly drug use and misuse, protective services, crisis interventions, homecare, elder-abuse, and other current topics. Lecture 3 hours per week.

HMS 239 COMMUNITY SERVICES FOR THE ELDERLY (3 CR.)

Introduces the social service delivery system and analyzes its impact on the elderly. Discusses how national, state, and local programs for the elderly are developed. Assists students in becoming advocates for their clients. Lecture 3 hours per week.

HMS 251 SUBSTANCE ABUSE I (3 CR.)

Provides knowledge, skills, and insight for working in drug and alcohol abuse programs. Emphasizes personal growth and client growth measures in helping relationships. Stresses various methods of individual and group techniques for helping the substance abuser. Lecture 3 hours per week.

HMS 252 SUBSTANCE ABUSE II (3 CR.)

Prerequisite HMS 251. Expands knowledge and skill in working with the substance abuser. Focuses on assisting substance abusers in individual and group settings and explores client treatment modalities. May provide opportunities for field experience in treatment centers. Lecture 3 hours per week.

HMS 255 ADOLESCENT ALCOHOL USE AND ABUSE (3 CR.)

Examines adaptive and injurious effects of alcohol on the adolescent. Teaches adolescent developmental tasks, behavior concepts and principles. Explores specific treatment modalities. Lecture 3 hours per week.

HMS 258 CASE MANAGEMENT AND SUBSTANCE ABUSE (3 CR.)

Focuses on the process for interviewing substance abuse clients. Includes intake, assessment, handling denial, and ending the interview. Teaches skills for writing short-term goals and treatment plans with emphasis on accountability. Examines various reporting devices. Lecture 3 hours per week.

HMS 265 PERSONALITY THEORY (3 CR.)

HMS 265 and PSY 225 cannot both be taken for credit toward graduation. Studies the theories of personality and their relationship to counseling. Emphasis is on the historical perspective, view of human nature, contributions and limitations of each theory. Lecture 3 hours per week.

HMS 266**COUNSELING PSYCHOLOGY (3 CR.)**

Studies major counseling theories, their contributions and limitations, and the application of each to a counseling interaction. Students develop their own personal counseling theory. Lecture 3 hours per week.

HMS 297**COOPERATIVE EDUCATION (1-6 CR.)**

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

HUMANITIES**HUM 111-112****GREAT BOOKS I-II (3 CR.) (3 CR.)**

Introduces selected great works of philosophy and literature, with emphasis on close analysis of the text. Lecture 3 hours per week.

HUM 201 SURVEY**OF WESTERN CULTURE I (3 CR.)**

Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Ancient and Classical, Early Christian and Byzantine, Medieval, and Early Renaissance. Lecture 3 hours per week.

HUM 202 SURVEY**OF WESTERN CULTURE II (3 CR.)**

Studies thought, values, and arts of Western culture, integrating major developments in art, architecture, literature, music, and philosophy. Covers the following periods: Renaissance, Baroque, Enlightenment, Romantic, and Modern. Lecture 3 hours per week.

HUM 231-232 SURVEY**OF ASIAN CULTURE I-II (3 CR.) (3 CR.)**

Studies thought, values, and arts of Asian culture, integrating art, architecture, literature, music, and philosophy of various cultures, including two or more of the following: India, China, Japan, and Southeast Asia. Lecture 3 hours per week.

HUM 260 SURVEY OF TWENTIETH-CENTURY CULTURE (3 CR.)

Explores literature, visual arts, philosophy, music, and history of our time from an interdisciplinary perspective. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

INTERIOR DESIGN**IDS 100 THEORY AND TECHNIQUES OF INTERIOR DESIGN (3 CR.)**

Introduces drafting and presentation, color theory, and coordination, space planning and arrangement of furnishings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 105 ARCHITECTURAL DRAFTING FOR INTERIOR DESIGN (3 CR.)

Introduces tools and equipment, lettering, methods of construction, designing and delineation of architecture. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 106 THREE DIMENSIONAL DRAWING AND RENDERING (3 CR.)

Provides instruction in graphic presentation of three-dimensionally drawn interiors. Presents the use of colored media to render three-dimensional drawings. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 109 STYLES OF FURNITURE AND INTERIORS (3 CR.)

Teaches history of furnishings and interiors from the ancient world to the present. Lecture 3 hours per week.

IDS 115**CONTEMPORARY RESIDENTIAL DESIGN STUDIO (4 CR.)**

Prerequisites IDS 100, IDS 105, and IDS 106. Plans an interior space based on contemporary designs. Presents each step used in planning, i.e., drafting the space, spatial planning and arrangement, color and furnishings selection. May require a final visual presentation with all necessary furnishings, materials, and color boards with rendered perspectives. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

IDS 205**MATERIALS AND SOURCES (3 CR.)**

Presents textiles, floor and wall coverings, and window treatments. Emphasizes construction, fiber, finish, and code applications. May use research and field trips to trade sources representing these elements. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 206**LIGHTING AND FURNISHINGS (3 CR.)**

Provides instruction in lighting terminology and calculations and instructions in techniques of recognizing quality of construction in furnishings and related equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 207 UPHOLSTERY AND SLIPCOVERING (3 CR.)

Provides instruction and studio experience in cutting and fabricating slipcovers, and in upholstering small pieces of furniture. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 208 DRAPERY DESIGN AND FABRICATION (3 CR.)

Provides instruction in designing, measuring, cutting and fabricating various kinds of window treatments. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 215 THEORY AND RESEARCH IN COMMERCIAL DESIGN (3 CR.)

Teaches graphic standards and specifications in interior design. Explains handicap codes and fire codes for large scale spaces. Provides programming and space planning with emphasis on systems furniture. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

IDS 221 DESIGNING COMMERCIAL INTERIORS I (4 CR.)

Presents problems in designing and developing presentations with emphasis on retail spaces. Lecture 2 hours. Laboratory 4 hours. Total 6 hours per week.

IDS 225 BUSINESS PROCEDURES (3 CR.)

Provides instruction in preparation of contracts, purchase orders, specifications, and other business forms used in the interior design field. Lecture 3 hours per week.

IDS 235 ANTIQUES (3 CR.)

Involves process of research, authentication, and determining provenance. Covers examples of furnishings, fixtures, textiles, glass, and ceramics. May provide field trips, lectures, examination, and discussion to assist in determining age, condition, and other properties. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

ITALIAN**ITA 101-102 BEGINNING ITALIAN I-II (5 CR.) (5 CR.)**

Develops the understanding, speaking, reading, and writing of Italian, and emphasizes the structure of the language. Lecture 5 hours per week.

ITA 103-104 BASIC SPOKEN ITALIAN I-II (3 CR.) (3 CR.)

Teaches oral communication, and introduces the student to cultural mores and customs. Recommended for students with no prior instruction in the language. Does not fulfill the foreign language requirement for the Associate in Arts degree. Lecture 3 hours per week.

ITA 111-112 CONVERSATION IN ITALIAN I-II (3 CR.) (3 CR.)

Prerequisite for ITA 111 is ITA 102 or equivalent. Prerequisite for ITA 112 is ITA 111 or equivalent. Emphasizes the spoken language, stressing fluency and correctness of structure, pronunciation and vocabulary. Lecture 3 hours per week.

ITA 201-202 INTERMEDIATE ITALIAN I-II (3 CR.) (3 CR.)

Prerequisite ITA 102 or equivalent. Continues development of skills of understanding, speaking, reading and writing of Italian. Classes conducted in Italian. Lecture 3 hours per week.

JAPANESE**JPN 101-102 BEGINNING JAPANESE I-II (5 CR.) (5 CR.)**

Develops the understanding, speaking, reading, and writing of Japanese, and emphasizes the structure of the language. Lecture 5 hours per week.

JPN 201-202 INTERMEDIATE JAPANESE I-II (4 CR.) (4 CR.)

Prerequisite JPN 102. Continues the development of the skills of understanding, speaking, reading, and writing of Japanese. Classes conducted in Japanese. Lecture 4 hours per week.

LATIN**LAT 101-102 ELEMENTARY LATIN I-II (3 CR.) (3 CR.)**

Teaches Latin grammar and composition. Introduces the translation of Latin literature, with special selections from Caesar and other writers. Lecture 3 hours per week.

LAT 201-202 INTERMEDIATE LATIN I-II (3 CR.) (3 CR.)

Prerequisites two years high school Latin or one year college Latin. Introduces the reading of classical Latin with a review of Latin grammar, forms, and syntax. Lecture 3 hours per week.

LEGAL ADMINISTRATION**LGL 110 INTRODUCTION TO LAW AND THE LEGAL ASSISTANT (3 CR.)**

Introduces various areas of law in which a legal assistant will be working. Includes intense study of court system (Virginia and federal) as well as a brief overview of criminal law, torts, domestic relations, evidence, ethics, the role of the legal assistant and other areas of interest. Lecture 3 hours per week.

LGL 115 REAL ESTATE LAW (3 CR.)

Studies law of real property, and gives in-depth survey of more common types of real estate transactions and conveyances such as deeds, contracts, leases, and deeds of trust. Focuses on drafting problems involving these various instruments. Includes research projects, and studies the system of recording and search of public documents. Lecture 3 hours per week.

LGL 116 DOMESTIC RELATIONS AND CONSUMER LAW (3 CR.)

Studies elements of a valid marriage, grounds for divorce and annulment, separation, defenses, custody, support, adoptions, and applicable tax consequences. Focuses on separation and pre-nuptial agreements, pleadings, and rules of procedure. May include specific federal and Virginia consumer laws. Lecture 3 hours per week.

LGL 125 LEGAL RESEARCH (3 CR.)

Provides an understanding of various components of a law library, and emphasizes research skills through the use of digests, encyclopedias, reporter systems, codes, Shepards, ALR and other research tools. Lecture 3 hours per week.

LGL 126 LEGAL WRITING (3 CR.)

Requires competence in English grammar. Studies proper preparation of various legal documents, including case and appeal briefs, legal memoranda, letters and pleadings. Involves practical applications. Lecture 3 hours per week.

LGL 215 TORTS (3 CR.)

Studies fundamental principles of the law of torts, including preparation and use of pleadings and other documents involved in the trial of a civil action. Emphasizes personal injury and medical malpractice cases. Lecture 3 hours per week.

LGL 217 TRIAL PRACTICE AND THE LAW OF EVIDENCE (3 CR.)

Introduces civil and criminal evidence; kinds, degrees and admissibility of evidence; and methods and techniques of its acquisition. Emphasizes Virginia and federal rules of evidence. Focuses on elements of a trial and various problems associated with the trial of a civil or criminal case. Lecture 3 hours per week.

LGL 218 CRIMINAL LAW (3 CR.)

Focuses on major crimes: their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasizes Virginia law. Gives general principles of applicable constitutional law and criminal procedure. Lecture 3 hours per week.

LGL 227 ADMINISTRATION OF DECEDENTS' ESTATES (3 CR.)

Teaches students how to administer an estate efficiently. Includes instruction on substantive areas of law and preparation of forms and provides samples for the efficient administration of decedents' estates. Lecture 3 hours per week.

LGL 230 LEGAL TRANSACTIONS (3 CR.)

Introduces commercial principles and practices and Uniform Commercial Code. Emphasizes contracts, warrants, title, consideration, performance, parties, subject matter and remedies for breach, torts, sales, negotiable instruments, consumer protection, insurance, wills and inheritance, bankruptcy and statute of limitations. Lecture 3 hours per week.

LGL 235 LEGAL ASPECTS OF BUSINESS ORGANIZATIONS (3 CR.)

Examines lawyer's role in the formation of business entities, including sole proprietorship, partnerships and corporations, and other business vehicles. Studies fundamental principles of law applicable to each and the preparation of the documents necessary for organization and operation. Lecture 3 hours per week.

LGL 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

LIBRARY TECHNOLOGY**LBR 105 LIBRARY SKILLS FOR RESEARCH (1 CR.)**

Introduces students to library skills and resources. Employs a laboratory approach to develop skills in the use of library materials. Presents general information about library procedures, specific methods for utilizing varied reference materials including dictionaries, indexes, special subject area tools, on-line information retrieval, classification systems, and the card catalog. Introduces general topics on research paper preparation. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

MARKETING**MKT 100 PRINCIPLES OF MARKETING (3 CR.)**

Presents principles, methods and problems involved in the distribution and marketing of goods and services to industrial and ultimate consumers. Introduces various marketing middlemen: wholesaler, retailer, broker, agent including cooperative and trade associations, shippers, stores and facilitators. Discusses present-day problems and policies connected with distribution and sale of products, pricing, promotion, and buyer motivation. Examines variations of the marketing mix and market research, plus legal, social and ethical considerations in marketing. Lecture 3 hours per week.

- MKT 110 PRINCIPLES OF SELLING (3 CR.)**
Presents fundamental aspects of personal selling, sales, ethics, and selling methods. Emphasizes professional sales techniques. Examines organization necessary for a well coordinated sales effort, including the training of sales personnel for maximum efficiency in selling and organization of the sales division within the business enterprise. Introduces sales management in planning, organizing, directing and controlling the total sales effort. Lecture 3 hours per week.
- MKT 115 RETAIL ORGANIZATION AND MANAGEMENT (3 CR.)**
Examines the organization of the retail establishment to accomplish its goals in an effective and efficient manner. Includes study of site location, internal layout, store operations, and security. Examines the retailing mix, the buying or procurement process, pricing, and selling. Studies retail advertising, promotion and publicity as a coordinated effort to increase store traffic. Lecture 3 hours per week.
- MKT 120 FUNDAMENTALS OF FASHION (3 CR.)**
Develops an understanding of the principles and procedures involved in the production, distribution, and consumption of fashion merchandise. Traces the history and development of fashion and how these changes affect the fashion merchandising world. Focuses on changing consumer characteristics which influence demand for fashion products and the effects that fashion marketing activities have on the economy. Lecture 3 hours per week.
- MKT 129 BASIC INSURANCE SKILLS (3 CR.)**
Presents basic insurance concepts and terminology, including personal and commercial insurance. Emphasizes customer relations and interpersonal skills, including written and oral communications. Lecture 3 hours per week.
- MKT 200 CONSUMERS, MARKETING, AND SOCIETY (3 CR.)**
An overview of the marketing system as it applies to the needs and wants of consumers and the purchasing process, along with consideration of the role of government in consumer affairs. Assists the individual in becoming an informed consumer and better business manager through an understanding of rights and obligations in consumer transactions. Lecture 3 hours per week.
- MKT 220 PRINCIPLES OF ADVERTISING (3 CR.)**
Emphasizes the role of advertising in the marketing of goods and services. Discusses the different uses of advertising; types of media; how advertising is created; agency functions and legal, social and economic aspects of the industry. Introduces advertising display, copy and art work preparation, printing and selection of media. Lecture 3 hours per week.
- MKT 227 MERCHANDISE BUYING AND CONTROL (3 CR.)**
Studies the merchandising cycle. Explores techniques used in the development of buying resources, merchandising plans, model stock, unit control, and inventory systems. Highlights merchandise selection, policy pricing strategies, and inventory control methods. Lecture 3 hours per week.
- MKT 228 PROMOTION (3 CR.)**
Presents an overview of promotion activities including advertising, visual merchandising, publicity and sales promotion. Focuses on coordinating these activities into an effective campaign to promote sales for a particular product, business, institution or industry. Emphasizes budgets, selecting media, and analyzing the effectiveness of the campaign. Lecture 3 hours per week.
- MKT 236 COLOR, LINE AND DESIGN APPLICATION (3 CR.)**
Presents color theory and principles of line and design. Applies these principles to various fashion activities, such as visual merchandising, special events and apparel coordination. Lecture 3 hours per week.
- MKT 238 FASHION MERCHANDISING (3 CR.)**
Develops an understanding of the major considerations involved in the buying and merchandising of fashion products. Emphasizes the dynamics of fashion and consumer buying patterns and sources of buying information. Discusses fashion buying and inventory control in the merchandising cycle plus techniques used to develop fashion buying plans, model stocks, unit control and inventory systems. Stresses selection policy and pricing for profit. Lecture 3 hours per week.
- MKT 275 INTERNATIONAL MARKETING (3 CR.)**
Examines the role of the multinational firm, as well as the environments in which they operate. Covers such factors as exchange rates, government foreign trade policy, and social-cultural factors. Compares international market planning with domestic market planning. Lecture 3 hours per week.
- MKT 297 COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)
Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.
- MATHEMATICS**
- MTH 001 DEVELOPMENTAL MATHEMATICS (1-5 CR.)**
Bridges the gap between a weak mathematical foundation and the knowledge necessary for the study of mathematics courses in technical and professional programs. Arithmetic, algebra, geometry, and trigonometry may be covered. Students may re-register for this course in subsequent semesters as necessary until the course objectives are completed. Variable hours per week.
- MTH 002 BASIC ARITHMETIC (1-5 CR.)**
Reviews arithmetical principles and computations designed to develop the mathematical proficiency necessary for selected curriculum entrance. Variable hours per week.
- MTH 003 BASIC ALGEBRA I (1-5 CR.)**
Prerequisites satisfactory score on an appropriate proficiency examination and MTH 002 or equivalent. Develops mathematical proficiency necessary for selected curriculum entrance. Variable hours per week.
- MTH 004 BASIC ALGEBRA II (1-5 CR.)**
Prerequisite satisfactory score on an appropriate proficiency examination and MTH 003 or equivalent. Develops the mathematical proficiency in intermediate algebra necessary for selected curriculum entrance. Variable hours per week.
- MTH 006 BASIC GEOMETRY (1-5 CR.)**
Prerequisites satisfactory score on an appropriate proficiency examination and MTH 003 or equivalent. Develops the mathematical proficiency in geometry necessary for selected curriculum entrance. Variable hours per week.
- MTH 007 BASIC TRIGONOMETRY (1-5 CR.)**
Prerequisites satisfactory score on an appropriate proficiency examination and MTH 004 or equivalent. Develops the mathematical proficiency in trigonometry necessary for selected curriculum entrance. Variable hours per week.
- MTH 103-104 BASIC TECHNICAL MATHEMATICS I-II (3 CR.) (3 CR.)**
Prerequisites satisfactory score on an appropriate proficiency examination and MTH 002 or equivalent. Presents a review of arithmetic, and teaches elements of algebra, geometry, and trigonometry. Directs applications to specialty areas. Lecture 3 hours per week.
- MTH 115-116 TECHNICAL MATHEMATICS I-II (3 CR.) (3 CR.)**
Prerequisites satisfactory score on appropriate mathematics proficiency examinations, two units of high school algebra and one unit of high school geometry or equivalent. Designed for the technical student. Teaches analytical geometry of the straight line, basic algebra through exponentials and logarithms, curve sketching, numerical trigonometry, vectors, and complex numbers. Introduces analytical trigonometry and calculus. Lecture 3 hours per week.
- MTH 120 INTRODUCTION TO MATHEMATICS (3 CR.)**
Prerequisite is a satisfactory score on an appropriate proficiency examination covering basic arithmetic skills. MTH 003 or equivalent is desirable. Introduces number systems, logic, basic algebra, systems of equations, and descriptive statistics. Lecture 3 hours per week.
- MTH 126 MATHEMATICS FOR ALLIED HEALTH (2 CR.)**
Teaches scientific notation, precision and accuracy, decimals and percents, ratio and proportion, variation, simple equations, techniques of graphing, use of charts and tables, logarithms, and the metric system. Lecture 2 hours per week.
- MTH 150 TOPICS IN GEOMETRY (3 CR.)**
Prerequisites satisfactory score on an appropriate proficiency examination and MTH 003 and MTH 006 or equivalent. Studies the fundamentals of plane and solid geometry. Topics include visualization, ratio, right triangle geometry, and non-Euclidean geometry. Applications will aid students in aviation, teaching, and other fields. Lecture 3 hours per week.

MTH 151-152 MATHEMATICS FOR THE LIBERAL ARTS I-II (3 CR.) (3 CR.)

Prerequisites satisfactory score on an appropriate proficiency examination and MTH 003 and either MTH 004 or MTH 006 or equivalent. Covers the basic concepts and methods of mathematics, computer science, and statistics. Presents topics including number theory, logic, functions, elementary computer concepts, problem-solving, probability, and statistics. Lecture 3 hours per week.

MTH 160 INTRODUCTION TO COLLEGE ALGEBRA (3 CR.)

Prerequisites include a satisfactory score on an appropriate proficiency examination and MTH 004 or equivalent. Reviews the fundamental ideas of algebra including sets, polynomials, rational expressions, graphing, equations and inequalities, relations and functions, and systems of first degree equations and inequalities. Lecture 3 hours per week.

MTH 165 COLLEGE ALGEBRA (3 CR.)

Prerequisites are a satisfactory score on an appropriate proficiency examination and MTH 003, MTH 004 and MTH 006 or equivalent. Prepares students for MTH 271, Applied Calculus. Topics include algebra, analytic geometry, systems of equations, and a study of algebraic, exponential, and logarithmic functions. Credit is not given for both MTH 165 and MTH 166. Lecture 3 hours per week.

MTH 166 COLLEGE ALGEBRA AND TRIGONOMETRY (4 CR.)

Prerequisites are a satisfactory score on an appropriate proficiency examination and MTH 003, MTH 004, and MTH 006 or equivalent. Prepares students for Calculus with Analytic Geometry. Includes algebra, analytic geometry, and a study of algebraic and transcendental functions. Credit is not given for both MTH 165 and MTH 166. Lecture 4 hours per week.

MTH 173-174 CALCULUS WITH ANALYTIC GEOMETRY I-II (5 CR.) (5 CR.)

Prerequisites are MTH 166 or (1) satisfactory score on an appropriate proficiency examination and (2) two units of algebra, one unit of geometry and one-half unit each of trigonometry and pre-calculus. Covers functions, limits, derivatives, differentials, indefinite integrals, definite integrals, and applications. Lecture 5 hours per week.

MTH 181-182 FINITE MATHEMATICS I-II (3 CR.) (3 CR.)

Prerequisites satisfactory score on an appropriate proficiency examination and MTH 003, MTH 004, and MTH 006 or equivalent. Introduces set theory, the real number system, probability theory, vectors, matrices, linear programming, systems of linear equations, and theory of games. Lecture 3 hours per week.

MTH 213 ADVANCED ENGINEERING TECHNICAL MATHEMATICS I (3 CR.)

Prerequisite MTH 116 or equivalent. Applies differential and integral calculus to the appropriate technical field. Lecture 3 hours per week.

MTH 241-242 STATISTICS I-II (3 CR.) (3 CR.)

Prerequisites MTH 152, MTH 165, MTH 182, or permission of the division. Covers descriptive statistics, elementary probability, distributions, including the normal distribution, sampling distributions, estimation, hypothesis testing (including z , t , F and χ^2 tests), regression, correlation, analysis of variance, and non-parametric methods. Lecture 3 hours per week.

MTH 243-244 PROBABILITY AND STATISTICS I-II (3 CR.) (3 CR.)

Prerequisite for MTH 243 is MTH 174 or equivalent. Corequisite is MTH 277. Prerequisite for MTH 244 is MTH 285. Covers distribution theory, moment generating functions, estimation, multiple regression, and analysis of variance. Lecture 3 hours per week.

MTH 250 COLLEGE GEOMETRY (3 CR.)

Prerequisite MTH 174 or consent of the division. Presents topics in Euclidean and non-Euclidean geometries chosen to prepare individuals for teaching geometry at the high school level. Studies Euclid's geometry and its limitations, axiomatic systems, techniques of proof, and Hilbert's geometry, including the parallel postulates for Euclidean, hyperbolic, and elliptic geometries. Lecture 3 hours per week.

MTH 271-272 APPLIED CALCULUS I-II (3 CR.) (3 CR.)

Prerequisites are a satisfactory score on an appropriate proficiency examination and MTH 165 or four units of high school mathematics beginning with two units of algebra and one unit of geometry or equivalent. Introduces limits, continuity, differentiation and integration of algebraic and transcendental functions, multivariable calculus, and differential equations. Emphasizes applications. Lecture 3 hours per week.

MTH 277 MULTIVARIABLE CALCULUS (4 CR.)

Prerequisite is satisfactory completion of Calculus with Analytic Geometry I-II. Covers vector valued functions, partial derivatives, multiple integration, and topics in vector calculus. Lecture 4 hours per week.

MTH 285 LINEAR ALGEBRA (3 CR.)

Prerequisite is satisfactory completion of Calculus with Analytic Geometry I-II. Covers matrices, vector spaces, determinants, solutions of systems of linear equations, eigenvalues, and eigenvectors. Lecture 3 hours per week.

MTH 286 DISCRETE MATHEMATICS (4 CR.)

Prerequisite MTH 174. Examines mathematical structures and procedures that facilitate the manipulation of discrete or non-continuous data, primarily for Computer Science majors. Topics include sets, logic and Boolean algebra, counting methods, functions and relations, graphs, trees, and introduction to finite state automata. Lecture 4 hours per week.

MTH 291 ORDINARY DIFFERENTIAL EQUATIONS (3 CR.)

Prerequisite is satisfactory completion of Calculus with Analytic Geometry I-II. Covers first order differential equations, linear differential equations, systems of differential equations, and applications. Lecture 3 hours per week.

MTH 292 TOPICS IN DIFFERENTIAL EQUATIONS (3 CR.)

Prerequisite is successful completion of Multivariable Calculus and Ordinary Differential Equations. Covers more topics in differential equations. These topics include series solutions, Fourier series, Laplace transform, partial differential equations and boundary value problems. Lecture 3 hours per week.

MTH 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MECHANICAL ENGINEERING TECHNOLOGY**MEC 112 PROCESSES OF INDUSTRY (3 CR.)**

Analyzes the processes of manufacturing products from materials for industry/engineering. Includes machining casting, forming molding, hot/cold working, chipless machining, and welding. Addresses quality assurance and inspection procedures. Lecture 3 hours per week.

MEC 118 AUTOMATED MANUFACTURING TECHNOLOGY (3 CR.)

Studies numerical control systems. Includes application of numerical control to standard machine tools, numerical control systems, NC coordinate system, APT systems, two-dimensional machine process, three-dimensional machine process, flexible manufacturing role of robotics in automated manufacturing. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MEC 120 PRINCIPLES OF MACHINE TECHNOLOGY (3 CR.)

Studies fundamental machine operations and practices, including layout, measuring devices, hand tools, drilling, reaming, turning between centers, cutting tapers and threads, and milling; fabrication of mechanical parts on drill press, lathe and mill. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MEC 126 COMPUTER PROGRAMMING FOR TECHNOLOGISTS (2 CR.)

Introduces computer programming to technology students. Covers programming for the microcomputer using high level languages such as BASIC, FORTRAN, or Pascal. Teaches computer solutions of mathematical problems in applications such as circuit analysis and static equilibrium. Lecture 2 hours per week.

MEC 127 COMPUTER PROGRAMMING FOR ENGINEERING TECHNOLOGY (3 CR.)

Focuses on programming for microcomputers in engineering technology. Covers problem solving techniques, structures programming, flowcharts, input/output, variables, expressions, conditionals, looping, and subroutines. Uses scientific languages such as BASIC, Pascal, and FORTRAN. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 133 MECHANICS III - DYNAMICS FOR ENGINEERING TECHNOLOGY (2 CR.)

Focuses on rigid body mechanics including kinetics, kinematics, and applications to machine elements. Lecture 2 hours per week.

MEC 136 ADVANCED MACHINE TECHNOLOGY (3 CR.)

Prerequisite MEC 120. Applies machine operations of MEC 133 and boring, grinding and gear cutting to build simple machines and make the necessary tools for fabrication. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MEC 155 MECHANISMS (2 CR.)

Studies the purpose and actions of cams, gear trains, levers, and other mechanical devices

used to transmit control. Focuses on motions, linkages, velocities, and acceleration of points within a link mechanism; layout method for designing cams and gear grain. Requires preparation of weekly laboratory reports. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MEC 210 MACHINE DESIGN (3 CR.)

Studies the design of machine elements for producing and transmitting power. Includes additional material in statics, strength of materials, dynamics, engineering materials and industrial processes, including lubrication, and friction. Emphasizes graphical kinematics of mechanisms, and discusses analytical design of machine components. Requires preparation of weekly laboratory reports. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 225 METALLURGY (3 CR.)

Prerequisites MEC 112 and MTH 116. Teaches fundamentals of metallurgy, grain size, effect on carbon content, and hardness testing devices. Tests different alloys to determine the effect of heat treatment. Requires preparation of weekly laboratory reports. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 245 ROBOTICS (3 CR.)

Prerequisite MEC 118. Introduces industrial robotics including spatial descriptions, positions, translations, rotations, mappings and transformations; manipulator kinematics and dynamics; force control of manipulators. Teaches robot programming languages and systems; programming and operation of education robots. Requires outside laboratory reports. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MEC 255 THERMODYNAMICS (3 CR.)

Prerequisite MTH 116. Studies the properties of fluids and basic principles of work, energy, and heat. Includes the first and second laws of thermodynamics, processes and cycles, thermal reversibilities and irreversibilities, internal combustion engines, and gas turbines. Lecture 3 hours per week.

MEC 265 FLUID MECHANICS (3 CR.)

Studies properties of fluids and fluid flow, Bernoulli's theorem, measuring devices, viscosity and dimensional analysis. Emphasizes pumps, piping, and fluid motors. Lecture 3 hours per week.

MEC 297

COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MEDICAL LABORATORY

MDL 101 INTRODUCTION TO MEDICAL LABORATORY TECHNIQUES (3 CR.)

Introduces the basic techniques including design of the health care system, ethics, terminology, calculations, venipuncture and routine urinalysis. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MDL 105 PHLEBOTOMY (3 CR.)

Introduces basic medical terminology, anatomy, physiology, components of health care de-

livery and clinical laboratory structure. Teaches techniques of specimen collection, specimen handling, and patient interactions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MDL 110 URINALYSIS AND BODY FLUIDS (3 CR.)

Studies the gross, chemical, and microscopic techniques used in the clinical laboratory. Emphasizes study of clinical specimens which include the urine, feces, cerebrospinal fluid, blood, and body exudates. Introduces specimen collection and preparation. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MDL 120 PRINCIPLES OF HEMATOLOGY (4 CR.)

Presents theory of procedure performed in hematology and coagulation and the relationship of these procedures to the diagnosis of disease. Includes performance of manual hematology procedure and coagulation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

MDL 130 BASIC CLINICAL MICROBIOLOGY (3 CR.)

Studies classification, theories, techniques, and methods used in basic bacteriology, parasitology, and micology. Emphasizes routine identification. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MDL 135 CLINICAL MICROBIOLOGY TECHNIQUES I (5 CR.)

Introduces the basic theories and techniques used to identify bacteria, fungi, and parasites in a simulated clinical setting. Lecture 3 hours. Laboratory 6 hours. Total 9 hours per week.

MDL 215 IMMUNOLOGY (2 CR.)

Presents the physiological basis of humoral and cell mediated immunity, including the medical and clinical laboratory application of immunological principles. Lecture 2 hours per week.

MDL 216 BLOOD BANKING (4 CR.)

Teaches fundamentals of blood grouping and typing, compatibility testing, antibody screening, component preparation, donor selection, and transfusion reactions and investigation. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

MDL 230-231 PRINCIPLES AND TECHNIQUES OF HISTOLOGY I-II (3 CR.) (3 CR.)

Prerequisite for MDL 231 is MDL 230. Teaches the basic principles of histological techniques. Emphasizes the theory behind the practical aspects of producing good tissue sections. Covers special techniques in staining, immunofluorescence, immunoperoxidase, and electron microscopy. Lecture 3 hours per week.

MDL 255

DIAGNOSTIC MICROBIOLOGY (3 CR.)

Presents principles of medical microbiology including specimen handling, identification and pathogenicity of bacteria, fungi, parasites and viruses infecting humans. Lecture 3 hours per week.

MDL 261-262 CLINICAL CHEMISTRY AND INSTRUMENTATION I-II (4 CR.) (5 CR.)

Introduces methods of performing biochemical analysis of clinical specimens. Teaches instrumentation involved in a clinical chemistry laboratory, quality control, and the ability to

recognize technical problems. Lecture 2-3 hours. Laboratory 6 hours. Total 8-9 hours per week.

MDL 265 ADVANCED CLINICAL CHEMISTRY (2 CR.)

Presents principles of current special chemistry techniques. Lecture 2 hours per week.

MDL 266 CLINICAL CHEMISTRY TECHNIQUES (4 CR.)

Includes performing of clinical chemistry methodologies and operation of typical instrumentation in a clinical laboratory or simulated laboratory setting. Laboratory 12 hours per week.

MDL 276 CLINICAL HEMATOLOGY TECHNIQUES (4 CR.)

Stresses performing hematological and coagulation methods and operation of typical instrumentation in a clinical laboratory or simulated laboratory setting. Laboratory 12 hours per week.

MDL 277 CLINICAL IMMUNOHEMATOLOGY AND IMMUNOLOGY TECHNIQUE (4 CR.)

Deals with performing techniques, procedures, and interpretations in Blood Banking and Serology in a clinical laboratory or simulated laboratory setting. Laboratory 12 hours per week.

MDL 278 CLINICAL MICROBIOLOGY TECHNIQUES II (4 CR.)

Includes performing of techniques, procedures, and identification of microorganisms in a clinical laboratory or simulated laboratory setting. Laboratory 12 hours per week.

MDL 281 CLINICAL CORRELATIONS (1 CR.)

Teaches students to apply knowledge gained in courses offered in the MDL curriculum using primarily a case history form of presentation. Emphasizes critical thinking skills in the practice of laboratory medicine. Lecture 1 hour per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MEDICAL RECORDS

MDR 100 INTRODUCTION TO THE HEALTH CARE DELIVERY SYSTEM (1 CR.)

Introduces the organization of the health care delivery system with emphasis on types of providers and the role that accrediting and licensing bodies play in the delivery of health care. Lecture 1 hour per week.

MDR 113-114 MEDICAL TERMINOLOGY AND DISEASE PROCESSES I-II (3 CR.) (3 CR.)

Includes the study of prefixes, suffixes, stem words, and technical terms; puts emphasis on the causes and treatment of selected disease processes. Lecture 3 hours per week.

MDR 141-142 FUNDAMENTALS OF HEALTH INFORMATION SYSTEMS I-II (3 CR.) (3 CR.)

Focuses on health data collection, storage, retrieval and reporting systems, with emphasis on the role of the computer in accomplishing these functions. Lecture 3 hours per week.

MDR 215 HEALTH DATA**CLASSIFICATION SYSTEMS (5 CR.)**

Prerequisite MDR 141 or permission of the program head. Focuses on disease and procedure classification systems currently utilized for collecting health data for the purposes of statistical research and financial reporting. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

MDR 220 HEALTH STATISTICS (2 CR.)

Introduces the student to basic statistical principles as applied in the health care environment. Lecture 2 hours per week.

MDR 225 QUALITY ASSURANCE**IN HEALTH CARE (2 CR.)**

Presents medical care evaluation techniques, utilization review activities, peer review organization requirements, and risk management. Lecture 2 hours per week.

MDR 226 LEGAL ASPECTS OF HEALTH**RECORD DOCUMENTATION (2 CR.)**

Presents the legal requirements associated with health record documentation. Emphasizes the policies and procedures concerning the protection of the confidentiality of the patient's health record. Lecture 2 hours per week.

MDR 231-232 HEALTH RECORD**APPLICATIONS I-II (3 CR.) (3 CR.)**

Uses an integrated approach to practicing health records skills in a simulated clinical environment. Emphasizes the use of the microcomputer in accomplishing problem-solving tasks. Laboratory 6 hours per week.

MDR 241 FUNDAMENTALS OF**HEALTH INFORMATION****SYSTEMS III (3 CR.)**

Continues MDR 142. Lecture 3 hours per week.

MDR 251 CLINICAL PRACTICE I (4 CR.)

Supervises student practice in health record activities conducted in a variety of clinical settings. Laboratory 12 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

MUSIC**MUS 008****FUNDAMENTALS OF MUSIC (3 CR.)**

Teaches the beginner to read, write, and understand the symbols of music notation. Introduces both pitch and rhythmic notation symbols. Combines listening and visual exercises in order to develop performance skills and proficiency in the language of music. Registration permitted until course objectives are completed. Lecture 3 hours per week.

MUS 101-102 BASIC**MUSICIANSHIP I-II (3 CR.) (3 CR.)**

Provides exercises leading to knowledge and skill in the rudiments of music. Includes rhythmic notation as well as scales, keys, and intervals along with exercises in sight reading and ear training. Lecture 3 hours per week.

MUS 109 MUSIC FOR CHILDREN (3 CR.)

Selects and develops a repertoire of songs, musical games, rhythms, and movement activities for the 2-5-year-old. Develops skills on keyboard, autoharp, or musical instruments appropriate for use in early childhood educa-

tion. Lecture 3 hours, Laboratory 1 hour. Total 4 hours per week.

MUS 111-112**MUSIC THEORY I-II (4 CR.) (4 CR.)**

Discusses elements of musical construction of scales, intervals, triads, and chord progressions. Develops ability to sing at sight and write from dictation. Introduces the analysis of the Bach chorale style. Expands facility with harmonic dictation and enables the student to use these techniques at the keyboard. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

MUS 113 INSTRUMENTAL**REPAIR I (3 CR.)**

Teaches the principles of instrumental maintenance and repair through the use of modern diagnostic methods. Explains electronic and mechanical diagnostic and remedial techniques. Includes both theoretical and applied laboratory experiments. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

MUS 120 HYMNOLOGY (3 CR.)

Prerequisite divisional approval. Studies the development of hymns throughout different historical periods. Analyzes hymn styles for a variety of religious services throughout the liturgical year. Surveys current trends in hymn singing and accompaniment styles. Lecture 3 hours per week.

MUS 121-122 MUSIC**APPRECIATION I-II (3 CR.) (3 CR.)**

Increases the variety and depth of the student's interest, knowledge, and involvement in music and related cultural activities. Acquaints the student with traditional and twentieth century music literature, emphasizing the relationship music has as an art form with man and society. Increases the student's awareness of the composers and performers of all eras through listening and concert experiences. Lecture 3 hours per week.

MUS 123-124 ORGANIZING**AND DIRECTING****CHORAL ACTIVITIES I-II (2 CR.) (2 CR.)**

Develops the organizational skills necessary for directing a variety of choral groups, planning a rehearsal, and building a choral program. Enables students to master the conducting skills that deal with beat patterns, score reading, and musical terminology. Permits performance in a laboratory group as singers and conductors to gain experience in selecting and rehearsing music. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 125 AMERICAN MUSIC (3 CR.)

Presents the development of music in America from early colonists to the present, in light of philosophical, political, geographical, and sociological developments. Lecture 3 hours per week.

MUS 130 OVERVIEW OF**THE RECORDING INDUSTRY (1 CR.)**

Prerequisite divisional approval. Introduces and surveys employment opportunities in the commercial music industry. Assists students in defining their professional goals. Lecture 1 hour per week.

MUS 131-132**CLASS VOICE I-II (2 CR.) (2 CR.)**

Introduces the many aspects of singing from the physical act through the aesthetic experi-

ence. The course is designed for the beginning singer who desires vocal improvement, and for the voice major as an addition to and extension of skills and knowledge necessary for artistic development. Introduces appropriate repertoire. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 133-134 RECORDING**SYSTEMS SERVICES I-II (3 CR.) (3 CR.)**

Prerequisite divisional approval. Introduces the principles of recording systems and recording system designs. Provides the student with theoretical and practical site locations. Includes the study of sound studio design and construction, production costs, and retail distribution. This general survey course is not applicable to the Music Recording Technology Certificate program. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 136**APPLIED MUSIC-VOICE * (1-2 CR.)**

Prerequisite divisional approval. Teaches singing, proper breath control, diction, and development of tone. Studies the standard vocal repertoire. One or two half-hour lessons per week. Four to eight hours practice required.

MUS 137 CHORUS ** (1-2 CR.)**MUS 138****SMALL VOCAL ENSEMBLE ** (1-2 CR.)****MUS 140 INTRODUCTION TO****RECORDING TECHNIQUES (3 CR.)**

Introduces the theory and practice of basic magnetic and multichannel recording. Presents the concepts of recording electronics, equipment nomenclature, function, application, and interface, microphone application, and mix-down techniques. Provides basic hands-on experience in the recording studio. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 141-142**CLASS PIANO I-II (2 CR.) (2 CR.)**

Offers the beginning piano student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of keyboard playing. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 145**APPLIED MUSIC - KEYBOARD * (1-2 CR.)**

Prerequisite divisional approval. Teaches piano, organ, harpsichord, or synthesizer. Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.

MUS 148 ORCHESTRA ** (1-2 CR.)**MUS 149 BAND ** (1-2 CR.)****MUS 151-152****CLASS WOODWINDS I-II (2 CR.) (2 CR.)**

Offers the beginning woodwind student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of specific woodwind instruments. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

- MUS 155 APPLIED MUSIC - WOODWINDS *** (1-2 CR.)
Prerequisite divisional permission. Teaches fundamentals of the woodwind instruments. Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.
- MUS 156 WOODWINDS ENSEMBLE **** (1-2 CR.)
- MUS 157 SOUND STUDIO DESIGN** (3 CR.)
Prerequisite divisional approval. Introduces the theory and practice of sound studio design. Provides a basic understanding of acoustics and the acoustical properties of construction materials. Allows the student practical opportunities in designing sound studios. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 158 RECORDING STUDIO ELECTRONICS: THEORY AND MAINTENANCE** (3 CR.)
Prerequisite divisional approval. Introduces the practices used in maintaining professional recording equipment and basic electronic theory used within the recording industry. Provides the skills and knowledge necessary to perform routine maintenance and to repair recording and related equipment. Designed to prepare the student for position as entry-level technician or apprentice recording engineer. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 159 IMPROVISATIONAL TECHNIQUES** (3 CR.)
Prerequisite selected Applied Music or freshman level proficiency. Introduces the principles of improvisation using harmonic structures and progressions from the period of common practice. Includes listening to and performing music of the standard jazz and popular repertoire. Develops performance skills utilizing specific improvisational devices employed in different historical periods. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 161-162 CLASS STRINGS I-II** (2 CR.) (2 CR.)
Offers the beginning string student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of specific string instruments. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- MUS 163-164 GUITAR THEORY AND PRACTICE I-II** (3 CR.) (3 CR.)
Studies the fundamentals of sound production, music theory, and harmony as they apply to guitar. Builds proficiency in both the techniques of playing the guitar and in the application of music fundamentals to these techniques. Presents different types of guitars and related instruments. Emphasizes music as entertainment and as a communication skill. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.
- MUS 165 APPLIED MUSIC - STRINGS *** (1-2 CR.)
Prerequisite divisional approval. Teaches fundamentals of string instruments, harp, or guitar. Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.
- MUS 166 STRING ENSEMBLE **** (1-2 CR.)
- MUS 171-172 CLASS BRASS I-II** (2 CR.) (2 CR.)
Offers the beginning brass student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of specific brass instruments. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- MUS 175 APPLIED MUSIC - BRASS *** (1-2 CR.)
Prerequisite divisional approval. Teaches fundamentals of brass instruments. Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.
- MUS 176 BRASS ENSEMBLE **** (1-2 CR.)
- MUS 179 MUSIC COPYRIGHT LAW** (1 CR.)
Prerequisite divisional approval. Introduces the legal problems and normal conventions practiced within the commercial music industry. Provides a basic understanding of national and international music copyright laws. Lecture 1 hour per week.
- MUS 181-182 CLASS PERCUSSION I-II** (2 CR.) (2 CR.)
Offers the beginning percussion student activities in learning musical notation, in accomplishing sight reading skills, and in mastering techniques of specific percussion instruments. Presents appropriate literature. Open to all students and may be used to fulfill applied minor instrument requirement for music major. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- MUS 185 APPLIED MUSIC - PERCUSSION *** (1-2 CR.)
Prerequisite divisional permission. Teaches fundamentals of percussion instruments. Studies the standard repertoire. 1-2 half-hour lessons per week, 4-8 hours practice (laboratory) required.
- MUS 186 PERCUSSION ENSEMBLE **** (1-2 CR.)
- MUS 205 KEYBOARD METHODS AND MATERIALS** (3 CR.)
Studies the problems, materials, and techniques of teaching keyboard. Lecture 3 hours per week.
- MUS 211-212 ADVANCED MUSIC THEORY I-II** (4 CR.) (4 CR.)
Prerequisite MUS 111-112 or equivalent. Increases facility in the analysis and usage of diatonic and chromatic harmonies. Continues harmonic analysis of Bach style. Includes exercises in sight-singing, ear-training, and keyboard harmony. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.
- MUS 213-214 COMPOSITION I-II** (3 CR.) (3 CR.)
Prerequisite divisional approval. Requires the writing of short compositions in several styles, ranging from the 18th to the 20th century, for various instrumental or vocal combinations. Individualized instruction meets the special need of each student. Score analysis forms an important part of this course. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 221-222 HISTORY OF MUSIC I-II** (3 CR.) (3 CR.)
Presents the chronology of musical styles from antiquity to the present time. Relates the historical development of music to parallel movements in art, drama, and literature. Develops techniques for listening analytically and critically to music. Lecture 3 hours per week.
- MUS 223-224 THE HISTORY OF OPERA I-II** (3 CR.) (3 CR.)
Studies the development of operatic style through the presentation of representative works from 1600 to the present. Lecture 3 hours per week.
- MUS 225 THE HISTORY OF JAZZ** (3 CR.)
Studies the underlying elements of jazz, concentrating on its cultural and historical development from earliest stages to the present. No previous knowledge of music is required. Lecture 3 hours per week.
- MUS 226 TWENTIETH CENTURY MUSIC AND MUSIC CULTURES** (3 CR.)
Examines the twentieth century in all its social, political, and cultural ramifications as a point of departure. Includes a study of both Western and non-Western folk, popular, and classical music of the twentieth century. Lecture 3 hours per week.
- MUS 227 EDITING AND MIXDOWN TECHNIQUES** (3 CR.)
Prerequisite divisional approval. Introduces the theory and practice of electronic-mechanical editing and mixdown techniques. Provides the skills necessary to edit, mixdown, externally reprocess, and otherwise manipulate multitrack original recordings into finished master recordings. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 231-232 ADVANCED CLASS VOICE I-II** (2 CR.) (2 CR.)
Continues MUS 131-132. Continues the expansion of appropriate vocal repertoire. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
- MUS 235 ADVANCED RECORDING TECHNIQUES** (3 CR.)
Prerequisite MUS 140 or divisional approval. Introduces advanced recording techniques that lead to master release and demonstration tapes. Provides knowledge and skills in refined areas of multi-channel recording and mixdown techniques. Includes study of the process which converts finished master tapes to phonograph discs or prerecorded cartridges suitable for retail release. Provides experience in solving on-site recording problems. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.
- MUS 236 ADVANCED APPLIED MUSIC - VOICE *** (1-2 CR.)
Continues MUS 126.
- MUS 237 CHORUS **** (1-2 CR.)
Continues MUS 137.
- MUS 238 SMALL VOCAL ENSEMBLE **** (1-2 CR.)
Continues MUS 138.
- MUS 241-242 ADVANCED CLASS PIANO I-II** (2 CR.) (2 CR.)
Teaches advanced applications of keyboard fundamentals and technical skills. Includes ex-

ercises in intervals, triads, all major and minor scales, and simple and compound meters. Uses advanced repertoire. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 243-244 LITURGICAL MUSIC AND SERVICE PLAYING I-II (3 CR.) (3 CR.)

Acquaints the student with the standard repertoire of vocal, instrumental, and organ literature used in a variety of liturgical services. Develops the knowledge and performance skills for piano or organ accompaniment and registration for responses, hymns, and anthems. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 245 ADVANCED APPLIED MUSIC - KEYBOARD * (1-2 CR.)

Continues Applied Music - Keyboard MUS 145.

MUS 248 ORCHESTRA ** (1-2 CR.)

Continues Orchestra MUS 148.

MUS 249 BAND ** (1-2 CR.)

Continues Band MUS 149.

MUS 255 ADVANCED APPLIED MUSIC - WOODWINDS * (1-2 CR.)

Continues Applied Music - Woodwinds MUS 155.

MUS 256

WOODWIND ENSEMBLE ** (1-2 CR.)

Continues Woodwind Ensemble MUS 156.

MUS 259 ADVANCED IMPROVISATIONAL TECHNIQUES (3 CR.)

Prerequisite MUS 159. Extends the improvisational performance skills of the student in the standard jazz repertoire through the use of techniques based on harmonic progressions, rhythmic patterns, and scalar and arpeggio patterns. Includes the practical application of modal theory to standard jazz and popular repertoire. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

MUS 265 ADVANCED APPLIED MUSIC - STRINGS * (1-2 CR.)

Continues Applied Music - Strings MUS 165.

MUS 266 STRING ENSEMBLE ** (1-2 CR.)

Continues String Ensemble MUS 166.

MUS 275 ADVANCED APPLIED MUSIC - BRASS * (1-2 CR.)

Continues Applied Music - Brass MUS 175.

MUS 276 BRASS ENSEMBLE ** (1-2 CR.)

Continues Brass Ensemble MUS 176.

MUS 278 MULTICHANNEL RECORDING WORKSHOP (2 CR.)

Prerequisite divisional approval. Provides the opportunity to improve and refine multichannel recording techniques in a seminar and project format. Emphasizes hands-on laboratory experiences in multichannel recording, overdubbing, and mixdown techniques. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

MUS 285 ADVANCED APPLIED MUSIC - PERCUSSION * (1-2 CR.)

Continues Applied Music - Percussion MUS 185.

MUS 286 PERCUSSION ENSEMBLE ** (1-2 CR.)

Continues Percussion Ensemble MUS 186.

MUS 288 RECORDING PROBLEMS SEMINAR (2 CR.)

Prerequisite divisional approval. Provides a seminar setting in which students may discuss recording problems with commercial music industry professionals. Introduces the student to professional organizations, libraries, and journals common to the recording industry. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

* **APPLIED MUSIC:** Private lessons are available for either 1 or 2 hours of credit per semester. The length of the lessons will be 1/2 hour for 1 hour credit and 1 hour for 2 hours credit per semester. All courses in applied music may be repeated for a total of 8 hours for the major and 4 hours for the minor.

** **ENSEMBLE:** Courses in ensemble consist of performance from the standard repertoires, including study of ensemble techniques and interpretation. Divisional approval required. May be repeated for credit. Laboratory /Rehearsal 3-6 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

NATURAL SCIENCE

NAS 101-102 NATURAL SCIENCES I-II (4 CR.) (4 CR.)

Presents a multidisciplinary perspective integrating the main fields of science. Emphasizes the interaction of the scientific disciplines. (Primarily for non-science majors.) Lecture 3 hours per week. Recitation and laboratory 3 hours per week. Total 6 hours per week.

NAS 120 INTRODUCTORY METEOROLOGY (3 CR.)

Studies cloud formation, weather maps, forecasting, and wind systems with emphasis on local weather patterns. Lecture 3 hours per week.

NAS 125 METEOROLOGY (4 CR.)

Presents a non-technical survey of fundamental meteorology. Focuses on the effects of weather and climate on humans and their activities. Serves for endorsement or recertification of earth science teachers. Lecture 3 hours. Recitation and laboratory 2 hours. Total 5 hours per week.

NAS 130 ELEMENTS OF ASTRONOMY (4 CR.)

Covers history of astronomy and its recent developments. Stresses the use of astronomical instruments and measuring techniques and includes the study and observation of the solar system, stars, and galaxies. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

NAS 131-132 ASTRONOMY I-II (4 CR.) (4 CR.)

Studies the major and minor bodies of the solar system, stars and nebulae of the milky way, and extragalactic objects. Examines life and death of stars, origin of the universe, history of astronomy, and instruments and techniques of observation. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

NAS 161-162 HEALTH SCIENCE I-II (4 CR.) (4 CR.)

Presents an integrated approach to human anatomy and physiology, microbiology, and pathology. Includes chemistry and physics as related to health sciences. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

NURSING

NUR 111 NURSING I (7 CR.)

Introduces nursing principles, concepts and the nursing process. Develops nursing skills to meet the biopsychosocial needs of individuals. May include math computational skills and basic computer instruction related to the delivery of nursing care. Provides supervised learning experiences in college nursing laboratory and/or cooperating agencies. Lecture 5 hours. Laboratory 6 hours. Total 11 hours per week.

NUR 112 NURSING II (8 CR.)

Focuses on the nursing care of individuals and/or families experiencing changes along the health/illness continuum that are common, well-defined, and have predictable outcomes. Provides supervised learning experiences in college nursing laboratory and/or cooperating agencies. Lecture 5 hours. Laboratory 9 hours. Total 14 hours per week.

NUR 135 DRUG DOSAGE CALCULATIONS (2 CR.)

Teaches apothecary, metric, household conversion; reading of drug orders and labels. Provides a practical approach to learning to prepare dosages and solutions, including calculating intravenous flow rates and pediatric drugs. Lecture 2 hours per week.

NUR 211-212-213 NURSING III-IV-V (8 CR.) (10 CR.) (10 CR.)

Emphasizes the nursing area of individuals/families in various stages of development experiencing problems related to their biopsychosocial needs. Uses all components of the nursing process with increasing degrees of skill. Provides supervised learning experiences in college nursing laboratory and/or cooperating agencies. For NUR 211: Lecture 4 hours. Laboratory 12 hours. Total 16 hours per week. For NUR 212-213: Lecture 5 hours. Laboratory 15 hours. Total 20 hours per week.

NUR 220 NURSING DIMENSIONS (1 CR.)

Explores the role of the registered nurse. Emphasizes trends, nursing organizations, legal and ethical implications, and methods of planning and assigning patient care. Lecture 1 hour per week.

NUR 225 NURSING PROCESS (3 CR.)

Teaches a systematic approach to the utilization of the nursing process. Develops skills in nursing process to ensure quality nursing care to meet the changing standards for nursing practice. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

OFFICE SYSTEMS TECHNOLOGY

OFT 100 OFFICE SKILLS REVIEW (3 CR.)

Provides the opportunity to review office skills such as keyboarding typewriting, shorthand, machine transcription and other selected office topics based on individual needs. Lecture 3 hours per week.

OFT 105 PERSONAL KEYBOARDING (3 CR.)

Teaches touch keyboarding, using correct techniques. Introduces business letters and manuscript/report formats. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 107 EDITING/PROOFREADING SKILLS (3 CR.)

Develops skills essential to creating and editing business documents. Covers spelling; diction, punctuation, word division, capitalization, and sentence structure. Lecture 3 hours per week.

OFT 110 KEYBOARDING - SKILLBUILDING (3 CR.)

Prerequisite basic knowledge of the keyboard. Emphasizes speed and accuracy to attain skills for job employment and job promotion. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 111 KEYBOARDING I (3 CR.)

Introduces the keyboard with emphasis on good techniques, machine mastery, letter formats and styles, tabulations, centering, and reports. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 112 KEYBOARDING II (3 CR.)

Prerequisite OFT 111. Continues skill building through production typing with emphasis on employment competencies. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 115 KEYBOARDING FOR INFORMATION PROCESSING (3 CR.)

Develops keyboarding proficiency with a variety of keyboards found on electronic text-data entry devices. Includes instruction in general business and office formats. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 116 AUTOMATED KEYBOARDING EQUIPMENT (1 CR.)

Prerequisite divisional approval. Develops proficiency in the operation of automated keyboarding equipment. May use self-instructional materials. Laboratory 2 hours per week.

OFT 117 KEYBOARDING FOR COMPUTER USAGE (1-2 CR.)

Develops keyboarding proficiency in the operation of computers with emphasis on speed, accuracy, and use of special keys. Variable hours per week.

OFT 121 SHORTHAND I (3 CR.)

Focuses on shorthand theory, reading and writing skills, development of general business vocabularies, word usage, and general business dictation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 122 SHORTHAND II (3 CR.)

Prerequisite Shorthand I or equivalent. Develops speed in typical business dictation, with emphasis on transcription accuracy from shorthand notes. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 123 SPEEDWRITING I (3 CR.)

Develops skill in an alphabetic shorthand system based on dominant sounds, high frequency letter groups, and prefixes and suffixes. Strengthens dictation skills. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 124 SPEEDWRITING II (3 CR.)

Develops advanced dictation skills and transcription accuracy. Develops further skill in reading and writing with emphasis on spelling and punctuation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 130 OFFICE PROCEDURES (3 CR.)

Prerequisite OFT 111 or divisional approval. Introduces general functions and duties performed in the office. Lecture 3 hours per week.

OFT 136 OFFICE RECORDKEEPING (3 CR.)

Introduces types of recordkeeping duties performed in the office, such as financial, tax, payroll, and inventory. Utilizes specialized software where applicable. Lecture 3 hours per week.

OFT 137 FILING AND RECORDS MANAGEMENT (3 CR.)

Introduces indexing principles, filing procedures, and systems, including electronics and micrographics. Teaches selection of equipment and supplies and solving records management problems. Lecture 3 hours per week.

OFT 141 WORD PROCESSING I (3 CR.)

Prerequisite OFT 111 or equivalent. Teaches creating, editing, printing, saving, spell checking, margins, tabs, columns, page formatting, search/replace, and other applications. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 142 WORD PROCESSING II (3 CR.)

Prerequisite OFT 141. Teaches advanced software applications. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 143 WORD PROCESSING III (3 CR.)

Prerequisite OFT 142 or equivalent. Expands the student's knowledge of word processing using the same software package taught in Word Processing I and II, if possible. Concentrates on the writing of macro instructions and the use of other enhancements found in the particular software package employed as a teaching vehicle. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 205 BUSINESS COMMUNICATIONS (3 CR.)

Teaches techniques of oral and written communications. Emphasizes writing and presenting business-related materials. Lecture 3 hours per week.

OFT 206 PROFESSIONAL DEVELOPMENT (3 CR.)

Develops professional awareness in handling business and social situations. Emphasizes goal setting and decision making. Lecture 3 hours per week.

OFT 216 WORD PROCESSING EQUIPMENT OPERATION (3 CR.)

Prerequisite OFT 111 or equivalent. Teaches use and operation of word/information processing equipment. Incorporates specific advanced applications. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 230 INTRODUCTION TO OFFICE AUTOMATION (3 CR.)

Introduces principles, methods, and techniques involved in office automation technology. Emphasizes word processing and microcomputer equipment and software. Studies automated office personnel, procedures, ergonomics, and career opportunities. Lecture 3 hours per week.

OFT 231 MICROCOMPUTER OFFICE APPLICATION I (3 CR.)

Prerequisite OFT 111 or equivalent. Teaches business applications of microcomputer software packages. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 232 MICROCOMPUTER OFFICE APPLICATION II (3 CR.)

Prerequisite OFT 111 or equivalent. Teaches business applications of microcomputer software packages. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 235 SPECIALIZED SOFTWARE APPLICATIONS (3 CR.)

Introduces specific business software on the microcomputer. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 236 WORD PROCESSING OPERATION AND SYSTEM OPERATION (3 CR.)

Focuses on advanced applications and use of word/information processing equipment. Teaches system supervision and operation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 237 PRINCIPLES OF OFFICE AUTOMATION MANAGEMENT (3 CR.)

Prerequisite OFT 230. Studies management functions and analyzes supervisor's role in information processing cycle and changing technology of office automation. Lecture 3 hours per week.

OFT 238 WORD PROCESSING - ADVANCED OPERATIONS (3 CR.)

Uses word processing to integrate spreadsheet and database applications into text; teaches document conversion and use of ASCII text; teaches hard disk management and advanced DOS commands. Lecture 3 hours per week.

OFT 241-242 MACHINE TRANSCRIPTION I-II (3 CR.) (3 CR.)

Prerequisite OFT 112. Teaches efficient operation of transcribing equipment, listening and dictating techniques and business formats, grammar. Also covers punctuation and business English usage. Emphasizes production rates of mailable copy. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 251-252 OFFICE SYSTEMS AND PROCEDURES I-II (3 CR.) (3 CR.)

Prerequisite OFT 111 or divisional approval. Teaches office protocol, solutions to office problems, managerial functions, and other topics associated with office technology. Lecture 3 hours per week.

OFT 253 DESKTOP PUBLISHING I (3 CR.)

Prerequisite OFT 111 or equivalent and proficiency in the use of a word processing package. Introduces specific desktop publishing software. Teaches document layout and design, fonts, typestyles, style sheets, and graphics. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 254 DESKTOP PUBLISHING II (3 CR.)

Prerequisite OFT 253. Presents advanced features of desktop publishing software, culminating in the layout and design of complex multi-page documents. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 255 DESKTOP PUBLISHING III(3 CR.)

Prerequisite OFT 254. Uses word processing software to teach advanced document preparation. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

OFT 297**COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHILOSOPHY**PHI 101-102 INTRODUCTION TO PHILOSOPHY I-II (3 CR.) (3 CR.)**

Introduces a broad spectrum of philosophical problems and perspectives with an emphasis on the systematic questioning of basic assumptions about meaning, knowledge, reality, and values. Lecture 3 hours per week.

PHI 111 LOGIC I (3 CR.)

Introduces inductive and deductive reasoning, with an emphasis on common errors and fallacies. Lecture 3 hours per week.

PHI 112 LOGIC II (3 CR.)

Evaluates deductive arguments utilizing methods of symbolic logic. Lecture 3 hours per week.

PHI 115 PRACTICAL REASONING (3 CR.)

Studies informal logic and language techniques as they relate to reasoning and argument. Provides practice in analyzing arguments and constructing sound arguments. Lecture 3 hours per week.

PHI 211-212 THE HISTORY OF WESTERN PHILOSOPHY I-II (3 CR.) (3 CR.)

Provides historical survey of representative philosophers from the pre-Socratics to the present. Introduces the student to development of philosophical thought through selected readings of original works and appropriate critical materials. Lecture 3 hours per week.

PHI 220 ETHICS (3 CR.)

Provides a systematic study of representative ethical systems. Lecture 3 hours per week.

PHI 225 SELECTED PROBLEMS IN APPLIED ETHICS (3 CR.)

Analyzes and discusses significant contemporary ethical issues and problems existing throughout the various professions such as business, medicine, law, education, journalism, and public affairs. May be repeated for credit. Lecture 3 hours per week.

PHI 226 SOCIAL ETHICS (3 CR.)

Provides a critical examination of moral problems and studies the application of ethical concepts and principles to decision-making. Topics may include abortion, capital punishment, euthanasia, man and the state, sexuality, war and peace, and selected issues of personal concern. Lecture 3 hours per week.

PHI 227 BIO-MEDICAL ETHICS (3 CR.)

Examines the ethical implications of specific

biomedical issues in the context of major ethical systems. Lecture 3 hours per week.

PHI 231 THANATOLOGY: DIMENSIONS OF DEATH AND DYING I (3 CR.)

Surveys attempts to understand the meaning of death, and ways of handling personal and social implications. Examines dying and death from a variety of perspectives, including psychological, sociological, cultural, and religious views. Lecture 3 hours per week.

PHI 241-242 AESTHETICS I-II (3 CR.) (3 CR.)

Examines a variety of philosophical attempts to define beauty and the norms of artistic taste. Lecture 3 hours per week.

PHI 250 EPISTEMOLOGY (3 CR.)

Examines concepts and principles concerning foundations of knowledge, perception, and belief. Lecture 3 hours per week.

PHI 255 MIND, BRAINS, AND COMPUTERS (3 CR.)

Provides critical review of major concepts of mind, cognitive functions, and computer intelligence. Lecture 3 hours per week.

PHI 265 PHILOSOPHY OF RELIGION (3 CR.)

PHI 265 and REL 250 cannot both be taken for credit toward graduation. Examines problems raised by arguments for and against the existence of God and discusses such topics as the nature of God, the nature of religious experience, the problem of evil, religious truth and language, immortality, miracles, spirituality, and the relation between philosophy and theology. Lecture 3 hours per week.

PHI 270 INTRODUCTION TO METAPHYSICS (3 CR.)

Examines the central problems in metaphysics which may include questions concerning cosmology, the structure of the universe, the nature of space, time and causality. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHOTOGRAPHY**PHT 101-102 PHOTOGRAPHY I-II (3 CR.) (3 CR.)**

Teaches principles of photography and fundamental camera techniques. Requires outside shooting and lab work. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 110 HISTORY OF PHOTOGRAPHY (3 CR.)

Surveys important photographers, technical developments, and historical influences on nineteenth and twentieth century photography. Lecture 3 hours per week.

PHT 112 HISTORY OF CONTEMPORARY TRENDS (3 CR.)

Emphasizes the most contemporary work of the day. Covers individual photographers, the issues their work represents, and the historical influences that have made their work possible. Lecture 3 hours per week.

PHT 201-202 ADVANCED PHOTOGRAPHY (3 CR.) (3 CR.)

Prerequisite PHT 102 or equivalent. Provides weekly critiques of students' work. Centers on specific problems found in critiques. Includes working procedures and critical skills in looking at photographs. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 205 ZONE SYSTEM IN PHOTOGRAPHY (3 CR.)

Prerequisite PHT 102 or equivalent. An advanced course designed for users of all photographic formats. Teaches control of image quality through calibration and testing of film, exposure, and development and negative printing. Teaches creative "previsualization" techniques. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 206 LARGE FORMAT PHOTOGRAPHY (3 CR.)

Prerequisite PHT 102 or equivalent. Discusses 4x5 view camera techniques and controls, and sheet film processing. Demonstrates the image-making advantages of large format photography. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 207 COLOR SLIDE WORKSHOP (3 CR.)

Prerequisite PHT 102 or equivalent. Examines color transparency materials. Focuses on use of slides as personal expression and as a communication tool. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 211-212 COLOR PHOTOGRAPHY I-II (3 CR.) (3 CR.)

Prerequisites PHT 102 and PHT 110. Introduces theory, materials, and processes of modern color images. Includes additive and subtractive theory, color filtration, and negative and positive printing techniques. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 221-222 STUDIO LIGHTING I-II (3 CR.) (3 CR.)

Prerequisite PHT 102 or equivalent. Examines advanced lighting and camera techniques under controlled studio conditions. Includes view camera use, electronic flash, advanced lighting techniques, color temperature and filtration, and lighting ratios. Requires outside shooting. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 226 COMMERCIAL PHOTOGRAPHY (3 CR.)

Prerequisites PHT 206-222. Examines advanced topics relating to commercial photography. Emphasizes advertising, portraiture, and commercial and public relations. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 227 PHOTOGRAPHIC MARKETING (3 CR.)

Teaches the techniques of small photographic business operations. Includes portfolio preparation and presentation and basic marketing techniques. Covers theory of marketing, costing procedures and problems, legal accounting problems, copyright, and fundamentals of small photographic business operation. Lecture 3 hours per week.

PHT 231-232 PHOTOJOURNALISM I-II (3 CR.) (3 CR.)

Prerequisite PHT 102 or equivalent. Intro-

duces equipment, techniques, skills, and concepts of photojournalism. Teaches photography for features, spot news, and photo essays. Emphasizes editing, captioning, and layout. May require individual projects. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 246 ADVANCED**PHOTOGRAPHIC PRINTING (3 CR.)**

Prerequisite PHT 102 or equivalent. Examines advanced printing techniques and principles of archival processing and presentation. Emphasizes development of individual printing style. Requires a portfolio of high quality prints on subject of choice. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

PHT 247 ALTERNATIVE**PHOTOGRAPHIC PROCESSES (3 CR.)**

Prerequisite PHT 102 or equivalent. Explores manipulated imagery including traditional and non-traditional processes such as non-silver and electronic imaging. Uses enlarged film negatives in order to investigate a variety of methods. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 256 COMMUNICATING**THROUGH THE PHOTOGRAPHIC****SEQUENCE (3 CR.)**

Using experiences of sequencing, involves the student in creating a picture book composed of images that have been placed in a sequence that has special visual meaning. Lecture 1 hour. Laboratory 4 hours. Total 5 hours per week.

PHT 297**COOPERATIVE EDUCATION (1-6 CR.)**

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHYSICAL EDUCATION AND RECREATION**PED 101 FUNDAMENTALS****OF PHYSICAL ACTIVITY (1-2 CR.)**

Presents principles underlying the components of physical fitness. Utilizes conditioning activities involving cardiovascular strength and endurance, respiratory efficiency, muscular strength, and flexibility. May include fitness assessment, nutrition and weight control information, and concepts of wellness. Variable hours per week.

PED 103-104**AEROBIC FITNESS I-II (1 CR.) (2 CR.)**

Develops cardiovascular fitness through activities designed to elevate and sustain heart rates appropriate to age and physical condition. For PED 103, Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week. For PED 104, Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 105**AEROBIC DANCE I (1 CR.)**

Focuses on physical fitness through dance exercises. Emphasizes the development of cardiovascular endurance, muscular endurance, and flexibility. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 107-108**SLIMNASTICS I-II (1 CR.) (2 CR.)**

Provides the student with a full body workout

through flexibility, strength, and cardiovascular endurance exercises. Includes fitness evaluation, nutrition analysis, and weight control. For PED 107, Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week. For PED 108, Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 109 YOGA**(1 CR.)**

Focuses on the forms of yoga training emphasizing flexibility. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 110 PHYSICAL**ACTIVITIES FOR CHILDREN (3 CR.)**

Includes methods and materials for teaching simple rhythms, recreational games, singing games, and other movement experiences. Emphasizes methods for pre-school through elementary age students. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

PED 111-112**WEIGHT TRAINING I-II (1 CR.) (2 CR.)**

Focuses on muscular strength and endurance training through individualized workout programs. Teaches appropriate use of weight training equipment. For PED 111, Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week. For PED 112, Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 113-114**LIFETIME ACTIVITIES (1 CR.) (1 CR.)**

Presents lifetime sports and activities. Teaches skills and methods of lifetime sports and activities appropriate to the local season and facilities available. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 121-122**RACKETBALL I-II (1 CR.) (1 CR.)**

Prerequisite for PED 122 is PED 121 or instructor's permission. Teaches racketball skills and strategies for team and individual play. Includes terminology, scoring, etiquette, equipment selection, and safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 123-124 TENNIS I-II (1 CR.) (1 CR.)

Prerequisite for PED 124 is PED 123 or instructor's permission. Teaches tennis skills with emphasis on stroke development and strategies for individual and team play. Includes rules, scoring, terminology, and etiquette. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 125 BADMINTON (1 CR.)

Introduces skills, techniques, strategies, rules, and scoring. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 126 ARCHERY (1 CR.)

Teaches skills and techniques of target archery. Focuses on use and maintenance of equipment, terminology, and safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 127 CYCLING (1 CR.)

Introduces cycling techniques, equipment selection, care and maintenance, safety, and physical conditioning. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 128 HORSEBACK RIDING (1 CR.)

Prerequisite appropriate riding skills or instructor's permission for advanced course. Presents riding seats and preparation for riding, care and grooming of a horse, selection, use and

care of equipment, and safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 129 SELF-DEFENSE (1 CR.)

Examines history, techniques, and movements associated with self-defense. Introduces the skills and methods of self-defense emphasizing mental and physical discipline. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 131 FENCING I (1 CR.)

Presents the skills and techniques of foil fencing emphasizing footwork, terminology, rules, strategies of offensive and defensive movements. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 133-134 GOLF I-II (1 CR.) (1 CR.)

Prerequisite for PED 134 is PED 133 or instructor's permission. Teaches basic skills of golf, rules, etiquette, scoring, terminology, equipment selection and use, and strategy. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 135-136 BOWLING I-II (1 CR.) (1 CR.)

Prerequisite for PED 136 is PED 135 or instructor's permission. Teaches basic bowling skills and techniques, scoring, rules, etiquette, and terminology. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 139 ICE SKATING (1 CR.)

Introduces the skills of figure skating with emphasis on form. Includes equipment selection and safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 141-142**SWIMMING I-II (1 CR.) (1 CR.)**

Prerequisite for PED 142 is PED 141 or instructor's permission. Introduces skills and methods of swimming strokes. Focuses on safety and physical conditioning. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 144**SKIN AND SCUBA DIVING (2 CR.)**

Prerequisite strong swimming skills. Emphasizes skills and methods of skin and scuba diving. Includes training with underwater breathing apparatus and focuses on safety procedures, selection and use of equipment. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 154 VOLLEYBALL (1 CR.)

Introduces skills, techniques, strategies, rules, and scoring. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 156 SOFTBALL (1 CR.)

Emphasizes skills, techniques, strategies, rules. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 160 MODERN DANCE (1 CR.)

Teaches the basic techniques of creative dance. Skills include self-expression, contemporary routines, dance forms, and basic choreography. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 161-162 DANCE**PRODUCTION I-II (1 CR.) (1 CR.)**

Prerequisite for PED 162 is PED 161 or instructor's permission. Focuses on creating a dance performance. Teaches the basic skills in creating and producing a dance. Includes light-

ing, costumes, music, and choreography. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 163-164 JAZZ I-II (1 CR.) (1 CR.)

Prerequisite for PED 164 is PED 163 or instructor's permission. Introduces dance through contemporary jazz movements. Includes floor stretches, isolations, dance patterns and locomotor movements. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 165 TAP DANCE (1 CR.)

Teaches the basic footwork, patterns, and coinciding body movements to various rhythms. Includes development of choreographic routines. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 166 BALLET (1 CR.)

Teaches ballet as a discipline with correct alignment and ballet form. Expresses movement through traditional dance form with choreographic emphasis. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 167

DANCE IMPROVISATION (1 CR.)

Explores the creation of spontaneous movement experiences with emphasis on self-expression and creative awareness. Includes improvisational techniques utilizing body awareness, use of the environment, and group dynamics. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 171-172

BALLROOM DANCE I-II (1 CR.) (1 CR.)

Prerequisite for PED 172 is PED 171 or instructor's permission. Presents the basic step patterns, rhythmic patterns, and positions in ballroom dance. Includes techniques based upon traditional steps with basic choreographic patterns. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 174 SHOOTING

AND FIREARM SAFETY (1 CR.)

Teaches the basic techniques of shooting and firearm safety for both hunting and sport shooting. Emphasizes the selection and care of equipment, proper shooting forms, personal safety. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 178

WHITEWATER CANOEING (1 CR.)

Introduces whitewater canoeing techniques, selection and care of equipment, terminology, safety procedures and rescues, and reading and navigating whitewater. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 181-182

DOWNHILL SKIING I-II (1 CR.) (1 CR.)

Prerequisite for PED 182 is PED 181 or instructor's permission. Teaches basic skills of downhill skiing; selection and use of equipment; terminology and safety rules. Includes field experience. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 183-184 OUTDOOR

ADVENTURES I-II (2 CR.) (2 CR.)

Prerequisite for PED 184 is PED 183 or instructor's permission. Introduces outdoor adventure activities with emphasis on basic skills, preparation, personal and group safety, equipment selection and use, ecology, and field experience. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

PED 185

CROSS-COUNTRY SKIING (1 CR.)

Presents cross-country skiing techniques with emphasis on ski touring, waxing, selection and use of equipment, and physical conditioning. Lecture 1 hour. Laboratory 1 hour. Total 2 hours per week.

PED 245

ADVANCED LIFESAVING (2 CR.)

Prerequisite strong swimming skills. Introduces basic swimming and non-swimming rescues, swimming approaches and carries, water survival, first aid and safety. Focuses on preparation for the American Red Cross Advanced Lifesaving Certificate. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHYSICAL THERAPY ASSISTING

PTH 100 INTRODUCTION TO

PHYSICAL THERAPIST ASSISTING(1 CR.)

Introduces the health technology student to the field of physical therapy. Emphasizes the team approach to patient care and the role of the physical therapist assistant within the therapeutic team. Provides instruction in computational skills needed in physical therapy practice. Lecture 1 hour per week.

PTH 106 EMERGENCY SITUATIONS

AND PROCEDURES (1 CR.)

Emphasizes student recognition of safety factors, potential hazards, and emergency situations in health care settings. Outlines procedures and measures used for common emergency situations seen in a physical therapy department. Lecture 1 hour per week.

PTH 110 MEDICAL REPORTING (2 CR.)

Emphasizes the principles of medical reporting, including the ability to abstract pertinent information from actual medical records. Includes the writing of patient progress notes in standardized formats and medical terminology. Introduces the student to computer usage. Lecture 2 hours per week.

PTH 115 KINESIOLOGY FOR

THE PHYSICAL THERAPIST ASSISTANT (5 CR.)

Studies individual muscles and muscle functions, biomechanical principles of joint motion and gait patterns. Applies kinesiological principles to therapeutic exercises. Lecture 3 hours. Laboratory 4 hours. Total 7 hours per week.

PTH 121-122 THERAPEUTIC

PROCEDURES I-II (9 CR.) (5 CR.)

Emphasizes therapeutic procedures utilized by physical therapist assistants. Allows students to practice elements of patient care and therapeutic skills. For PTH 121 - Lecture 6 hours. Laboratory 6 hours. Total 12 hours per week. For PTH 122 - Lecture 3 hours. Laboratory 4 hours. Total 7 hours per week.

PTH 131 CLINICAL EDUCATION I (3 CR.)

Provides supervised instruction in the administration of therapeutic skills in a variety of clinical settings. Emphasizes the development of oral and written communication skills and

the understanding of commonly seen disabilities. Lecture 1 hour. Laboratory 6 hours. Total 7 hours per week.

PTH 210 PSYCHOLOGICAL ASPECTS OF THERAPY (2 CR.)

Focuses on the psychological reactions and behavioral changes in patients and their families. Emphasizes techniques of effective interaction between the allied health worker and the patient. Lecture 2 hours per week.

PTH 225 REHABILITATION PROCEDURES (5 CR.)

Focuses on rehabilitation techniques utilized in the treatment of disabling conditions. Emphasizes advanced exercise procedures, prosthetic and orthotic training, and other specialized techniques. Lecture 3 hours. Laboratory 4 hours. Total 7 hours per week.

PTH 227

PATHOLOGICAL CONDITIONS (2 CR.)

Studies specific pathologic conditions commonly seen in physical therapy. Emphasizes musculo-skeletal and neurological system conditions. Lecture 2 hours per week.

PTH 231-232 CLINICAL

EDUCATION II-III (7 CR.) (8 CR.)

Provides instruction during the administration of therapeutic skills in a clinical setting. Emphasizes the total therapy program including rehabilitation techniques and specialized exercise programs. Provides experience in a variety of clinical settings. For PTH 231 - Lecture 2 hours. Laboratory 15 hours. Total 17 hours per week. For PTH 232 - Lecture 1 hour. Laboratory 21 hours. Total 22 hours per week.

PTH 245 PROFESSIONAL ISSUES (3 CR.)

Studies administrative procedures, changing practices in physical therapy, and trends in health care delivery. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PHYSICS

PHY 100 ELEMENTS OF PHYSICS (4 CR.)

Covers basic concepts of physics, including Newtonian mechanics, properties of matter, heat and sound, fundamental behavior of gases, ionizing radiation, and fundamentals of electricity. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 101-102 INTRODUCTION TO

PHYSICS I-II (4 CR.) (4 CR.)

Surveys general principles of physics. Includes topics such as force and motion, energy, heat, sound, light, electricity and magnetism, and modern physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 111-112

TECHNICAL PHYSICS I-II (4 CR.) (4 CR.)

Prerequisite one year of high school algebra or equivalent. A concurrent course in college algebra and trigonometry is recommended. Emphasizes technical applications. Includes precision measurement, statics, dynamics, energy and momentum, heat, sound, optics, DC and AC electricity, and modern physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 114 TECHNICAL PHYSICS I (4 CR.)

Prerequisite three units of high school mathematics. Co-requisite MTH 115. Introduces electronics and nuclear energy for industrial purposes. Focuses on precision measurement, properties of matter, hydrostatics and hydraulics, force and motion, Newtonian mechanics, vectors and graphics solutions, statics, dynamics, rotary motion, motion, light and optics, magnetism and electricity, DC and AC circuits and machines. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 150 INTRODUCTION**TO MODERN PHYSICS (2 CR.)**

Introduces topics in modern physics, such as structure of the atom, nature and use of nuclear energy, and recent discoveries in atomic and nuclear physics. Lecture 2 hours per week.

PHY 155 TOPICS IN**CONTEMPORARY PHYSICS (2 CR.)**

Explores the physics of everyday life. Includes discussion of contemporary events and issues as reported by news media and recent research. Lecture 2 hours per week.

PHY 167**PHYSICS OF SOUND SYSTEMS (2 CR.)**

Introduces physics principles employed in sound systems. Includes sound production, transmission and reproduction. Also covers application and design. Lecture 2 hours per week.

PHY 201-202 GENERAL**COLLEGE PHYSICS I-II (4 CR.) (4 CR.)**

Prerequisite MTH 165 or equivalent. Teaches fundamental principles of physics. Covers mechanics, thermodynamics, wave phenomena, electricity and magnetism, and selected topics in modern physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 231 GENERAL UNIVERSITY**PHYSICS I (5 CR.)**

Prerequisite MTH 173 or MTH 174 or divisional approval. Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity, solid state, quantum physics, and nuclear physics. Includes extended coverage of selected topics. Lecture 4 hours. Laboratory 2 hours. Total 6 hours per week.

PHY 241-242 UNIVERSITY**PHYSICS I-II (4 CR.) (4 CR.)**

Prerequisite MTH 173, corequisite MTH 174. Teaches principles of classical and modern physics. Includes mechanics, wave phenomena, heat, electricity, magnetism, relativity, and nuclear physics. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

PHY 243 MODERN PHYSICS (4 CR.)

Prerequisites PHY 241 and PHY 242 or equivalent. For majors requiring calculus-based physics. Teaches principles of modern physics. Includes indepth coverage of relativity, quantum physics, solid state and nuclear physics. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week. Additional 1 credit recitation hour recommended.

PHY 297**COOPERATIVE EDUCATION (1-6 CR.)**
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PLANNING**PLN 100 INTRODUCTION****TO PLANNING DEVELOPMENT (3 CR.)**

Provides material on the growth of urban and suburban areas. Includes planning theory, size and density of urban areas, clustering, economic base analysis, and economics of business and residential location. Introduces theoretical patterns of geographic form, density and control. Covers the value of planning document, regulations and zoning. Lecture 3 hours per week.

PLN 106 REAL ESTATE**PLANNING AND DEVELOPMENT (3 CR.)**

Evaluates commercial and residential real estate market in terms of land use development. Considers environmental factors in land use planning, and determining best locations for various types of development. Interprets real estate market and feasibility studies within the context of an interdependent urban system. Lecture 3 hours per week.

PLN 107 URBAN**LAND DEVELOPMENT (3 CR.)**

Prerequisite PLN 100. Expands on concept of land use planning. Presents legislative and legal aspects of residential and commercial development issues. Includes evaluation of planning renewal, and environmental impact analysis. Lecture 3 hours per week.

PLN 110 INTRODUCTION**TO PUBLIC ADMINISTRATION (3 CR.)**

Studies basic concepts in planning management, growth control techniques, organization and planning policies. Presents government operation, personnel organization, financial planning and budget analysis and utilization of data processing in fiscal administration. Lecture 3 hours per week.

PLN 126**PLANNING APPLICATIONS (3 CR.)**

Prerequisite PLN 100 and DRF 120 or divisional approval. Combines organizational planning, financial planning, and a variety of planning and forecasting methods in a series of practical applications. Develops set of interrelated plans in a number of areas. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

POLITICAL SCIENCE**PLS 120 INTRODUCTION TO****POLITICAL SCIENCE (3 CR.)**

Teaches basic concepts and methods of the discipline of political science through study of political dimensions of a selected topic. Lecture 3 hours per week.

PLS 130 BASICS**OF AMERICAN POLITICS (3 CR.)**

Teaches basics of the operations of Congress, the presidency, and the federal court system. Includes civil liberties, citizenship, elections, political parties, and interest groups. Lecture 3 hours per week.

PLS 135 AMERICAN**NATIONAL POLITICS (3 CR.)**

Teaches political institutions and processes of

the national government of the United States, focuses on the Congress, presidency, and the courts, and on their inter-relationships. Gives attention to public opinion, suffrage, elections, political parties, interest groups, civil rights, domestic policy, and foreign relations. Lecture 3 hours per week.

PLS 136**STATE AND LOCAL POLITICS (3 CR.)**

Teaches structure, powers and functions of state and local government in the United States. Lecture 3 hours per week.

PLS 211-212**U.S. GOVERNMENT I-II (3 CR.) (3 CR.)**

Teaches structure, operation, and process of national, state, and local governments. Includes in-depth study of the three branches of the government and of public policy. Lecture 3 hours per week.

PLS 241 INTERNATIONAL**RELATIONS I (3 CR.)**

Teaches geographic, demographic, economic, ideological, and other factors conditioning the policies of countries and discusses conflicts and their adjustment. Lecture 3 hours per week.

PLS 242 INTERNATIONAL**RELATIONS II (3 CR.)**

Teaches foreign policies of the major powers in the world community with an emphasis on the role of the United States in international politics. Lecture 3 hours per week.

PLS 297**COOPERATIVE EDUCATION (1-6 CR.)**

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

PSYCHOLOGY**PSY 100 PRINCIPLES****OF APPLIED PSYCHOLOGY (3 CR.)**

Introduces the general principles of psychology as they are applied to work, relationships, and self. Includes perception, learning, development, motivation, emotion, therapy, communication, attitudes. Lecture 3 hours per week.

PSY 105 PSYCHOLOGY**OF PERSONAL ADJUSTMENT (3 CR.)**

Introduces psychological principles that contribute to the well-adjusted personality. Considers the effects of stress and coping with the problems of everyday life. Lecture 3 hours per week.

PSY 106 EXPERIENCES**IN PERSONAL GROWTH (3 CR.)**

Teaches individual to understand himself better in relation to his immediate environment, community, and society. Also, stresses stimulation, role playing, and other experiential techniques. Lecture 3 hours per week.

PSY 115 HEALTH PSYCHOLOGY (3 CR.)

Studies the psychology of healthy behavior. Applies psychological principles to preventative health care. Covers topics such as exercise, nutrition, stress, life-styles, and habits. Lecture 3 hours per week.

PSY 119 CROSS-CULTURAL PSYCHOLOGY (3 CR.)

Investigates psychological principles from a cross-cultural perspective. Examines cultural basics for views of reality. Describes topics such as time, space, values, sex roles, and human development in relation to culture. Lecture 3 hours per week.

PSY 120 HUMAN RELATIONS (3 CR.)

Introduces the theory and practice of effective human relations. Increases understanding of self and others and interpersonal skills needed to be a competent and cooperative communicator. Lecture 3 hours per week.

PSY 125 INTERPERSONAL RELATIONSHIPS (3 CR.)

Studies individual behavior as it affects the individual's relationships. Considers such topics as attitudes, needs, values, leadership, communication, and group dynamics. Teaches constructive methods of interpersonal problem solving. Lecture 3 hours per week.

PSY 126 PSYCHOLOGY FOR BUSINESS AND INDUSTRY (3 CR.)

PSY 126 and BUS 115 cannot both be taken for credit toward graduation. Focuses on the application of psychology to interpersonal relations and the working environment. Includes topics such as group dynamics, motivation, employee-employer relationship, interpersonal communications, and techniques for selection and supervision of personnel. Lecture 3 hours per week.

PSY 165 PSYCHOLOGY OF HUMAN SEXUALITY (3 CR.)

Focuses on scientific investigation of human sexuality and psychological and social implications of such research. Considers socio-cultural influences, the physiology and psychology of sexual response patterns, sexual dysfunctions, and development of relationships. Lecture 3 hours per week.

PSY 166 PSYCHOLOGY OF MARRIAGE (3 CR.)

Analyzes personality interactions in marriage and other intimate relationships. Examines theories of personal development and types of relationships resulting from interactions. Lecture 3 hours per week.

PSY 201-202 INTRODUCTION TO PSYCHOLOGY I-II (3 CR.) (3 CR.)

Prerequisite for PSY 202 is PSY 201. Examines human and animal behavior, relating experimental studies to practical problems. Includes topics such as sensation/perception, learning, memory, motivation, emotion, stress, development, intelligence, personality, psychopathology, therapy, and social psychology. Lecture 3 hours per week.

PSY 205 PERSONAL CONFLICT AND CRISIS MANAGEMENT (3 CR.)

Studies the effective recognition and handling of personal and interpersonal conflicts. Discusses cooperative roles of public and private agencies, management of family disturbances, child abuse, rape, suicide, and related cases. Lecture 3 hours per week.

PSY 215 ABNORMAL PSYCHOLOGY (3 CR.)

Prerequisite PSY 202 or permission of instructor. Explores historical views and current perspectives of abnormal behavior. Emphasizes major diagnostic categories and criteria, indi-

vidual and social factors of maladaptive behavior, and types of therapy. Includes methods of clinical assessment and research strategies. Lecture 3 hours per week.

PSY 216 SOCIAL PSYCHOLOGY (3 CR.)

Prerequisite PSY 201. Examines individuals in social contexts, their social roles, group processes and intergroup relations. Includes topics such as small group behavior, social behavior, social cognition, conformity, attitudes, and motivation. Lecture 3 hours per week. This course is also approved for offering as SOC.

PSY 225 THEORIES OF PERSONALITY (3 CR.)

PSY 225 and HMS 265 cannot both be taken for credit toward graduation. Prerequisite PSY 201 or divisional approval. Studies the major personality theories and their applications. Includes psychodynamic, behavioral, cognitive, and humanistic perspectives. Lecture 3 hours per week.

PSY 231-232 LIFE SPAN HUMAN DEVELOPMENT I-II (3 CR.) (3 CR.)

Investigates human behavior through the life cycle. Describes physical, cognitive, and psycho-social aspects of human development from conception to death. Lecture 3 hours per week.

PSY 235 CHILD PSYCHOLOGY (3 CR.)

Studies development of the child from conception to adolescence. Investigates physical, intellectual, social and emotional factors involved in the child's growth. Lecture 3 hours per week.

PSY 236 ADOLESCENT PSYCHOLOGY (3 CR.)

Studies development of the adolescent. Investigates physical, intellectual, social, and emotional factors of the individual from late childhood to early adulthood. Lecture 3 hours per week.

PSY 237 ADULT PSYCHOLOGY (3 CR.)

Studies development of the adult personality. Investigates physical, intellectual, social, and emotional aspects of aging from early adulthood to death. Lecture 3 hours per week.

PSY 245 EDUCATIONAL PSYCHOLOGY (3 CR.)

Prerequisite PSY 135, 201, or 235. Explores human behavior and learning in the educational context. Investigates the nature of various mental characteristics such as intelligence, interest, and knowledge. Examines their measurement and appraisal and their significance for educational goals. Lecture 3 hours per week.

PSY 246 PSYCHOLOGY OF MANAGEMENT (3 CR.)

Prerequisite PSY 100, 120, or 201 or divisional approval. Applies principles of industrial and organizational psychology to work environments. Includes topics such as job assessment, work design, employer-employee relations, and organizational climate. Lecture 3 hours per week.

PSY 255 PSYCHOLOGICAL ASPECTS OF CRIMINAL BEHAVIOR (3 CR.)

Studies psychology of criminal behavior. Includes topics such as violent and non-violent crime, sexual offenses, insanity, addiction, white collar crime, and other deviant behaviors. Provides a background for law enforcement occupations. Lecture 3 hours per week.

PSY 256 GROUP DYNAMICS (3 CR.)

Prerequisite PSY 201, 202, or divisional approval. Studies the social and psychological principles that govern the behavior of the individual in a group setting. Examines motivation of individuals who form and join groups, performance and productivity of group members, group leadership, and majority/minority influence. Lecture 3 hours per week.

PSY 265 PSYCHOLOGY OF MEN AND WOMEN (3 CR.)

Prerequisite divisional approval. Examines the major determinants of sex differences. Emphasizes psychosexual differentiation and gender identity from theoretical, biological, interpersonal, and sociocultural perspectives. Includes topics such as sex roles, socialization, rape, abuse, and androgyny. Lecture 3 hours per week.

PSY 266 PSYCHOLOGY OF DEATH AND DYING (3 CR.)

PSY 266 and SOC 247 cannot both be taken for credit toward graduation. Focuses on psychological aspects of death and dying. Teaches the meaning of death and ways of handling its personal and social implications. Includes psychological, sociological, cultural, and religious views of death. Lecture 3 hours per week.

PSY 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RADIOGRAPHY**RAD 100 INTRODUCTION TO RADIOLOGY AND PROTECTION (2 CR.)**

Presents brief history of radiological profession, code of ethics, conduct for radiologic students, and the basic fundamentals of radiation protection. Lecture 2 hours per week.

RAD 111-112 RADIOLOGIC SCIENCE I-II (4 CR.) (4 CR.)

Teaches concepts of radiation, radiography physics, fundamentals of electromagnetic radiation, electricity and magnetism, and application of these principles to radiography. Focuses on X-ray production, emission, and X-ray interaction with matter. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 121 RADIOGRAPHIC PROCEDURES I (4 CR.)

Introduces procedures for positioning the patient's anatomical structures relative to X-ray beam and image receptor. Emphasizes procedures for routine examination of the chest, abdomen, extremities, and axial skeleton. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 125 PATIENT CARE PROCEDURES (2 CR.)

Presents the care and handling of the sick and injured patient in the Radiology Department. Introduces the fundamentals of nursing procedures, equipment and supplies specific to radiology. Lecture 2 hours per week.

RAD 131-132 ELEMENTARY CLINICAL PROCEDURES I-II (3 CR.) (3 CR.)

Develops advanced technical skills in fundamental radiographic procedures. Focuses on manipulation of equipment, patient care, osseous studies, skull procedures, and contrast studies. Provides clinical experience in cooperating health agencies. Clinical 15 hours per week.

RAD 205 RADIATION PROTECTION AND RADIOBIOLOGY (3 CR.)

Studies methods and devices used for protection from ionizing radiation. Teaches theories of biological effects, cell and organism sensitivity, and the somatic and genetic effects of ionizing radiation. Presents current radiation protection philosophy for protecting the patient and technologist. Lecture 3 hours per week.

RAD 221 RADIOGRAPHIC PROCEDURES II (4 CR.)

Continues procedures for positioning the patient's anatomical structures relative to X-ray beam and image receptor. Emphasizes procedures for routine examination of the skull, contrast studies of internal organs, and special procedures employed in the more complicated investigation of the human body. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RAD 231-232 ADVANCED CLINICAL PROCEDURES I-II (5 CR.) (5 CR.)

Reinforces technical skills in fundamental radiographic procedures. Introduces more intricate contrast media procedures. Focuses on technical proficiency, application of radiation, protection, nursing skills, and exposure principles. Teaches advanced technical procedures and principles of imaging modalities, correlating previous radiographic theory, focusing on full responsibility for patients in technical areas, perfecting technical skills, and developing awareness of related areas utilizing ionizing radiation. Provides clinical experience in cooperating health agencies. Clinical 25 hours per week.

RAD 240⁴ RADIOGRAPHIC PATHOLOGY (3 CR.)

Presents a survey of common medical and surgical disorders that affect radiographic image. Discusses conditions related to different systems of the human body. Studies the correlation of these conditions with radiographs. Lecture 3 hours per week.

RAD 246 SPECIAL PROCEDURES (2 CR.)

Studies special radiographic and surgical procedures and equipment employed in the more complicated investigation of internal conditions of the human body. Lecture 2 hours per week.

RAD 255 RADIOGRAPHIC EQUIPMENT (3 CR.)

Studies principles and operation of general and specialized X-ray equipment. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

REAL ESTATE**REA 100 PRINCIPLES OF REAL ESTATE (4 CR.)**

Examines practical applications of real estate principles. Includes a study of titles, estates,

land descriptions, contracts, legal instruments, financing and management of real estate. Lecture 4 hours per week.

REA 105 REAL ESTATE MATHEMATICS (3 CR.)

Focuses on the application of fundamental mathematical principles of special real estate problems. Includes, but is not limited to, allocation of areas of land, pricing land, computation of commissions, earnings on investments, calculation of escrow items, and closing costs. Lecture 3 hours per week.

REA 110 REAL ESTATE SALES (3 CR.)

Focuses on the fundamentals of sales principles as they apply to real estate. Includes prospect, motives, needs, and abilities to buy real estate. Lecture 3 hours per week.

REA 215 REAL ESTATE BROKERAGE (3 CR.)

Considers administrative principles and practices of real estate brokerage, financial control and marketing of real property. Lecture 3 hours per week.

REA 216 REAL ESTATE APPRAISAL (3 CR.)

Explores fundamentals of real estate evaluation: methods used in determining value; application of the valuation process and the principal techniques by simulations, working problems and reviewing actual appraisals. Includes the opportunities available in the appraisal field. Lecture 3 hours per week.

REA 217 REAL ESTATE FINANCE (3 CR.)

Presents principles and practices of financing real estate sales and properties. Analyzes various types of mortgage payments and contracts, financing of homes and industrial properties and building, loan applications, relationship between correspondent and investor, construction loans. Lecture 3 hours per week.

REA 221 INCOME PROPERTY VALUATION I (3 CR.)

Prerequisite REA 216 or equivalent. Familiarizes the student with the techniques that are utilized to perform the appraisal of more complex income producing properties. Focuses on income and expense forecasting, appropriate techniques for determining capitalization rates, and discounted cash flow method. (Note: Required for Virginia Real Estate Appraiser license and certification per Code of Virginia, Chapter 20.1.) Lecture 3 hours per week.

REA 222 INCOME PROPERTY VALUATION II (3 CR.)

Prerequisite REA 216 or equivalent. Provides further experience in the appraisal of complex income producing properties. Includes valuation of complex commercial properties such as apartment complexes, office buildings, shopping centers, industrial properties, hotels, and mixed use complexes. (Note: Required for Virginia Real Estate Appraiser license and certification per Code of Virginia, Chapter 20.1.) Lecture 3 hours per week.

REA 225 REAL PROPERTY MANAGEMENT (3 CR.)

Introduces the field of property management; professional aspects of real estate brokerage, properties, neighborhood analysis, tenants and qualifications, aspects of maintenance and repair. Lecture 3 hours per week.

REA 236 STATE CERTIFIED RESIDENTIAL APPRAISER (1 CR.)

Concentrates on Appraisal Law in the State of Virginia, appraisal practices, principles and theories with regard to their application to residential properties. Emphasizes the review of terms, concepts, and the valuation theories targeted to the residential examination. Lecture 1 hour per week.

REA 238 PROFESSIONAL APPRAISAL STANDARDS (1 CR.)

Examines the provisions and standard rules that govern professional appraisal practices. Covers the "Binding Requirements" and "The Specific Appraisal Guidelines" published by The Appraisal Foundation. Lecture 1 hour per week.

REA 245 REAL ESTATE LAW (3 CR.)

Studies real estate law, including rights incidental to property ownership and management, agency contract and application to real estate transfer covenanting probate proceedings, trust transactions, and tax implications. Lecture 3 hours per week.

REA 247 REAL ESTATE INVESTMENTS (3 CR.)

Focuses on estate investments with emphasis on taxation, limited partnerships, syndications, exchanges and modern techniques of mortgage equity requirements and depreciation guidelines. Lecture 3 hours per week.

REA 256 LAND PLANNING AND USE (3 CR.)

Presents land value and usage, planning, zoning regulations, building and site requirements, sanitation and utilities, highest and best use concept, population analysis, influence of market forces and public policies. Lecture 3 hours per week.

REA 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RECREATION AND PARKS**RPK 100 INTRODUCTION TO THE FIELD OF RECREATION AND PARKS (3 CR.)**

Includes history and philosophy of the recreation and parks movement. Discusses the theory of leisure and play. Analyzes leisure service delivery systems and career opportunities. Emphasizes the private, commercial, industrial sectors, Armed Forces, and volunteer, as well as the public area. Lecture 3 hours per week.

RPK 110 ARTS ACTIVITIES IN RECREATION AND PARKS (3 CR.)

Develops basic skills and practical application of programming for the arts in a wide variety of settings in the recreation and parks field. Includes specific programs in arts and crafts, music and drama, as well as a survey of current practices in programming in the field. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 120 OUTDOOR RECREATION (3 CR.)

Includes history and philosophy of conserva-

tion, preservation, and the development of outdoor recreation in the United States. Emphasizes development of practical skills in planning, instructing, and managing outdoor recreation programs and facilities, including youth resident camps, R.V. campgrounds, as well as resources in the urban setting. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 125 OUTDOOR EDUCATION AND INTERPRETIVE SERVICES (3 CR.)

Develops basic skills in outdoor education and interpretive services. Provides direct application of skills in nature centers, visitor management services or resident-based outdoor educational settings. Includes use of audiovisual equipment, interpretive display design and construction, and nature trail planning. Develops specific interpretive programs and outdoor education teaching units. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 135 PROGRAM PLANNING, ORGANIZATION AND GROUP LEADERSHIP (3 CR.)

Teaches principles of program planning in the recreation setting. Analyzes participants' needs and demands, as well as social, physical, and psychological characteristics. Explains how to organize and lead programs. Includes a leadership practicum. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 136 ORGANIZATION AND MANAGEMENT OF RECREATIONAL SOCIAL AND PHYSICAL ACTIVITIES (3 CR.)

Includes programs of a social and physical nature in schools, home, church, youth groups, community centers, camps and other institutions. Teaches planning and leadership in games, parties, as well as dual, individual, and team sports. Emphasizes organization, management and specific leadership strategies. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 145 HORTICULTURE AND TURF PRACTICES IN RECREATION AND PARKS (3 CR.)

Introduces recreation and parks students to horticulture methods and materials, and turf grass management practices as they apply to the field of recreation and parks. Covers plant materials, silviculture, propagation, maintenance, and equipment. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 146 FACILITY AND LANDSCAPE PLANNING FOR RECREATION AND PARKS (3 CR.)

Provides experience in planning and landscaping design for a variety of recreation and park areas and facilities. Emphasizes the planning and design process, and practical field application. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 155 THERAPEUTIC RECREATION (3 CR.)

Introduces competencies needed to direct recreation activities for special populations such as mentally retarded, physically disabled, and senior adults in the community and in special settings. Teaches techniques for adaptation of social and physical activities to special popula-

tions, as well as leadership techniques and strategies. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 165 RISK MANAGEMENT ON RECREATION IN RECREATION AND PARKS (3 CR.)

Discusses the law and liability as they relate to the individual and agencies in recreation and parks. Emphasizes the analysis of programs and facilities for safety, emergency, and accident procedures, and supervision. Lecture 3 hours per week.

RPK 200 MICROCOMPUTERS IN PUBLIC SERVICE AGENCIES (3 CR.)

Provides detailed, practical application of the use of the microcomputer in public services. Gives the student an understanding of how microcomputers work and their software applications in specific public service fields such as Administration of Justice, Fire Science, and Recreation and Parks. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 201 RECREATION AND PARKS MANAGEMENT I (3 CR.)

Examines organization and management of recreation and parks agencies. Discusses management theory, line charts, and personnel policies. Explains budget preparation, documentation and presentation. Outlines fiscal policies including pricing theory and marketing strategies. Lecture 3 hours per week.

RPK 202 RECREATION AND PARKS MANAGEMENT II (3 CR.)

Includes problems and practices in maintenance of buildings, outdoor facilities, and equipment, as well as safety and emergency procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RPK 205 ROCK CLIMBING (1 CR.)

Covers fundamentals of rock climbing and includes instruction in face climbing, as well as basics of security on rocks using ropes and anchors. Includes two single day climbing trips. Laboratory 2 hours per week.

RPK 206 ADVENTURE ROPES COURSES (1 CR.)

Introduces programs which emphasize the development of self-concept, group cooperation, and physical abilities. Teaches a variety of rope course activities including new games, initiatives, and the high and low rope courses. Includes the use of ropes course apparatus, safety techniques, and sequencing. Laboratory 2 hours per week.

RPK 207 CROSS COUNTRY SKIING (1 CR.)

Introduces the basics of cross country skiing, including selection of equipment, waxing, flat track techniques, and skills for skiing uphill and downhill. Is a combination of classroom and field experience. Laboratory 2 hours per week.

RPK 208 ALPINE SKIING (1 CR.)

Introduces basic alpine skiing and planning group ski trips. Includes equipment, safety, basic fundamentals of skiing, and planning group ski trips. Laboratory 2 hours per week.

RPK 215 RECREATIONAL CAMPING (1 CR.)

Discusses organizing and running a group camping trip. Includes information in site, food and shelter selection, personal and group safety,

packing, and conservation. Emphasizes appreciation of natural resources, outdoor skills, and outdoor living. Laboratory 2 hours per week.

RPK 216 RECREATIONAL BACKPACKING (2 CR.)

Required for Recreation and Parks majors. Discusses the ethical role of the backpacker in terms of conservation and ecology. Includes field experience involving backpacking, orienteering, and trail safety. Laboratory 4 hours per week.

RPK 225 CANOE CAMPING (2 CR.)

Introduces the history, techniques, safety, and planning related to canoe operation and camping along a river or on a lake shore. Required for Recreation and Parks majors. Laboratory 4 hours per week.

RPK 297 COOPERATIVE EDUCATION (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RECREATION VEHICLE

RVH 100 INTRODUCTION TO MOTORCYCLE MECHANICS (3 CR.)

Develops understanding of the motorcycle, its systems, operating principles, and diagnostic techniques. Gives emphasis to developing safe shop practices. Includes the use of hand tools and equipment required for basic motorcycle maintenance. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RELIGION

REL 100 INTRODUCTION TO THE STUDY OF RELIGION (3 CR.)

Explores various religious perspectives and ways of thinking about religious themes and religious experience. Lecture 3 hours per week.

REL 205 HEBREW SCRIPTURES (3 CR.)

Surveys history, literature, and theology of ancient Israel and early Judaism in light of the religious writings of Israel (Old Testament). Lecture 3 hours per week.

REL 207 HEBREW PROPHETIC LITERATURE (3 CR.)

Studies the prophetic books of the Old Testament as part of the literary and religious heritage of western civilization. Examines historical and social context, and literary and theological purposes. Lecture 3 hours per week.

REL 215 NEW TESTAMENT AND EARLY CHRISTIANITY (3 CR.)

Surveys the history, literature, and theology of early Christianity in the light of the New Testament. Lecture 3 hours per week.

REL 216 LIFE AND TEACHINGS OF JESUS (3 CR.)

Studies the major themes in the teachings of Jesus of Nazareth as recorded in the Gospels, and examines the events of his life in light of modern biblical and historical scholarship. Lecture 3 hours per week.

REL 217
LIFE AND LETTERS OF PAUL (3 CR.)
Studies the journeys and religious thought of the apostle Paul. Lecture 3 hours per week.

REL 225 SELECTED TOPICS
IN BIBLICAL STUDIES (3 CR.)
Examines a selected body of literature, a specific book of the Bible, or a pervasive theme. Lecture 3 hours per week.

REL 230 RELIGIONS
OF THE WORLD (3 CR.)
Introduces the religions of the world with attention to origin, history, and doctrine. Lecture 3 hours per week.

REL 231-232 RELIGIONS
OF THE WORLD I-II (3 CR.) (3 CR.)
Studies religions of the world with attention to origin, history, and doctrine. Lecture 3 hours per week.

REL 235
MAJOR RELIGIOUS THINKERS (3 CR.)
Examines the works of one or more important people in religious thought. May be repeated for credit. Lecture 3 hours per week.

REL 236 SPECIAL STUDIES
IN RELIGIONS OF THE WORLD (3 CR.)
Studies aspects of one or more of the religions of the world. May be repeated for credit. Lecture 3 hours per week.

REL 240 RELIGIONS IN AMERICA (3 CR.)
Surveys various manifestations of religion in the American experience. Emphasizes concepts, problems, and issues of religious pluralism and character of American religious life. Lecture 3 hours per week.

REL 246 CHRISTIANITY (3 CR.)
Examines the origins and historical development of Christianity, its basic metaphysical and theological assumptions, its essential doctrines, and the present state of the church in the modern world. Lecture 3 hours per week.

REL 250
PHILOSOPHY OF RELIGION (3 CR.)
REL 250 and PHI 265 cannot both be taken for credit toward graduation. Critically examines problems raised by arguments for and against the existence of God. Discusses topics such as the nature of God, problem of evil, religious truth, immortality, miracles, spirituality, and the relation between philosophy and theology. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RESPIRATORY THERAPY

RTH 102 INTEGRATED SCIENCES
FOR RESPIRATORY CARE (3 CR.)
Integrates the concepts of mathematics, chemistry, physics, microbiology, and computer technology as these sciences apply to the practices of respiratory care. Lecture 3 hours per week.

RTH 121 CARDIOPULMONARY
SCIENCE I (3 CR.)
Focuses on assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary, renal and neuromuscular physiology and pathophysiology. Lecture 3 hours per week.

RTH 131-132 RESPIRATORY CARE
THEORY AND
PROCEDURES I-II (4 CR.) (4 CR.)
Presents theory of equipment and procedures used for patients requiring general and critical cardiopulmonary care. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

RTH 135 DIAGNOSTIC AND
THERAPEUTIC PROCEDURES I (2 CR.)
Focuses on purpose, use and evaluation of equipment, and procedures used in the diagnosis and therapeutic management of patients with cardiopulmonary disease. Lecture 2 hours per week.

RTH 145 PHARMACOLOGY
FOR RESPIRATORY CARE I (2 CR.)
Introduces students to pharmacologic agents used in cardiopulmonary care. Lecture 2 hours per week.

RTH 151-152 FUNDAMENTAL
CLINICAL
PROCEDURES I-II (4 CR.) (4 CR.)
Prerequisite for RTH 151 is RTH 131. Prerequisite for RTH 152 is RTH 151. Offers clinical instruction in basic patient care practices. Laboratory 16 hours per week.

RTH 222 CARDIOPULMONARY
SCIENCE II (3 CR.)
Focuses on assessment, treatment, and evaluation of patients with cardiopulmonary disease. Explores cardiopulmonary, renal, and neuromuscular physiology, and pathophysiology. Lecture 3 hours per week.

RTH 223 CARDIOPULMONARY
SCIENCE III (2 CR.)
Continues the exploration of topics discussed in RTH 121 and 222. Lecture 2 hours per week.

RTH 226 THEORY OF NEONATAL
AND PEDIATRIC
RESPIRATORY CARE (2 CR.)
Focuses on cardiopulmonary physiology and pathology of the newborn and pediatric patient. Lecture 2 hours per week.

RTH 235 DIAGNOSTIC AND
THERAPEUTIC PROCEDURES II (3 CR.)
Focuses on quality assurance of diagnostic procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

RTH 245 PHARMACOLOGY
FOR RESPIRATORY CARE II (2 CR.)
Concentrates on pharmacologic agents used in the management of the critically ill patient. Lecture 2 hours per week.

RTH 253 ADVANCED
CLINICAL PROCEDURES III (4 CR.)
Prerequisite is RTH 152. Offers clinical instruction in advanced patient care practice. Laboratory 16 hours per week.

RTH 254 ADVANCED
CLINICAL PROCEDURES IV (4 CR.)
Prerequisite RTH 253. Offers clinical instruction in advanced patient care practice. Laboratory 16 hours per week.

RTH 265 CURRENT ISSUES
IN RESPIRATORY CARE (2 CR.)
Explores current issues affecting the profession of respiratory care. Lecture 2 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

RUSSIAN

RUS 101-102 BEGINNING
RUSSIAN I-II (5 CR.) (5 CR.)
Develops the understanding, speaking, reading, and writing of Russian, and emphasizes the structure of the language. Lecture 5 hours per week.

RUS 201-202 INTERMEDIATE
RUSSIAN I-II (3 CR.) (3 CR.)
Prerequisite RUS 102 or equivalent. Continues the development of the skills of understanding, speaking, reading, and writing of Russian. Class conducted in Russian. Lecture 3 hours per week.

SOCIOLOGY

SOC 200
PRINCIPLES OF SOCIOLOGY (3 CR.)
Introduces fundamentals of social life. Presents significant research and theory in areas such as culture, social structure, socialization, deviance, social stratification, and social institutions. Lecture 3 hours per week.

SOC 201-202 INTRODUCTION
TO SOCIOLOGY I-II (3 CR.) (3 CR.)
Introduces basic concepts and methods of sociology. Presents significant research and theory in areas such as socialization, group dynamics, gender roles, minority group relations, stratification, deviance, culture, community studies. Includes population, social change, and social institutions (family, education, religion, political system, economic system). Lecture 3 hours per week.

SOC 207 MEDICAL SOCIOLOGY (3 CR.)
Surveys the social, economic, cultural, and individual factors in health and illness. Examines issues of wellness, health-care systems, physician-nurse-patient relationships, medical costs, ethics and policy. Lecture 3 hours per week.

SOC 208 SOCIOLOGY
OF POPULAR CULTURES (3 CR.)
Focuses on historical and contemporary currents of social life. Includes nature of social trends, relationship between social trends and individual behavior, and reflection of cultural trends in the mass media. Lecture 3 hours per week.

SOC 211-212 PRINCIPLES OF ANTHROPOLOGY (3 CR.) (3 CR.)

Inquires into the origins, development, and diversification of human biology and human cultures. Includes fossil records, physical origins of human development, human population genetics, linguistics, cultures' origins and variation, and historical and contemporary analysis of human societies. Lecture 3 hours per week.

SOC 215 SOCIOLOGY OF THE FAMILY (3 CR.)

Studies topics such as marriage and family in social and cultural context. Addresses the single scene, dating and marriage styles, child-rearing, husband and wife interaction, single parent families, alternative lifestyles. Lecture 3 hours per week.

SOC 216 CHILD-PARENT COMMUNITY RELATIONS (3 CR.)

Emphasizes understanding of interrelationships within the community that influence childhood development. Includes the role of religion, ethical values and citizenship in the education of children. Lecture 3 hours per week.

SOC 235 JUVENILE DELINQUENCY (3 CR.)

Studies demographic trends, causal theories, and control of juvenile delinquency. Presents juveniles' interaction with family, schools, police, courts, treatment programs, and facilities. Lecture 3 hours per week.

SOC 236 CRIMINOLOGY (3 CR.)

Studies research and causal theories of criminal behavior. Examines crime statistics, crime victims, and types of criminal offenses. Introduces role of police, judicial and correctional system in treatment and punishment of offenders. Lecture 3 hours per week.

SOC 245 SOCIOLOGY OF AGING (3 CR.)

Introduces study of aging with special emphasis on later stages of the life cycle. Includes theories of aging, historical and comparative settings, social policy, and future trends of aging. Lecture 3 hours per week.

SOC 246 DEATH AND SOCIETY (3 CR.)

Analyzes death and its relationship to social behavior and societal institutions. Focuses attention on types of death, bereavement, funerals, estate planning/inheritance, and the student's own responses to these issues. Lecture 3 hours per week.

SOC 247 DEATH AND DYING (3 CR.)

SOC 247 and PSY 266 cannot both be taken for credit toward graduation. Studies theoretical, practical, and historical aspects of death. Focuses upon student's own ideas, feeling, and attitudes toward death and dying and the significance and consequences of those attitudes. Lecture 3 hours per week.

SOC 255 COMPARATIVE SOCIOLOGY (3 CR.)

Analyzes varieties of human behavior, beliefs and values in western and non-western cultures. Emphasizes similarities and variations among social institutions such as family, law, religion, economics and government. Lecture 3 hours per week.

SOC 256 SOCIOLOGY OF THE FUTURE (3 CR.)

Emphasizes images of the future; technology and social evolution; basic methodologies of futures research; technology forecasting and assessment; world view; speculation on the future of basic institutions including family, education, economics and politics. Lecture 3 hours per week.

SOC 266 MINORITY GROUP RELATIONS (3 CR.)

Investigates minorities such as racial and ethnic groups. Addresses social and economic conditions promoting prejudice, racism, discrimination, and segregation. Lecture 3 hours per week.

SOC 268 SOCIAL PROBLEMS (3 CR.)

Applies sociological concepts and methods to analysis of current social problems. Includes delinquency and crime, mental illness, drug addiction, alcoholism, sexual behavior, population crisis, race relations, family and community disorganization, poverty, automation, wars, and disarmament. Lecture 3 hours per week.

SOC 270 METHODS OF SOCIAL RESEARCH (3 CR.)

Introduces basic procedures and techniques of data collection and analysis. Provides research opportunities in participant-observation, market research, sampling, and analysis of documents. Lecture 3 hours per week.

SOC 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

SPANISH**SPA 016 SPANISH FOR BUSINESS (1-3 CR.)**

Introduces the student to Spanish used in business transactions. Lecture 1-3 hours per week.

SPA 017 SPANISH FOR THE TOURIST (1-3 CR.)

Introduces spoken Spanish to people intending to travel in a Spanish-speaking country. Lecture 1-3 hours per week.

SPA 101-102 BEGINNING SPANISH I-II (5 CR.) (5 CR.)

Introduces understanding, speaking, reading, and writing skills and emphasizes basic Spanish sentence structure. Lecture 5 hours per week.

SPA 103-104 BASIC SPOKEN SPANISH I-II (3 CR.) (3 CR.)

Teaches oral communication and introduces cultural mores and customs to students with no prior instruction in the language. Does not fulfill the foreign language requirement for the Associate in Arts degree. Lecture 3 hours per week.

SPA 111-112 CONVERSATION IN SPANISH I-II (3 CR.) (3 CR.)

Prerequisite SPA 102. Emphasizes the spoken language, stressing fluency and correctness of structure, pronunciation, and vocabulary. Lecture 3 hours per week.

SPA 163-164 SPANISH FOR HEALTH PROFESSIONALS I-II (3 CR.) (3 CR.)

Introduces Spanish to those in the health sciences. Emphasizes oral communication and practical medical vocabulary. May include oral drill and practice. Lecture 3 hours per week.

SPA 201-202 INTERMEDIATE SPANISH I-II (3 CR.) (3 CR.)

Prerequisite SPA 102 or equivalent. Continues to develop understanding, speaking, reading, and writing skills. Spanish is used in the classroom. Lecture 3 hours per week.

SPA 211-212 INTERMEDIATE SPANISH CONVERSATION I-II (3 CR.) (3 CR.)

Prerequisite SPA 202 or equivalent. Continues to develop fluency through emphasis on idioms and other complex sentence structures. Lecture 3 hours per week.

SPA 233-234 INTRODUCTION TO SPANISH CIVILIZATION AND LITERATURE I-II (3 CR.) (3 CR.)

Prerequisite SPA 202 or equivalent. Introduces the student to Spanish culture and literature. Readings and discussions conducted in Spanish. Lecture 3 hours per week.

SPA 241-242 INTERMEDIATE SPANISH COMPOSITION I-II (3 CR.) (3 CR.)

Prerequisite SPA 202 or equivalent. Develops skills in written Spanish, emphasizing grammatical correctness. Lecture 3 hours per week.

SPEECH AND DRAMA**SPD 001 DEVELOPMENTAL SPEECH (1-5 CR.)**

Teaches basic skills needed to enter college-level oral communication courses. Students may re-register for this in subsequent semesters as necessary until the course objectives are completed. Variable hours per week.

SPD 100 PRINCIPLES OF PUBLIC SPEAKING (3 CR.)

Applies theory and principles of public address with emphasis on preparation and delivery. Lecture 3 hours per week.

SPD 110 INTRODUCTION TO SPEECH COMMUNICATION (3 CR.)

Examines the elements affecting speech communication at the individual, small group, and public communication levels with emphasis on practice of communication at each level. Lecture 3 hours per week.

SPD 111-112 VOICE AND DICTION I-II

(3 CR.) (3 CR.)

Enables students to improve pronunciation, articulation, and voice quality. Includes applied phonetics. Lecture 3 hours per week.

SPD 115 SMALL GROUP COMMUNICATION

(3 CR.)

Emphasizes the development of presentational ability in a group, decision-making, group maintenance, and leadership and participant skills. Incorporates a preliminary study of group dynamics. Lecture 3 hours per week.

SPD 116 SPEECH WORKSHOP

(3 CR.)

Enables work in competitive speech activities such as debate, oratory, impromptu speaking, prose and poetry reading, and rhetorical criticism. May be repeated for credit. Lecture 3 hours per week.

SPD 125 INTERVIEWING

(3 CR.)

Studies theory and practice of interviewing, emphasizing the informational interview, the journalistic interviews, the employment interview, and the performance-appraisal interview. Lecture 3 hours per week.

SPD 126 INTERPERSONAL COMMUNICATION

(3 CR.)

Teaches interpersonal communication skills for both daily living and the world of work. Includes perception, self-concept, self-disclosure, listening and feedback, nonverbal communication, attitudes, assertiveness and other interpersonal skills. Lecture 3 hours per week.

SPD 127 WORKSHOP IN INTERPERSONAL SKILLS

(1 CR.)

Emphasizes practical applications of career-oriented oral communication skills at the interpersonal level. Lecture 1 hour per week.

SPD 130 INTRODUCTION TO THE THEATRE

(3 CR.)

Surveys the principles of drama, the development of theatre production, and selected plays to acquaint the student with various types of theatrical presentations. Lecture 3 hours per week.

SPD 131-132 ACTING I-II

(3 CR.) (3 CR.)

Develops personal resources and explores performance skills through such activities as theatre games, role playing, improvisation, work on basic script units, and performance of scenes. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

SPD 136 THEATRE WORKSHOP

(1-6 CR.)

Enables students to work in various activities of play production. The student participates in performance, set design, stage carpentry, sound, costuming, lighting, stage managing, props, promotion, or stage crew. May be repeated for credit. Variable hours per week.

SPD 137 ORAL INTERPRETATION

(3 CR.)

Studies the theory and practice of performing various types of literature: prose, poetry, and drama. Emphasizes the relationship among the oral interpreter, the literary work, and the audience. Lecture 3 hours per week.

SPD 141-142 THEATRE**APPRECIATION I-II** (3 CR.) (3 CR.)

Aims to increase knowledge and enjoyment of theatre. Considers process, style, organization, written drama, and performed drama. Lecture 3 hours per week.

SPD 200 ADVANCED**PUBLIC SPEAKING** (3 CR.)

Prerequisite SPD 100 or divisional approval. Focuses on preparation and delivery of various advanced forms of public address. Lecture 3 hours per week.

SPD 227 INDUSTRIAL AND ORGANIZATIONAL COMMUNICATION

(3 CR.)

Applies communication theory and principles to industrial and organizational settings. Lecture 3 hours per week.

SPD 229 INTERCULTURAL COMMUNICATION

(3 CR.)

Emphasizes the influence of culture on the communication process including differences in values, message systems, and communication rules. Lecture 3 hours per week.

SPD 233 REHEARSAL AND PERFORMANCE I

(4 CR.)

Explores various aspects of the theatre through involvement in college theatre production. Laboratory 12 hours per week.

SPD 241 INTRODUCTION TO DIRECTING I

(3 CR.)

Prerequisite SPD 131-132 or divisional approval. Introduces theory and practice of stage direction through the study of directing methods as well as the execution and discussion of directing exercises. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

SPD 265**INTERPRETER'S THEATRE** (3 CR.)

Involves study and practice of translating literature into theatrical performance, including such formats as Chamber Theatre, Readers' Theatre, and Choral Reading. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

SPD 297**COOPERATIVE EDUCATION** (1-6 CR.)

(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

STUDENT DEVELOPMENT**STD 100 ORIENTATION**

(1 CR.)

Assists students in transition to colleges. Provides overviews of college policies, procedures, curricular offerings. Encourages contacts with other students and staff. Assists students toward college success through information regarding effective study habits, career and academic planning, and other college resources available to students. May include English and math placement testing. Strongly recommended for beginning students. Required for graduation. Lecture 1 hour per week.

STD 107 CAREER EDUCATION

(3 CR.)

Surveys career options available to students. Stresses career development and assists in the understanding of self in the world of work. Assists students in applying decision-making to career choice. May be substituted for STD 100. Lecture 3 hours per week.

TRAVEL AND TOURISM**TRV 100 INTRODUCTION****TO THE TRAVEL INDUSTRY** (3 CR.)

Presents an overview of the structure and scope of the travel industry with emphasis on job categories and functions, basic vocabulary, and the interrelationships of the various components. Includes the study of information displays of airline computer reservation system. Lecture 3 hours per week.

TRV 111-112 GEOGRAPHY**OF TOURISM I-II** (3 CR.) (3 CR.)

Focuses on the geographic knowledge necessary to provide effective, efficient service to clients. Studies major western hemisphere (Part I) and eastern hemisphere (Part II) destinations. Emphasizes features of touristic importance, such as visit documentation, climate and physical features, accommodations and attractions, and accessibility. Lecture 3 hours per week.

TRV 115 GROUND TRANSPORTATION,**TOURS, CRUISES,****SERVICES PLANNING** (3 CR.)

Prerequisite TRV 100. Studies travel industry products and procedures including steamship travel and cruises, rail travel, motor coach travel, escorted and independent tours, hotel and resort features and procedures, car rentals, and assembling and selling complete travel packages. Includes the use of an airline computer reservation system to access ground arrangement information. Lecture 3 hours per week.

TRV 116 AIR TRAVEL PLANNING

(4 CR.)

Prerequisite TRV 100. Teaches basic tariff and ticketing to include interpreting and preparing domestic and international itineraries, applying airfares and tariff rules for proper fare construction and ticket issuance, procedures for credit sales, and the explanation and use of ticket refunds and exchanges. Includes the use of an airline computer reservation system to access fares and fare rules. Lecture 4 hours per week.

TRV 125 PRINCIPLES OF TRAVEL**SELLING AND COUNSELING** (3 CR.)

Prerequisite TRV 100. Studies successful selling strategies in the travel business. Analyzes selling techniques by types of travel clientele and their needs. Emphasizes the development of basic selling skills through role playing exercises and sales presentations. Lecture 3 hours per week.

TRV 130 INTRODUCTION TO MEETING PLANNING (3 CR.)

Focuses on basic aspects and skills involved in planning and managing meetings and conventions. Covers the entire spectrum of the meeting industry, treating all aspects with a broad approach. Emphasizes types of meetings, meeting markets, industry suppliers and affiliates, budget and program planning, site selection and contract negotiations, registration and housing, food and meeting functions, audiovisual and signage requirements, and post meeting analysis. Lecture 3 hours per week.

TRV 136 TOUR GUIDING AND MANAGEMENT (3 CR.)

Focuses on the aspects and skills involved in tour guiding and tour management. Covers the components of a tour, trends, and the approaches to public speaking, cultural sensitivity, working with various age groups and with the physically challenged. Lecture 3 hours per week.

TRV 137 REGIONAL TOUR GUIDING (3 CR.)

Focuses on the knowledge and skills needed to become a regional area tour guide. Covers the practical elements including regulations, licensing procedure, and marketing. Covers information necessary to give tours in the region that will include national and local history, geography, architecture, government and political history, museums, flora and fauna. Lecture 3 hours per week.

TRV 211 AIRLINE COMPUTER RESERVATION SYSTEMS I (4 CR.)

Prerequisite TRV 116. Studies airline computer reservation system entry instructions and processes to enable the student to acquire proficiency in developing itineraries, building passenger name records, and accessing other standard airline and travel information procedures. Includes car rental, hotel reservation, and other functions of major computerized reservation systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

TRV 212 AIRLINE COMPUTER RESERVATION SYSTEMS II (3 CR.)

Prerequisite TRV 211. Teaches advanced applications of an airline computer reservation system including complex domestic and international itineraries with specialized faring, passenger name record changes. Deals with constructing connections, creating client profile records, interpreting seat map displays and pre-reserved seat selection, rail and cruise bookings, and ticket reissuance procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

TRV 220 PRINCIPLES OF GROUP TRAVEL AND TOUR OPERATIONS (3 CR.)

Prerequisites TRV 115 and TRV 116. Introduces procedures and practices used in the travel industry to plan and operate travel programs for various sized groups. Encompasses all aspects of group travel, from the selling and planning stages to specific day-to-day details of directing and managing a group tour. Lecture 3 hours per week.

TRV 225 INTERNATIONAL TRAVEL AND TOURISM (3 CR.)

Prerequisite TRV 100. Analyzes the international organization of tourism, the role of the physical environment and culture, and tourism as a factor in economic planning and development. Lecture 3 hours per week.

TRV 230 MARKETING AND MANAGEMENT OF TRAVEL SERVICES (3 CR.)

Prerequisite TRV 115. Focuses on the management and marketing activities and functions in the travel industry. Studies planning and staffing procedures, specialized sales and management reports, profit analysis, and the unique problems of marketing services. Emphasizes the analysis of case studies of travel organizations. Lecture 3 hours per week.

TRV 235 PRINCIPLES OF MEETING PLANNING (3 CR.)

Prerequisite TRV 130. Focuses on planning and managing meetings. Examines entire sequence of events, from conceptual stage of first meeting plan through completion of the event. Emphasizes technical planning skills including site selection, negotiating with suppliers, meeting specifications, preparation, budgeting, special event planning, and working with facility staff to manage a successful meeting. Lecture 3 hours per week.

TRV 297 COOPERATIVE EDUCATION (1-6 CR.)
(see General Usage Courses section)

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

VETERINARY TECHNOLOGY**VET 105 INTRODUCTION TO VETERINARY TECHNOLOGY (3 CR.)**

Introduces the role of veterinary technicians in veterinary practice. Includes medical terminology, ethics, professionalism, and basic concepts of patient care. Lecture 3 hours per week.

VET 110 FUNDAMENTALS OF HORSE MANAGEMENT (3 CR.)

Surveys horse breeds, their functions and uses. Addresses horse conformation, facilities, and basic feeds and feedings. Includes study of principles of horse nutrition. Lecture 3 hours per week.

VET 111 ANATOMY AND PHYSIOLOGY OF DOMESTIC ANIMALS (4 CR.)

Introduces the structure and function of the animal and of all the organ systems of common domestic animals. Includes histology, embryology, and genetics. Includes laboratory dissection and demonstrations. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

VET 116 ANIMAL BREEDS AND BEHAVIOR (3 CR.)

Surveys common species of domestic animals including basic husbandry, care, and handling. Introduces identification of various breeds and their characteristics, including behavior patterns, problems, and solutions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

VET 121-122 CLINICAL PRACTICES I-II (4 CR.) (4 CR.)

Presents clinical techniques commonly performed in veterinary practice. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

VET 131-132-133 CLINICAL PATHOLOGY I-II-III (3 CR.) (3 CR.)

Surveys techniques used in the veterinary hospital laboratory. Includes hematology, urinalysis, microbiology, cytology, immunology, clinical chemistry, serology, and necropsy. Emphasizes the use of microscope, automated laboratory equipment, and modern diagnostic procedures. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

VET 135 ANESTHESIA OF DOMESTIC ANIMALS (2 CR.)

Introduces the basic principles of anesthesia of common domestic species. Includes techniques of induction, monitoring, and recovery of patients using injectable and inhalation anesthetics. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

VET 211-212 ANIMAL DISEASES I-II (2 CR.) (2 CR.)

Describes animal health and disease, surgical techniques, and animal behavior. Includes demonstrations and selected observation and practice in animal hospitals, clinics, or research laboratories. For VET 211 - Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week. For VET 212 - Lecture 2 hours. Laboratory 1 hour. Total 3 hours per week.

VET 216 ANIMAL PHARMACOLOGY (2 CR.)

Studies drugs and other medical substances of veterinary importance. Includes their characteristics, usage, measurement, dosage, administration, and also pharmacy management. Lecture 2 hours per week.

VET 217 INTRODUCTION TO LABORATORY, ZOO AND WILDLIFE MEDICINE (2 CR.)

Focuses on the identification, captive management, restraint and diseases of fish, reptiles, birds, rodents, rabbits, ferrets, primates, wild carnivores, and wild herbivores. Presents the fields of laboratory research zoological medicine. Lecture 2 hours per week.

VET 221 ADVANCED CLINICAL PRACTICES III (4 CR.)

Prerequisite VET 121-122. Presents advanced clinical techniques commonly performed in veterinary practice. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

VET 225 PARASITOLOGY OF DOMESTIC ANIMALS (2 CR.)

Studies the common internal and external parasites of various species of domestic animals. Emphasizes their lifecycles, pathology, treatment, and prevention. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**VET 235 ANIMAL HOSPITAL
MANAGEMENT
AND CLIENT RELATIONS (3 CR.)**

Introduces the basic concepts of business procedures of veterinary practice. Includes communication skills, office management, record keeping, and use of computers in veterinary practice. Lecture 3 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

WELDING

**WEL 115
ARC AND GAS WELDING (3 CR.)**

Presents arc and gas welding practices. Discusses safety, general welding practices and effects of welding on metals. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 116
WELDING I (OXYACETYLENE) (2 CR.)**

Teaches oxygen/acetylene welding and cutting including safety of equipment, welding, brazing and soldering procedures and cutting procedures. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

WEL 121 ARC WELDING (2 CR.)

Studies the operation of AC and DC power sources, weld heat, polarities, and electrodes for use in joining various alloys by the SMAW process. Covers welds in different types of joints and different welding positions. Emphasizes safety procedures. Lecture 1 hour. Laboratory 3 hours. Total 4 hours per week.

**WEL 122
WELDING II (ELECTRIC ARC) (3 CR.)**

Teaches electric arc welding, including types of equipment, selection of electrodes, safety equipment and procedures, and principles and practices of welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 126 PIPE WELDING I (3 CR.)

Teaches metal arc welding processes including the welding of pressure piping in the horizontal, vertical, and horizontal-fixed positions in accordance with section IX of the ASME Code. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

WEL 127 PIPE WELDING II (3 CR.)

Provides practice in the welding of pressure piping in the horizontal, vertical, and fixed positions. Laboratory 9 hours per week.

WEL 130 INERT GAS WELDING (3 CR.)

Introduces practical operations in the uses of inert-gas-shield arc welding. Discusses equipment, safety operations, welding practice in the various positions; shielded gases, filler rods, process variations and applications; manual and semi-automatic welding. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 141-142 WELDER QUALIFICATION
TESTS I-II (3 CR.) (3 CR.)**

Studies techniques and practices of testing welded joints through destructive and non-destructive tests, guiding, discoloration heat test, porous examinations, tensile, hammer and free bend tests. Also studies visual, magnetic and fluorescent tests. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 145
WELDING METALLURGY (3 CR.)**

Studies steel classifications, heat treatment procedures, properties of ferrous and non-ferrous metals. Discusses techniques and practices of testing welded joints and destructive/nondestructive, visual magnetic and fluorescent testing. Lecture 3 hours per week.

**WEL 146
WELDING QUALITY CONTROL (3 CR.)**

Teaches techniques and practices of inspection, and interpretation of tests and measurements. Includes radiographic tests of joints of unlimited thickness welded in 3G and 4G positions. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

**WEL 150 WELDING DRAWING
AND INTERPRETATION (2 CR.)**

Teaches fundamentals required for successful drafting as applied to the welding industry. Includes blueprint reading, geometric principles of drafting and freehand sketching, basic principles of orthographic projection, preparation of drawings and interpretation of symbols. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.

**WEL 160 SEMI-AUTOMATIC
WELDING PROCESSES (3 CR.)**

Introduces semi-automatic welding processes with emphasis on practical application. Includes the study of filler wires, fluxes, and gases. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

Please contact the appropriate division for the availability of general usage courses as described in the "Description of Courses" section.

The five campuses are indicated as follows: AL, Alexandria; AN, Annandale; LO, Loudoun; MA, Manassas; WO, Woodbridge; and ELI, Extended Learning Institute. Those individuals with cross campus responsibilities are indicated as CS, College Staff.

- Adams, Joseph D.;** Professor; B.A., Franklin and Marshall College; M.Ed., Shippensburg State College; Ph.D., Lehigh University; English (AN)
- Adams, Nancy B.;** Instructor; B.A., University of Virginia; M.S., San Diego State University; Counselor (MA)
- Agnew, James E.;** Assistant Professor; A.S., Manchester Community College; B.A., University of Hartford; M.S., University of New Haven; Program Head, Computer Information Systems (WO)
- Ahrens, David A.;** Assistant Professor; B.A., University of Hawaii; M.A., University of Oregon; Teleconference Coordinator, Telecommunications Center (ELI)
- Aiello, Nancy C.;** Professor; B.A., M.S., Syracuse University; Ph.D., V.P.I. & S.U.; Division Chair, Natural & Applied Sciences (LO)
- Alford, Terry;** Professor; B.A., M.A., Ph.D., Mississippi State University; History (AN)
- Allaire, Ruth A.;** Professor; B.S., M.S., University of Massachusetts; Ph.D., University of Maryland; Biology (WO)
- Allen, W. Gordon;** Professor; A.A., Northern Virginia Community College; B.S., U.S. Military Academy; M.B.A., George Washington University; M.S., Southeastern University; Accounting (LO)
- Allison, David;** Assistant Professor; A.B., Wilmington College; M.F.A., George Washington University; Photography (AL)
- Anderson, Carol L.;** Professor; A.S., Ferrum College; B.S., M.S., Virginia Commonwealth University; Accounting (AN)
- Anwari, M. Hashem;** Associate Professor; B.S., TriState University; M.S., North Carolina A&T State University; Program Head, Computer Information Systems (LO)
- Archer, Chalmers, Jr.;** Professor; A.A., Saints College; B.S., M.Ed., Tuskegee Inst.; Ed.D., Auburn University; Counselor, Financial Aid (AL)
- Atchison, Evelyn C.;** Professor; B.S.N., Duquesne University; M.S.N., Catholic University of America; Ed.D., George Washington University; Program Head, Nursing (AN)
- Atwater, Thomas C.;** Assistant Professor; B.S., M.A.C.T., University of North Carolina; Business Management (AL)
- Avery, Fay;** Professor; B.A., Parsons College; M.Ed., University of Buffalo; Ed.D., George Washington University; Division Chair, Business (AL)
- Bachtell, Janice E.;** Professor; M.S.N., Catholic University; Ph.D., American University; Nursing (AN)
- Baer, James A.;** Assistant Professor; A.B., Oberlin College; M.A.T., Antioch Graduate School of Education; M.A., Rutgers University; Ph.D., Rutgers University; History (AL)
- Bailey, Haroldine;** Assistant Professor; B.A., Colby College; M.Ed., Howard University; Counselor (AL)
- Bailey, Raymond C.;** Professor; A.B., Catawba College; M.A., Ph.D., University of Georgia; History (MA)
- Bailey, Sandra;** Assistant Professor; B.S., Indiana University; Program Head, Medical Record Technology Program (AN)
- Baldwin, Susan M.;** Assistant Professor; B.A., Boston College; M.A., University of Kentucky; Foreign Languages (AN)
- Ballmann, Gary E.;** Professor; B.A., University of Missouri; M.S., Texas Christian University; Ph.D., University of Maryland; Associate Dean for Curriculum Services (CS)
- Banas, Edward J.;** Professor; B.A., Rutgers College; M.B.A., Rutgers University; C.P.A.; Accounting (WO)
- Bannon, John E.;** Assistant Professor; B.F.A., Maryland Inst. College of Art; M.F.A., University of Pa.; Art (WO)
- Barbaro, Ronald D.;** Professor; B.A., Providence College; M.S., University of Rhode Island; Ph.D., Rutgers University; Chemistry (MA)
- Barr, Karen J.;** Instructor; B.A., SUNY at Albany; M.S., George Mason University; Mathematics (LO)
- Bassett, Max L.;** Professor; B.A., M.A., SUNY at Albany; M.S., Calif. State College at L.A.; Ed.S., Ed.D., University of Fla.; Dean, Academic and Student Services (CS)
- Baten, Abdul;** Professor; B. Com Hons, M. Com, Dacca University; M.B.A., American University; C.P.A.; Accounting (MA)
- Bausch, Denise;** Assistant Professor; B.A., Ohio University; M.A., Eastern Michigan University; English (WO)
- Bausch, Robert;** Assistant Professor; B.A., M.A., George Mason University; English (WO)
- Bedont, Sally A.;** Associate Professor; B.S., Rider College; M.Ed., Trenton State College; Office Systems Technology (MA)
- Beene, Joe F.;** Assistant Professor; B.A., University of Tennessee; M.S., George Washington University; J.D., University of Tennessee; Program Head, Administration of Justice (AN)
- Beeson, Sandra J.;** Instructor; B.A., Purdue University; M.S.L.S., Catholic University; Coordinator, Media Processing Services (CS)
- Berg, Lillian D.;** Associate Professor; B.S., Birmingham Southern College; M.S., Emory University; Chemistry (AN)
- Bergeman, George W.;** Assistant Professor; B.A., M.S., University of Iowa; Mathematics (LO)
- Berger, Morton;** Professor; B.A., Brooklyn College; M.A., Ph.D., Yeshiva University; Psychology (AL)
- Bernhardt, Frances A.;** Associate Professor; A.E., St. Cloud State College; B.S., M.A., University of Minnesota; Post-M.L.S., Catholic University of America; Coordinator, Library Services (AN)
- Bernier, Joseph W.;** Assistant Professor; B.S., University of Maryland; D.D.S., Indiana University; Coordinator, Dentistry (AN)
- Beyer, Betty Jane;** Associate Professor; B.A., University of Western Ontario; M.A., Annenberg School of Communications, University of Pennsylvania; Director, Continuing Education & Community Services (LO)
- Bixler, Linda A.;** Associate Professor; B.S., M.S., Radford College; English (AN)
- Bizier, Patricia P.;** Instructor; B.S., University of Maine; M.S.L.S., Catholic University of America; Librarian (MA)
- Black, Bernadette M.;** Associate Professor; B.A., Ladycliff College; M.S., University of Dayton; Career Planning & Job Counselor (AL)
- Blier, Teresa S.;** Assistant Professor; B.S., B.S., Bradley University; J.D., University of Chicago Law School; Program Head, Legal Assisting (AL)
- Blois, Beverly A., Jr.;** Professor; B.A., Stetson University; M.A., University of N. Carolina; Ph.D., George Mason University; History (LO)
- Blunt, Rosalind;** Assistant Professor; B.S., Hampton Inst.; M.A., University of Virginia; English (LO)
- Bobolia, Michael P.;** Associate Professor; B.A., Adelphi University; M.S., Hofstra University; Ed.D., V.P.I. & S.U.; Counselor (WO)
- Bobrik, Michael A.;** Associate Professor; B.A., Hunter College; Ph.D., Mass. Institute of Technology; Chemistry (AL)
- Bohling, Carolyn A.;** Assistant Professor; A.A., Marymount University; B.S., Virginia Commonwealth University; M.B.A., Marymount University; Real Estate (AL)
- Bone, Gerald P.;** Associate Professor; B.A., M.A., S.T.B., St. Louis University; Psychology/Philosophy/Religion (LO)
- Bonnette, Richard A.;** Assistant Professor; B.A., LaRoche College; Radiography (AN)
- Booth, Frederick N.;** Associate Professor; B.A., North Texas State University; M.A.T., Tulane University; Mathematics (AN)
- Botscheller, John V.;** Associate Professor; B.S., City College of N.Y.; M.S., University of Minnesota; Assistant Division Chair for the Sciences (AL)
- Bowling, Charles Richard;** Assistant Professor; A.B., St. Mary's College; M.A., University of Ky.; Counselor (AN)
- Bracke, Peter;** Associate Professor; B.S., Purdue University; M.B.A., University of Chicago; D.B.A., George Washington University; Planning/Engineering (AL)
- Bracy, Douglas B.;** Instructor; B.A., Lafayette College; Computer Information Systems (AL)
- Braden, Jean H.;** Professor; B.S., M.A., Ph.D., Ohio State University; Assistant Division Chair, Economics, Geography, and History (AL)
- Bradford, Arnold J.;** Professor; B.A., Williams College; M.A., Cornell University; Ph.D., University of Va.; Division Chair, Arts, Humanities, and Business (MA)
- Brady, Terrence V.;** Associate Professor; B.G.S., University of Nebraska; M.S., University of Arkansas; D.B.A., Nova University; Coordinator, Lecturer/Extended Day Services (AN)

- Braun, Eugene A.;** Associate Professor; B.S., B.A., Bridgewater College; M. Ed., James Madison University; Cert. in Acct., U. Va.; C.P.A.; Accounting (AN)
- Brogan, Barbara L.;** Assistant Professor; B.A., State University of N.Y.; M.E., N. Carolina State University; Economics (AL)
- Brohard, Ellen B.;** Associate Professor; B.S., Longwood College; M.S., V.P.I. and S.U.; Office Systems Technology (LO)
- Brown, David;** Professor; B.A., University of West Virginia; M.A., University of Ontario; Ph.D., McMaster University; Philosophy (AL)
- Brown, Donald A.;** Assistant Professor; B.A., M.A., University of Md.; Art and Music (AN)
- Brown, F. Eugene Jr.;** Associate Professor; B.A., Glenville State College; M.A., Trenton State College; Mathematics (AL)
- Brown, Julia R.;** Assistant Professor; A.B., M.A., Western Kentucky University; Counselor (AN)
- Brunner, James R.;** Associate Professor; B.A., University of Virginia; M.A., California State University; M.B.A., V.P.I. & S.U.; Financial Aid (AN)
- Brunner, Robert T.;** Associate Professor; B.A., Fairmont State College; M.A., West Virginia University; English (AL)
- Bryant, Helen E.;** Instructor; B.A., M.A., University of Arkansas; Speech (LO)
- Bryant, Mynora J.;** Associate Professor; B.A., M.A., Howard University; Ed.D., George Washington University; Counselor (AL)
- Bull, Elizabeth D.;** Instructor; B.A., St. Lawrence University; M.A., Mississippi State University; French (AL)
- Bulmer, Walter, Jr.;** Associate Professor; B.S., Salem College; M.S., University of Arizona; Biology (AN)
- Burgess, John F., Jr.;** Professor; B.S., M.S., Ed.D., Florida State University; Division Chair, Social Sciences & Public Services Division (AN)
- Burton, Jon C.;** Assistant Professor; B.A., University of Maryland; M.A., University of Va.; English (AL)
- Burwell, James A.;** Assistant Professor; A.B., University of Pittsburgh; M.D., University of Maryland School of Medicine; Coordinator/Medical Dir., Radiography, (AN)
- Butler, Harvey J.;** Assistant Professor; A.A.S., Northern Virginia Community College; B.S., George Mason University; M.S., Chicago State University; Program Head, Automotive Technology & Welding (MA)
- Calobrisi, Charlotte M.;** Assistant Professor; B.A., M.A., George Mason University; M.S., Georgetown University; English as a Second Language (AN)
- Cantu, Mario G.;** Assistant Professor; B.S., University of Houston; M.A., St. Mary's University; Ph.D., State University of New York; Economics (WO)
- Capps, John R.;** Associate Professor; B.F.A., M.F.A., Auburn University; Program Head, Communication Design (AL)
- Carmichael, Charlene;** Associate Professor; R.D.H.; B.S., M.A., New York University; C.A.G.S., V.P.I. & S.U.; Program Head, Dental Hygiene (AN)
- Carter, Elizabeth C.;** Instructor; B.A., University of Maryland; M.Ed., University of Virginia; Counselor (AN)
- Carter, Joseph M.;** Instructor; A.A.S., Northern Virginia Community College; Air Conditioning and Refrigeration (WO)
- Casabianca, Lynn R.;** Assistant Professor; B.A., Loyola University of Chicago; M.A., Duke University; English (AN)
- Casal, Laura C.;** Instructor; A.B., Youngstown State University; M.A., George Washington University; Assistant Division Chair, Developmental English (MA)
- Cascio, Bonnie J.;** Instructor; B.S., Central Connecticut State University; M.A., Rider College; Counselor (MA)
- Cassens, Denise M.;** Instructor; B.A., Tulane University; M.A., Johns Hopkins University; English (AL)
- Cavagnaro, Dorothy H.;** Assistant Professor; B.H.Sc., McGill University, Montreal, Quebec; M.Sc., V.P.I. & S.U.; Hotel, Restaurant, and Institutional Management (AN)
- Cavert, C. Edward;** Professor; B.A., North Central College; M.S., Syracuse University; Ed.D., University of Nebraska; Director, Telecommunications Center (ELI)
- Chambers, Barbara F.;** Professor; B.S., M.A., Ph.D., University of Alabama; Mathematics (WO)
- Champney, Terri A.;** Professor; B.S., D.V.M., Michigan State University; Program Head, Veterinary Technology (LO)
- Chang, YunHsi (Oscar);** Associate Professor; B.S., Nat'l Kaohsiung Institute of Tech.; M.S., North Carolina State University; Civil Engineering Technology (AN)
- Chapdelaine, Aime;** Assistant Professor; B.S.E.T., Capitol Inst. of Tech.; Electronics (AN)
- Chatman, Beatrice M.;** Assistant Professor; B.S., M.Ed., Virginia State College; Office Systems Technology (AL)
- Chen, Chih-Mei Lin;** Professor; B.S., National Taiwan University; M.Ph., Ph.D., City University of New York; Psychology (AL)
- Chu, Gen Sen;** Professor; B.A., TamKang College; M.S. in L.S., Appalachian State University; Ph.D., University of Md.; Director, Learning Resources Center (AN)
- Clarke, Alan R.;** Professor; ARIC, ARTCS, University of Salford, England; Ph.D., University of Sheffield, England; Division Chair, Environmental and Natural Sciences (WO)
- Clarke, Reginald W.;** Associate Professor; B.S., University of District of Columbia; M.A., George Washington University; Program Head, Human Services (AL)
- Cohen, Eliot I.;** Professor; B.A., Brandeis University; M.F.A., Maryland Inst. College of Art; Photography (LO)
- Collier, Ann M.;** Instructor; B.A., Monmouth College; M.Ed., University of Maryland; Mathematics (AN)
- Como, Robert M.;** Associate Professor; B.A., M.A., University of Hartford; Ph.D., University of Toledo; Division Chair, Communications and Humanities (WO)
- Conerly, Brenda F.;** Assistant Professor; B.S., M.Ed., M.A., University of Southern Mississippi (Hattiesburg); English as a Second Language (AL)
- Connolly, Charlene W.;** Associate Professor; B.S., Hunter College; M.A., New York University; Ed.D., St. John's University; Division Chair, Health Technologies (AN)
- Conroy, David E., Sr.;** Professor; B.A., Providence College; M.S., Central Connecticut State University; Ed.D., American University; Mathematics (AN)
- Cook, Gordon M.;** Professor; B.S., M.S., Appalachian State University; M.S.L.S., Catholic University; Ph.D., University of Maryland; Director, Learning Resources (WO)
- Corbett, Bobbie D.;** Instructor; A.A.S., Northern Virginia Community College; B.B.A., Marymount College; Business Management (AN)
- Coughlin, Elizabeth A.;** Assistant Professor; B.A., University of Rhode Island; M.A., Indiana University; Assistant Division Chair, Speech and Drama (AL)
- Craig, Sheila L.;** Assistant Professor; B.A., Trinity College; M.Ed., George Mason University; Counselor (AL)
- Crane, William H.;** Associate Professor; B.A., George Washington University; M.B.A., Ph.D., University of Liverpool; Business Administration (WO)
- Crippen, Nancy R.;** Associate Professor; B.S., George Mason University; M.A., University of Maryland; Physical Education (WO)
- Croft, Blanton;** Professor; B.S., Murray State University; M.A., University of Michigan, Ann Arbor; Ph.D., Purdue University, West Lafayette; Speech Communications (WO)
- Daily, Dianne M.;** Instructor; A.B., University of Miami; M.A., University of Kansas; English (AL)
- Daron, Patricia R.;** Professor; A.B., Upsala College; M.S., Long Island University; Ph.D., Catholic University; Natural Science (AN)
- David, Sheri I.;** Associate Professor; B.A., New York University; M.A., University of Chicago; Ph.D., City University of New York; History (MA)
- Davis, Mark P.;** Assistant Professor; B.A., University of Virginia; M.D., Medical College of Virginia; Coordinator/Medical Director, Emergency Medical Services Tech. (AN)
- Dearden, Z. Thomas;** Assistant Professor; B.E.E., Syracuse University, Electrical Engineering; Program Head, Electronics (WO)
- Dearing, Stuart Jay;** Professor; B.A., Western Maryland College; M.S., University of Maryland; Ed.D., Nova University; Biology (AN)
- Deaton, F. Eric;** Associate Professor; B.A., University of North Carolina; M.A.C.T., University of Tennessee; Political Science (AN)
- DeLia, Carol A.;** Assistant Professor; B.S., Slippery Rock College; M.A., Seton Hall University; Counselor (AN)

- Delmore, Marian L.;** Assistant Professor; B.A., University of Pittsburgh; M.L.S., University of Pittsburgh; Reference Librarian (AN)
- Dennis, Patrick F.;** Instructor; HVAC (WO)
- Depczenski, Robert G.;** Professor; B.S., Pennsylvania State University; M.Ed., University of Virginia; Ph.D., American University; Counselor (LO)
- DeRoy, Paula Q.;** Instructor; B.S., Penn. State University; M.L.S., University of Maryland; Librarian (AL)
- Devers, Donald R.;** Assistant Professor; B.A., University of Hawaii; M.A. (Equiv.), Catholic University of America; Psychology (AN)
- Dickson, Elizabeth A.;** Professor; B.A., Eckerd College; M.Ed., University of Virginia; Ed.D., V.P.I. & S.U.; M.S.T.M., American University; Computer Information Systems (LO)
- Dixit, Dhruv B.;** Professor; B.Sc., M.Sc., University of Baroda; M.S., Ph.D., University of California; Biology (LO)
- Dixon, Christine;** Assistant Professor; B.A., N.C. Central University; M.S.L.S., Catholic University; Circulation Librarian (AN)
- doCarmo, Pamela B.;** Professor; EMT-P; B.S., Central Michigan University; M.S., Indiana University; Program Head, Emergency Medical Services Technology (AN)
- Domenichetti, Madonna M.;** Professor; B.A., College of St. Scholastica; M.S., Ph.D., Catholic University of America; Psychology (WO)
- Donnell, Teresa;** Instructor; B.A., M.A., North Carolina Central University at Durham; Instructional Technologist (ELI)
- Donohoe, Rosanne T.;** Assistant Professor; B.A., Seton Hill College; M.A., Fordham University; Mathematics (AN)
- Doyle, Terrence A.;** Associate Professor; B.S., University of Wisconsin; M.A., University of Nebraska; Ph.D., Howard University; Speech (AN)
- Drasner, Steven;** Assistant Professor; B.S., State University of New York at Albany; M.S., University of Maryland; Computer Information Systems (AN)
- Dressler, Carolyn E.;** Professor; B.A., Douglas College; M.M., Peabody Conservatory; D.M.A., University of Maryland; Music/Assistant Division Chair, Music (AL)
- Drucker, Beverlee K.;** Instructor; B.A., Queen's College of CUNY; M.A., SUNY at Albany; Mathematics (WO)
- Drury, Natalia N.;** Associate Professor; B.A., Radcliffe College; M.A., American University; Economics (AN)
- Duggan, Jean M.;** Instructor; B.A., Oberlin College; M.Ed., University of Virginia; Counselor (AN)
- Eberhardt, Everett V.;** Assistant Professor; B.A., J.D., Howard University; Coordinator, Affirmative Action and Minority Affairs (CS)
- Echeverria, Pablo;** Assistant Professor; B.S., M.A., University of Puerto Rico; M.A., University of Maryland; Mathematics (AL)
- Eckerlin, Ralph P.;** Professor; A.B., Rutgers University; M.S., University of Miami; Ph.D., University of Connecticut; Biology (AN)
- Egan, Jennifer;** Instructor; B.A., East Carolina University; M.L.S., Florida State University; Librarian (LO)
- Ehle, John V. A., Jr.;** Associate Professor; B.A., Southeastern Louisiana University; M.S.S., Mississippi State University; Assistant Division Chair, Psychology and Sociology (AN)
- Ellis, BethJayne;** Associate Professor; B.A., University of Maine; M.S., Ph.D., Ohio State University; Biology (MA)
- Ellithorpe, Deborah D.;** Instructor; B.A., University of Dallas; M.S., Texas A & M University; Mathematics (WO)
- Elsberg, Constance M.;** Associate Professor; A.B., Barnard College; Certificate Soc. Anthro., Lucy Cavendish College, Cambridge University; Ph.D., University of Maryland; Sociology (AL)
- Emory, W. Frances;** Professor; B.S., M.A., Appalachian State University; Program Head, Business Careers; (WO)
- England, Elza M.;** Assistant Professor; B.A., American University; M.A., Montclair State College; M.L.S., Rutgers University; Librarian (WO)
- Ensign, Judith A.;** Assistant Professor; B.A., Connecticut College; M.P.A., New York University; Community Services Program Developer (MA)
- Erdahl, Emma G.;** Associate Professor; B.S., University of Kentucky; M.S., University of Wisconsin; Biology (AL)
- Ernst, Richard J.;** Professor; B.S., M.Ed., University of Florida; Ed.D., Florida State University; President (CS)
- Errico, Charles J.;** Professor; B.A., Towson State College; M.A., Ph.D., University of Maryland; Assistant Division Chair, Social Sciences (WO)
- Eyer, Patricia H.;** Associate Professor; B.S., Bloomsburg State College; M.S.A., George Washington University; Business Management (AN)
- Fahed, Charbel;** Assistant Professor; B.S., U.D.C.; Electronics (AN)
- Fancher, Ellen J.;** Assistant Professor; B.M., M.S.Ed., University of Miami; Ed. S., George Washington University; Counselor (WO)
- Fay, James S.;** Professor; B.M., Philadelphia Musical Academy; M.M., Catholic University; D.M.A., Johns Hopkins University; Music (AN)
- Felt, John D.;** Assistant Professor; B.S., Utah State University; M.B.A., Michigan State University; Business Administration (MA)
- Fichter, Eugene H.;** Associate Professor; B.S., M.S., William B. Paterson College; Psychology (AN)
- Fields, Lang;** Registrar (AN)
- Finch, Jo W.;** Instructor; B.A., University of North Alabama; M.A.T., Emory University; Assistant Division Chair, Science and Technology (MA)
- Finkelstein, Berta;** Instructor; B.S., Pennsylvania State University; M.A., Towson State University; Psychology (MA)
- Fiorillo, Rudolph J.;** Professor; B.S.M.E., M.M.E., Duquesne University; Ph.D., University of Maryland; Division Chair, Visual & Performing Arts (AL)
- Firdyiwek, Yitna B.;** Assistant Professor; B.A., V.P.I. & S.U.; M.A., Brown University; M.A., George Mason University; English (LO)
- Fletcher, Joyce F.;** Instructor; B.A., Howard University; M.A., University of Illinois; English (WO)
- Flores, Roy;** Associate Professor; A.B., M.S., Indiana State University; Ph.D., Iowa State University; Dean, Financial and Administrative Services (CS)
- Ford, Ann M.;** Associate Professor; B.S., University of Louisville; M.A., George Washington University; Counselor (AL)
- Freeman, Frank R.;** Associate Professor; A.B., Bellarmine College; M.Ed., Spalding College; Counselor (AN)
- Freiband, Michael A.;** Assistant Professor; B.A., University of Texas; M.B.A., Michigan State University; Hotel, Restaurant & Institutional Management/Travel & Tourism (AN)
- Friedmann, Jane F.;** Professor; A.B., Trinity College; M.A., SUNY at Fredonia; Ph.D., Indiana University of Pennsylvania; English (AN)
- Fruit, Gloria;** Instructor; B.A., George Mason University; M.A., University of Maryland; English (WO)
- Frye, C. Sherman, Jr.;** Assistant Professor; B.S., V.P.I. & S.U.; M.A.T., Brown University; C.A.G.S., V.P.I. & S.U.; Physics (AN)
- Fuchsman, Alvin A.;** Associate Professor; B.S., American University; M.S., Southern Illinois University; Administration of Justice (AN)
- Fuller, Suzanne;** Registrar (AL)
- Fusco, Frank D.;** Associate Professor; B.S., St. Lawrence University; M.D., Georgetown University School of Medicine; Coordinator/Medical Director, Respiratory Therapy (AN)
- Gale, James S.;** Associate Professor; B.A., M.A., Catholic University; C.P.A. (MD. State registered); Accounting (AL)
- Galligan, Jayne L.;** Assistant Professor; B.S.N., Carroll College; Nursing (AN)
- Gamgoum, Khadiga H.;** Assistant Professor; B.S., Cairo University; M.S., University of Georgia; Mathematics (AN)
- Garrigan, George A.;** Professor; B.Sc., Loras College; M.A., Drake University; Ph.D., University of Iowa; Chemistry (WO)
- Gary, Patricia K.;** Instructor; B.S., Tuskegee Institute; M.S., Rutgers University; Mathematics, (AL)
- Gates, Rebecca W.;** Assistant Professor; B.A., Washington State University; M.S., Indiana University; Community Services Program Developer (AL)
- Gauthey, J. Richard;** Assistant Professor; B.M.E., Cornell University; M.S., University of Calif. at Berkeley; Mechanical Engineering Technology (AN)
- Ghorbanian, Siamak M.;** Assistant Professor; B.S., M.S., Texas Southern University; Architecture (AL)

- Giacofci**, Marilou S.; Associate Professor; B.S., Hollins College; M.S., Old Dominion University; Division Chair, Science and Technology (MA)
- Gibbs**, Guy F.; Assistant Professor; B.A., Campbell University; M.Ed., East Carolina University; Counselor (MA)
- Gillette**, Pauline; Associate Professor; B.S., Massachusetts State Teacher's College; M.A., Trinity College; Psychology (AN)
- Ginoba**, Victor; Instructor; A.A.S., Northern Virginia Community College; B.S., Virginia State University; Automotive Technology (AL)
- Gisvold**, Jeanne; Associate Professor; B.A., University of Windsor, Canada; M.A., American University; J.D., Washington College of Law, The American University; Foreign Languages (AN)
- Gleeson**, Nancy B.; Instructor; A.A.S., NVCC; B.S., Ithaca College; Communication Design (AL)
- Glick**, D. Marvin; Professor; B.S., Eastern Mennonite College; M.A., Oberlin College; Ph.D., University of Kansas; Biology (LO)
- Goddard**, Thomas B.; Assistant Professor; B.S., New York State College of Forestry; M.S., George Washington University; B.S., Loyola College; Human Services (AL)
- Goodine**, Jean F.; Professor; B.A., Barnard College; M.A., Yale University; Ph.D., University of New Hampshire; English (MA)
- Goral**, Donald R.; Assistant Professor; B.S., California Institute of Technology; M.A., University of Wisconsin; M.A., Ph.D., University of California, Berkeley; Mathematics (AN)
- Gorham**, Robin W.; Professor; B.S., M.S., Ph.D., University of California, Irvine; Biology (AN)
- Goss**, Amy D.; Assistant Professor; B.S., Bloomsburg State College; M.Ed., Ohio University; Coordinator, Student Activities (AL)
- Grant**, Judith L.; Associate Professor; B.A., B.A., M.A., M.A., University of West Florida; Accounting (AN)
- Graus**, Richard R.; Professor; A.B., Johns Hopkins University; Ph.D., University of Rochester; Geology (AL)
- Graves**, Virginia H.; Associate Professor; B.S., Auburn University; M.A., University of Alabama; Program Head, Accounting & Marketing (AL)
- Graves**, Virginia; Assistant Professor; B.A., Birmingham Southern College; M.S.L.S., Drexel University; Media Processing Services (CS)
- Gray**, James V., Jr.; Assistant Professor; A.S., Northern Virginia Community College; B.S., Virginia Commonwealth University; M.B.A., George Mason University; Accounting (AL)
- Gray**, Jason D.; Instructor; B.A., Bowling Green State University; Associate Director, NVCC Educational Foundation (CS)
- Greenberg**, Florine A.; Professor; B.A., Barnard College; M.A., Columbia University; M.Ed., University of Maryland; Ed.D., George Washington University; Psychology (AN)
- Gregory**, Donald; Professor; B.A., Grinnell College; M.A., University of Iowa; Ph.D., Vanderbilt University; Philosophy (AN)
- Grodsky**, Alicia; Assistant Professor; B.A., University of Delaware; M.A., Ph.D., University of Maryland; Psychology (WO)
- Groff**, Rebecca W.; Associate Professor; A.A., George Washington University; M.A., Sangamon State University; Counselor (LO)
- Gronlund**, Mildred C.; Associate Professor; B.A., M.L.S., SUNY at Buffalo; M.A., George Mason University; Reference Librarian (AL)
- Grubb**, Donald J.; Assistant Professor; B.S., Metropolitan State College; M.A., University of Northern Colorado; Administration of Justice (AN)
- Guandolo**, Anne T.; Assistant Professor; A.B., Western College for Women; M.S., University of Maryland; Biology (AN)
- Guntner**, Talula A.; Assistant Professor; B.A., Columbia College; M.A., George Washington University; Travel and Tourism (AN)
- Guthrie-Morse**, Barbara; Associate Professor; B.S., M.Ed., Auburn University; Ph.D., University of Arizona; Provost (AN)
- Gwatney**, Martha B.; Professor; B.S.E., State College of Arkansas; M.S.E., Arkansas State University; Ed.D., University of Mississippi; Office Systems Technology (AN)
- Haid**, Nan K.; Associate Professor; B.F.A., Maryland Institute of Art; M.F.A., Virginia Commonwealth University; Art (WO)
- Haledjian**, Dean; Assistant Professor; B.A., Clemson University; M.S., V.P.I. & S.U.; Sociology (AN)
- Hall**, Janet L.; Associate Professor; B.S., Concord College; M.A., West Virginia University; English (AL)
- Hamberger**, Michael J.; Professor; B.S., Widener College; M.S.T., American University; Business Management (LO)
- Hanrahan**, Mary D.; Assistant Professor; B.A., Trinity College; M.Ed., George Mason University; Early Childhood Education (AL)
- Hansen**, Brian; Associate Professor; B.A., M.A., University of California, Davis; English (LO)
- Hanson**, Muriel F.; Associate Professor; B.A., Highfield College; M.A., Catholic University; Speech & Drama (AN)
- Hardy**, Thomas W.; Associate Professor; A.B., Georgetown University; M.A., University of North Carolina; M.A., George Washington University; Art (AN)
- Harmon**, Henry C.; Assistant Professor; B.F.A., M.F.A., Md. Institute College of Art; Art (WO)
- Harmon**, Robert W.; Instructor; B.S., Ohio State University; Program Head, Aviation Technology (MA)
- Harris**, Diane; Assistant Professor; C.D.A., University of North Carolina Extension; R.D.H., West Liberty State College; B.I.S., George Mason University; M.S., V.P.I. & S.U.; Community Services Program Developer, (AN)
- Harris**, Richard F.; Assistant Professor; B.A., M.Ed., Mississippi College; Counselor (AN)
- Harrison**, Elizabeth; Assistant Professor; A.B., Randolph-Macon Woman's College; M.A.R., Virginia Theological Seminary; Philosophy & Religion (AL)
- Harrison**, Mary Inez; Assistant Professor; B.A., M.A., George Mason University; Counselor (WO)
- Harrison**, William A., III; Assistant Professor; B.A., Randolph-Macon College; M.A., Wake Forest University; English (AL)
- Hartman**, Katherine B.; Assistant Professor; B.S., State Teachers College at Salem; M.S., V.P.I. & S.U.; Office Systems Technology (LO)
- Hatheway**, Barbara S.; Instructor; B.A., Bucknell University; M.A., University of Texas; Writer/Editor (ELI)
- Havercamp**, Kay K.; Associate Professor; Ph.B., M.A., DePaul University; Ed.D., Northern Illinois University; Director, Continuing Education/Community Services (AN)
- Hayden**, Joseph Dunstan; Professor; B.A., University of Chicago; M.A., Ph.D., Catholic University; Mathematics (AL)
- Hayes**, Donatus; Associate Professor; B.A., Mount Carmel College; M.S., M.A., Catholic University; Librarian (LO)
- Healy**, Patrick J.; Assistant Professor; B.S., University of Oklahoma; M.S., University of Southern California; Computer Information Systems (WO)
- Hecklinger**, Fred J.; Professor; B.S., M.Ed., St. Lawrence University; Ph.D., New York University; Coordinator, Counseling Services (AL)
- Hedley**, Alice M.; Assistant Professor; B.A., Long Island University; M.Ed., University of Virginia; Counselor (AL)
- Heneghan**, Beverly; Professor; B.A., University of Texas; M.A., West Texas University; D.A., George Mason University; English (AN)
- Heneghan**, Michael; Associate Professor; A.B., St. Patrick's College, Ireland; M.A., West Texas University; M.A., Catholic University; A.B.D., University of Maryland; English (AN)
- Henry**, JeanFrancois L.; Associate Professor; M.S., M.S., D.Sc., University of Brussels; Physics and Chemistry (MA)
- Hipp**, James F.; Assistant Professor; B.A., Queen of Peace College; M.A., Catholic University; Counselor (AN)
- Hironymous**, Patricia C.; Assistant Professor; B.A., University of California, Riverside; M.A., California State University; English As A Second Language (AL)
- Hoagland**, Nancy L.; Professor; B.S., Athens College; M.S., Jacksonville State University; Ph.D., V.P.I. and S.U.; English (LO)
- Hodge**, Margarita Esparza; Associate Professor; B.S., University of Texas; M.A., American University; Spanish & ESL (AL)
- Hoffmann**, F. Ronald; Associate Professor; B.S., M.S., University of Maryland; Physical Education (AN)
- Hogan**, Jean; Assistant Professor; B.A., Jersey City State College; M.S.L.S., Atlanta University; Media Librarian (AL)

- Holladay, Van Dale**; Assistant Professor; B.A., Gettysburg College; M.A., Washington State University; Administration of Justice (WO)
- Holley, H.C.**; Associate Professor; B.A., George Washington University; M.S., American University; Program Head, Administration of Justice (AL)
- Holm, Joan B.**; Associate Professor; B.F.A., University of Illinois; M.A., University of South Florida; Speech (AL)
- Holmes, Benjamin F.**; Professor; B.S., Southeast Missouri St. University; M.A., University of Missouri; Ed.D., George Washington University; Assistant Director, Continuing Education (AL)
- Holmes, James W.**; Associate Professor; B.S., Southern Illinois University; M.A., Murray St. University; Physical Education (AN)
- Holroyd, Diana H.**; Associate Professor; B.A., Florida State University; M.A., West Virginia University; English (AL)
- Holt, Barbara A.**; Assistant Professor; B.S., Florida State University; M.Ed., Florida Atlantic University; Computer Information Systems (AL)
- Horn, Jean M.**; Associate Professor; B.A., Elmira College; M.A., Pennsylvania State University; Mathematics (WO)
- Horobetz, Joseph S.**; Associate Professor; B.A., M.A., Ed.S., Peabody College; Assistant Division Chair, Art & Music (AN)
- Horowitz, Josef R.**; Professor; B.S., M.P.A., Temple University; Ed.D., George Washington University; Cooperative Education (AN)
- Howard, Barbara C.**; Professor; B.S., North Carolina College at Durham; M.S., North Carolina Central University; Ph.D., University of Maryland; Business Management (AN)
- Howell, Wayne M.**; Instructor; B.S., University of Southern Mississippi; A.A.S., Northern Virginia Community College; Automotive (AL)
- Howey, Roger A.**; Assistant Professor; B.S., M.S., Central Michigan University; Mathematics (AN)
- Huff, Edward A.**; Professor; B.S., M.A., Ph.D., American University; Mathematics (AL)
- Hunter, Gail E.**; Instructor; B.A., Cheyney University; M.S.Ed., University of Houston; Counselor (LO)
- Hurley, John E.**; Instructor; A.A.S., Northern Virginia Comm. College; B.S., University of Maryland; Air Conditioning & Refrigeration (WO)
- Huston, F. Kenneth**; Assistant Professor; B.F.A., Maryland Institute College of Art; M.F.A., School of Art, Institute of Chicago; Photography (WO)
- Hutcheon, Wallace S., Jr.**; Professor; B.S., Pennsylvania State University; M.A., M. Phil., Ph.D., George Washington University; Assistant Division Chair, Economics, Geography, History, and Political Science (AN)
- Inglis, Leo P.**; Instructor; B.S.E.E., Rensselaer Polytechnic; M.S.E.E., Purdue University; Mathematics (MA)
- Izadi, Dariush M.**; Instructor; B.A., University of California; M.A., SUNY at Buffalo; Mathematics (AN)
- Jay, Mary B.**; Professor; B.S., Northeast Missouri State University; M.A., S.C.T., Murray State University; Office Systems Technology (MA)
- Jeffries, Janice G.**; Instructor; B.A., University of Maine; M.S.L.S., Catholic University of America; Acquisitions/Reference Librarian (AN)
- Jennings, Shirley Y.**; Assistant Professor; B.A., Central State University; M.A., Howard University; Counselor (AN)
- Johns, Elizabeth L.**; Professor; B.S., Virginia State University; M.A., Case Western Reserve University; Ed.D., V.P.I. & S.U.; Division Chair, Social Sciences (AL)
- Johnson, Ellen K.**; Professor; B.A., Smith College; M.A., Ph.D., University of North Carolina; History (AN)
- Johnson, Mariette B.**; Associate Professor; F.M., University of Gothenburg, Sweden; M.A., American University; English as a Second Language (AL)
- Johnson, Terry A.**; Instructor; B.A., M.Ed., Howard University; Graduate Certificate in Business Management, University of Baltimore; Coordinator, Student Activities (AN)
- Jones, Evonne P.**; Assistant Professor; A.B., North Carolina Central University; M.Ed., University of Maryland; English (AN)
- Jones, Robert K.**; Assistant Professor; A.A.S., A.S., Northern Virginia Community College; B.I.S., George Mason University; M.S., Chicago State University; Automotive (MA)
- Kallen, Vivian**; Associate Professor; M.A., University of Chicago; Political Science & Social Science (AN)
- Kamen, Rebecca**; Associate Professor; B.S., Pennsylvania State University; M.A., University of Illinois; M.F.A., Rhode Island School of Design; Art (AL)
- Kashyap, Jaswant**; Professor; B.A., M.A., Vikram University, India; M.S.N., Catholic University; Nursing (AN)
- Kassab, Antoine F.**; Assistant Professor; B.S., Academy of Tech. Sciences; M.S., University of Kansas; Mechanical Engineering (AN)
- Kennedy, Jack R.**; Professor; B.A., Cumberland University; M.A., Ed.S., Peabody College of Vanderbilt University; M. Div., Southern Baptist Theol. Seminary; Ph.D., University of Edinburgh; Psychology (AN)
- Kettlewell, Gail B.**; Associate Professor; B.A., Muskingum College; M.A., Old Dominion University; Ed.D., V.P.I. and S.U.; Provost (MA)
- Kheradmand, Bahman H.**; Professor; B.S., Austin Peay State University; M.B.A., University of Tennessee; C.A.G.S., V.P.I. and S.U.; Accounting (AN)
- Kihl, Kim R.**; Professor; B.A., M.A., George Washington University; Ph.D., University of Maryland; Sociology (AL)
- Kilmer, Robert**; Professor; B.A., Louisiana State University; M.A., Ph.D., University of Chicago; English (WO)
- King, Betty**; Professor; B.A., Brandeis University; M.A., Ph.D., Harvard University; Biology (AL)
- King, Michael C.**; Assistant Professor; B.B.A., Manhattan College; J.D., George Mason University; Marketing/Business Law (WO)
- Kinnaman, Marjorie A.**; Instructor; B.A., San Francisco State University; M.Ed., George Mason University; Counselor (AL)
- Kinsella, William E., Jr.**; Professor; A.B., M.A., John Carroll University; Ph.D., Georgetown University; History (AN)
- Kirkbride, Eunice B.**; Professor; B.S., Skidmore College; M.S.N., Catholic University of America; Ed.D., George Washington University; Nursing (AN)
- Kirr, James N.**; Associate Professor; B.S., M.S., Ph.D., West Virginia University; Geology (AN)
- Klinko, Ann Marie**; Assistant Professor; B.S., College Misericordia; M.S., Marywood College; Office Systems Technology (AL)
- Korn, Charles J.**; Assistant Professor; B.S., Fitchburg State College; M.A., SUNY at Albany; Speech (MA)
- Kuhta, Anne M.**; Assistant Professor; B.A., Christopher Newport College; M.S., Old Dominion University; English (MA)
- Laime, Barbara C.**; Associate Professor; A.A., Centralia Junior College; B.A., M.S., Southern Illinois University; Counselor (MA)
- Laird, Rose M.**; Associate Professor; A.S., Montgomery College; B.S., University of Maryland; M.S., The Johns Hopkins University; Computer Information Systems (AN)
- Larose, Michael J.**; Associate Professor; B.A., Springhill College; M.A., Catholic University; E.D.S., George Washington University; Counselor (WO)
- Laski, Paul E.**; Assistant Professor; B.S., Tufts University; M.S., The American University; Computer Information Systems (AL)
- LaTour, Charles M.**; Instructor; B.A., Michigan State University; Hotel, Restaurant and Institutional Management (AN)
- Lawrence, Marcus K.**; Instructor; B.A., University of Virginia; M.Ed., University of Virginia; Counselor, Student Activities (WO)
- Leggat, John B.**; Associate Professor; B.A., Franklin College; M.A., Eastern Kentucky University; English (AN)
- Leggat, Pamela C.**; Assistant Professor; B.A., Pennsylvania State University; M.Ed., Western Maryland College; Reading (AN)
- Lehmann, Gerald A.**; Assistant Professor; B.S., M.A.T., Michigan State University; A.M., University of Illinois; M.Ed., University of Georgia; Mathematics (AL)
- Lembo, Frank J.**; Professor; A.A., Indian River Junior College; B.S., Florida State University; J.D., George Mason University School of Law; Real Estate (AN)
- Lemke, Randal A.**; Associate Professor; B.S., University of Nebraska; A.M., Ph.D., Washington University; Director, Extended Learning Institute (ELI)
- LeRosen, Robert**; Professor; B.S., Berry College; M.Ed., Ed.D., American University; Business Management (AL)

- Lesman, Ann St. Clair**; Professor; B.A., Rollins College; M.Ed., Duke University; M.A., Ph.D., University of Maryland; Spanish (MA)
- Lesman, Robert G.**; Associate Professor; B.S., Ball State University; M.A., Niagara University; English (AN)
- Lewis-Holmes, Brenda**; Assistant Professor; B.A., Radford College; M.A., Howard University; Drama (AL)
- L'Heureux, Maurice J.**; Professor; B.A., University of Dayton; Ph.D., St. Louis University; English (AN)
- Lieberman, Elizabeth S.**; Assistant Professor; B.A., Duke University; M.M., University of South Carolina; Mathematics (AN)
- Liebman, Harvey H.**; Professor; M.A., University of Oregon; M.A., University of Missouri; Architecture (MA)
- Liller, Susan W.**; A.A., Northern Virginia Community College; Registrar (WO)
- Lilley, Charles R.**; Professor; B.A., State Teacher's College; M.A., Ph.D., University of Maryland; History (WO)
- Lin, Yuhming Jack**; Assistant Professor; B.S., Taiwan Normal University; M.S., Old Dominion University; Computer Science (AN)
- Linville, Larry J.**; Associate Professor; A.A.S.(2), Northern Virginia Community College; B.S., American University; M.S., George Mason University; Admin. of Justice (AN)
- Little, Frederick N.**; Instructor; Automotive Body Reconditioning (AL)
- Liu, Margaret K.**; Assistant Professor; B.A., Bryn Mawr College; M.A., George Washington University; English (AL)
- Lizondo, Mary Ann**; Professor; B.A., Oberlin College; M.A., University of California; Ph.D., George Washington University; History (AN)
- Lobo, Lucia**; Professor; Magisterio, Teacher's College; Segovia, Spain; M.A., University of Navarra, Pamplona, Spain; M.S., Georgetown University; Ph.D., The Catholic University; Foreign Languages (AN)
- Lobstein, Marion B.**; Associate Professor; B.S., Western Carolina University; M.A.T., University of N.C.; M.S., George Mason University; Biology (MA)
- Lockett, Mary K.**; Instructor; A.A.S., Northern Virginia Community College; B.S., Howard University; Physical Therapy (AN)
- Loser, Robert C.**; Assistant Professor; B.S., Pennsylvania State University; M.S., Ed.S., Florida State University; Instructional Technologist (ELI)
- Lowe, Barbara B.**; B.S., Salisbury State College; Registrar (LO)
- Lowery, Claude J., Jr.**; Professor; B.B.A., M.B.A., North Texas State University; Business (MA)
- Luong, Tuan T.**; Assistant Professor; B.S., University of Maryland; M.B.A., American University; Business Administration (WO)
- Luquire, Karen B.**; Assistant Professor; B.S., Spring Hill College; M.A.C.T., University of Tenn.; Biology (WO)
- Macri, JoAnn**; Associate Professor; B.A., Nassau College; M.A., M.A.T., State University of New York, Binghamton; English (WO)
- Maestro, Barbara A.**; Instructor; B.S., Utah State University; M.A., George Washington University; Community Services Program Developer (WO)
- Mahmoud, Amal A.**; Associate Professor; B.A., Faculty of Education, Cairo; M.A., American University, Cairo; M.S., Ph.D., Georgetown University; English and ESL (AN)
- Mahood, Stephen H.**; B.A., Randolph Macon College; M.B.A., American Graduate School of International Management; Director, Fiscal and Auxiliary Services (CS)
- Majewski, Walerian**; Associate Professor; M.S., University of Warsaw; Ph.D., Polish Academy of Sciences; Physics (AN)
- Maney, Tucker H.**; Associate Professor; B.S., University of Richmond; M.S., University of Delaware; Mathematics (WO)
- Manigault, Sandra L.**; Instructor; B.S., Long Island University; M.A., Penn State University; Mathematics (AN)
- Manning, Jeanne L.**; Associate Professor; B.A., Colorado College; M.S.J., Northwestern University; M.A., University of Colorado; Ph.D., Yale University; French (AL)
- Marette, Michel G.**; Professor; Candidat Psych., Free University of Brussels, Belgium; M.Ed., University of Georgia; M.B.A., V.P.I. & S.U.; Program Head, Business Careers (LO)
- Martin, Robert E.**; Assistant Professor; A.A.S., Northern Virginia Community College; B.S., Capitol Institute of Technology; M.S., George Mason University; Electronics (AN)
- Marx, Barbara S.**; Associate Professor; B.A., Bryn Mawr College; M.A., University of Minnesota; English (AL)
- Massie, Byron B., II**; Assistant Professor; A.S., Central Virginia Community College; B.S., M.S., V.P.I. & S.U.; Biology (AN)
- Mather, Leonard J.**; Professor; B.A., Wilkes College; M.S., Virginia Commonwealth University; Ph.D., Catholic University; Psychology (AL)
- Mattamal, Martha M.**; Professor; B.A., M.S., Madris University; M.A., Georgetown University; Ph.D., Catholic University; Mathematics (AN)
- May, Dennis E.**; Assistant Professor; A.B., Duke University; M.A., West Chester State College; Developmental English (AL)
- McCann, Patrick J.**; Instructor; B.S., Temple University; Aviation Technology (MA)
- McClellan, Jim R.**; Professor; B.A., M.A., University of Texas; M.Ph., George Washington University; Ph.D., Union Graduate School, Institute for Policy Studies; History (AL)
- McCullough, Laura P.**; Assistant Professor; B.B.A., George Washington University; M.S., George Washington University; Program Head, Accounting, Business Administration, and Computer Information Systems (AN)
- McCutcheon, Lynn E.**; Professor; B.A., Indiana University of Pennsylvania; M.S., Auburn University; Ed.D., Nova University; Psychology (AN)
- McDaniel, William H., Jr.**; Associate Professor; B.S., M.B.A., Mississippi State University; Program Head, Computer Information Systems (AL)
- McElfresh, John R.**; Associate Professor; A.B., Davidson College; M.A., Princeton University; Spanish (AL)
- McElroy, Patricia J.**; Associate Professor; B.A., Morris Brown College; M.A., Atlanta University; Sociology (WO)
- McGinnis, Wyatt, Jr.**; Instructor; B.A., Lakeland College; M.P.A., American University; Counselor (AN)
- McIlvaine, Francis J.**; Associate Professor; B.S., University of Maryland; M.B.A., Michigan State University; Accounting (MA)
- McIntosh, John**; Associate Professor; B.S., Whittier College; M.F.A., Yale University; Photography (AL)
- McKeown, Joan**; Assistant Professor; R.D.H., B.S., University of Washington; M.S., V.P.I. & S.U.; Dental Hygiene (AN)
- McLoone, George**; Professor; A.B., Georgetown University; M.A., University of Virginia; Ph.D., George Washington University; English (MA)
- McMillion, Jennifer L.**; Instructor; B.S., Middle Tennessee State University; M.A., College of William and Mary; English (AL)
- McNamara, Nancy**; Professor; B.A., Mt. St. Agnes; M.A., Ed.D., George Washington University; Director, Continuing Education & Community Services (AL)
- McReynolds, Arnold R.**; Associate Professor; B.S., M.S., Howard University; Psychology (MA)
- McVeigh, Paul J.**; Professor; B.A., American University; M.A., University of Virginia; Ph.D., Trinity College, University of Dublin; Assistant Division Chair, English (AL)
- Meacham, T. Cassandra**; Assistant Professor; B.A., Hampton University; M.Ed., M.A.T., University of South Carolina; Speech and Drama (AN)
- Mensah, Charles Y.**; Assistant Professor; B.B.A., M.B.A., George Washington University; Ph.D., George Mason University; Economics (AN)
- Michaels, David B.**; Professor; F.G.A.; Cert., Hague Academy of International Law; B.A., New York University; L.L.B., Blackstone School of Law; M.B.A., Ph.D., University of Maryland; Business Management (AN)
- Michel, Moses**; Professor; B.A., City College of New York; M.B.A., University of Detroit; M.A., University of Oklahoma; Accounting (LO)
- Michener, Randolph E.**; Assistant Professor; B.F.A., Philadelphia College of Art; M.F.A., George Washington University; Art (MA)
- Mickey, Diane D.**; Associate Professor; B.S., Strayer College; M.S., V.P.I. & S.U.; Office Systems Technology (WO)
- Millard, William R.**; Instructor; A.A., Montgomery College; B.S., Capitol College; M.S., Johns Hopkins University; Computer Science (AL)

- Miller, Ervinia H.;** Associate Professor; B.S., Norfolk Division, Virginia State College; M.Ed., Boston University; Counselor (WO)
- Miller, Eula M.;** Associate Professor; B.A., Bennett College; M.A., George Washington University; Program Head, Early Childhood Education (AL)
- Miller, James E.;** Assistant Professor; B.A., West Virginia State College; M.S., West Virginia University; Counselor (MA)
- Miller, Sara;** Professor; B.A., Maryville College; M.A., Mississippi College; Ph.D., University of Mississippi; English (WO)
- Miller-Pecora, Judith;** Assistant Professor; A.A., Lorain Comm. College; B.F.A., Syracuse University; M.F.A., Virginia Commonwealth University; Art (AN)
- Missett, Regina B.;** Associate Professor; B.S.N., Georgetown University; M.S.N., Catholic University of America; Clinical Coordinator, Nursing (AN)
- Mitchell, Perry J.;** Associate Professor; B.A., M.A., University of Conn.; Political Science (AL)
- Monohan, James;** Assistant Professor; B.S., Morris Harvey College; M.S., Marshall University; Biology (MA)
- Montero, Joseph G.;** Professor; B.A., Granada, Spain; M.A., Catholic University of America; M.S., Georgetown University; Ph.D., Catholic University of America; Foreign Languages (AN)
- Mowbray, Carol A.;** Instructor; B.A., M.Ed., George Mason University; Coordinator, Student Benefits and Support Services (CS)
- Murphy, Marsha H.;** Associate Professor; B.A., M.A., University of Arkansas; C.P.A.; Accounting (AN)
- Murray, Edith B.;** Professor; B.A., University of Tenn.; M.A., M.F.A., Pennsylvania State University; M.A., Case Western Reserve University; Program Head, Arts & Design & Interior Design (LO)
- Mustachio, James A.;** Professor; B.S., Fairmont State College; M.A., West Virginia University; Ed.D., George Washington University; Director, Continuing Education & Community Services (WO)
- Myers, Edward P.;** Assistant Professor; B.A., Ohio Wesleyan University; M.B.A., University of Michigan; Computer Information Systems (AL)
- Naclerio, June A.;** Associate Professor; B.A., Hunter College; M.A., Eastern Michigan University; Mathematics (WO)
- Napisa, Rodolfo R.;** Instructor; B.S., PATS School of Aeronautics; Mechanical Engineering (AN)
- Narayanan, Ravi C.;** Associate Professor; B.Comm., University of Madras; M.B.A., University of Baltimore; C.P.A.; Accounting (AN)
- Narney, Pamela A.;** Assistant Professor; B.A., University of Illinois; M.A., University of Rhode Island; English (WO)
- Neal, Douglas A.;** Assistant Professor; B.A., Carson Newman College; M.A., Georgetown University; Political Science (AN)
- Nee, Virginia R.;** Assistant Professor; A.B., College of St. Elizabeth; M.A., California State University; M.A., George Mason University; Reading (LO)
- NeSmith, C. Mary;** Professor; B.B.A., University of Georgia; M.B.E., Ph.D., Georgia State University; Division Chair, Business & Social Sciences (WO)
- Netherton, Jean C.;** Professor; B.S., University of Arkansas; M.S., University of Illinois; Ph.D., Michigan State University; Provost (AL)
- Newsome, Eloise C.;** Assistant Professor; B.S., M.Ed., Virginia State University; Office Systems Technology (WO)
- Nguyen, Tri Huu;** Associate Professor; B.A., Miami University; M.S., Ph.D., Georgetown University; Linguistics/English as a Second Language (AL)
- Nicastri, Ralph;** Assistant Professor; B.A., Ed.M., SUNY at Buffalo; English as a Second Language (AN)
- Niles, Thomas R., II;** Professor; B.A., M.Ed., College of William & Mary; Ph.D., Western Michigan University; Dean, Student Development (WO)
- Niner, Elaine C.;** Professor; B.A., St. Mary's College; M.A., University of Notre Dame; Licenciado, Ph.D., University of Sao Paulo, Brazil; Division Chair, Humanities (AL)
- Noell, Laura K.;** Professor; B.A., University of Wisconsin; M.A., Ph.D., Washington University; Assistant Division Chair, English (AN)
- Noor, Ahmad;** Assistant Professor; B.S., M.S., Alabama A & M University; Computer Information Systems (AL)
- Norman, Ellis D.;** Assistant Professor; B.A., Michigan State University; M.B.A., University of Chicago; Hotel, Restaurant & Institutional Management (AN)
- Norman, Robert A.;** Assistant Professor; B.A., V.P.I. & S.U.; M.A., University of Northern Colorado; Computer Information Systems (MA)
- Norris, Lois E.;** Assistant Professor; B.A., Marymount College; M.A.T., University of Florida; Mathematics (AN)
- Nutting, Noreen;** Assistant Professor; B.S., Niagara University; Nursing (AN)
- Oandasan, Carol;** Instructor; B.B.A., Woodbury College; M.A.Ed., V.P.I. & S.U.; Counselor (MA)
- O'Brien, J. Christopher;** Professor; B.A., St. Meinrad College; M.A., Indiana State University; Ph.D., Catholic University; Sociology (AN)
- O'Brien, Walter M.;** Associate Professor; B.S., St. Vincent College; M.S., University of Notre Dame; Chemistry (AN)
- O'Connor, James A.;** Associate Professor; B.A., M.A., St. John's University; Ph.D., Catholic University; Program Head, Administration of Justice (WO)
- O'Donnell, Teresa D.;** Associate Professor; B.A., M.A., University of Colorado; Developmental English (AL)
- Olsen, Fred H.;** Professor; A.B., University of Puget Sound; M.A., Ph.D., Wash. University; History (AL)
- Olson, Katherine A.;** Professor; B.S., George Peabody College for Teachers; M.S., Florida State University; Marketing (AN)
- Orbeck, Leonard J.;** Assistant Professor; B.A., M.A., University of Maryland; Art (LO)
- Otey, Eddy M.;** Professor; B.A., Bennett College; M.A., Catholic University; Ed.S., George Washington University; Office Systems Technology (AL)
- Ottavio, Patricia S.;** Assistant Professor; B.S., University of Connecticut; M.P.H., San Diego State University; Physical Therapy (AN)
- Owings, Stephanie J.;** Instructor; B.A., University of Southern California; M.A., University of California, Los Angeles; Economics (LO)
- Paiva, Judith L.;** Associate Professor; B.A., University of Missouri (St. Louis); M.A., Indiana University; M.A., George Mason University; Developmental Studies & English as a Second Language (AL)
- Palguta, Michael F.;** Associate Professor; B.S., St. Francis College; M.B.A., George Washington University; Business Management (AL)
- Palumbo, Leonard L.;** Professor; B.B.A., Manhattan College; M.B.A., American University; Business Management (AN)
- Panaro, Yvonne C.;** Assistant Professor; B.A., San Francisco State University; M.S., Georgetown University; Spanish/Italian (AL)
- Pankow, William P.;** Assistant Professor; B.B.A., St. John's University; M.B.A., Long Island University; Accounting (WO)
- Pankowski, Bernard J.;** Associate Professor; B.S., U.S. Military Academy; M.S., Massachusetts Inst. of Tech.; M.S., George Washington University; Computer Information Systems (AN)
- Pape, Lynn D.;** Assistant Professor; B.A., St. Lawrence University; M.S., George Washington University; Business Management (AL)
- Parker, David L.;** Professor; B.S., Purdue University; M.S.S.T., American University; Ph.D., Catholic University of America; Biology (AL)
- Parkin, Cecelia J.;** Professor; B.S.N., M.S.N., Catholic University of America; Ed.D., George Washington University; Nursing (AN)
- Peck, Nan Jean;** Instructor; A.A., Waubonsee Community College; B.S., M.S., Illinois State University; Speech and Drama (AN)
- Pellerin, Richard O.;** Associate Professor; A.B., St. Anselm's College; M.A., Catholic University; Mathematics (AN)
- Perantoni, Esther S.;** Instructor; B.A., University of Maine; M.S.Ed., V.P.I. & S.U.; Community Services Program Developer (LO)
- Pereira-Ford, Clara V.;** Instructor; A.A., Northern Virginia Community College; B.A., M.A., George Mason University; Economics (AL)
- Perkins, Susan;** Associate Professor; B.S., University of North Carolina; M.A., Arizona State University; Assistant Division Chair, Mathematics and Computer Science (AL)
- Pernick, Susan;** Professor; B.S., Boston College; M.S., University of Maryland; D.N.Sc., Catholic University; Nursing (AN)

- Peterman, Richard L.;** Assistant Professor; B.A., Drew University; M.A., University of Maryland; Economics (AL)
- Peterson, Betty;** Associate Professor; Diploma, Columbus Hospital of Great Falls, Montana; B.S.N., Montana State University; M.S., V.P.I. & S.U.; Nursing (AN)
- Petrella, Robert;** Professor; B.M., Michigan State University; M.M., D.M.A., University of Maryland; Music (AL)
- Phillipp, Ernest F.;** Assistant Professor; B.S., Colorado State University; Computer Information Systems (WO)
- Phillipps, Charlene T.;** Assistant Professor; A.S., B.S., Bluefield State College; Computer Information Systems (MA)
- Piscitelli, Emil;** Professor; B.A., St. Charles Seminary; S.T.B., Gregorian University in Rome; Th.M., Harvard University; Ph.D., Georgetown University; Philosophy and Religion (AN)
- Pizzurro, Vincent J.;** B.S., Wayne State University; M.B.A., The American University; Director, Computing & Information Services (CS)
- Platt, Michael;** Assistant Professor; B.F.A., Columbus College of Art & Design; M.F.A., Howard University; Art (AL)
- Poland, Charles, Jr.;** Professor; B.A., M.A., American University; Ph.D., Western Colorado University; History (AN)
- Popeck, John H.;** Professor; B.S., Wisconsin State University; M.S., California State College, Los Angeles; Ed.D., University of Florida; Dean, Student Development (AL)
- Porta, Giulio;** Assistant Professor; A.A., Edison Jr. College; B.F.A., University of Florida; M.F.A., University of Maryland; Art (AN)
- Poulakis, Victoria S.;** Professor; B.A., Hunter College; Ph.D., University of Minnesota; English (LO)
- Primus, Virginia;** Instructor; B.A., St. Olaf College; M.A., University of Northern Colorado; Physical Education (AL)
- Quinn, Virginia N.;** Assistant Professor; B.A., Hunter College; Ed.M., Harvard University; Psychology (LO)
- Raphaelli, Ellen C.;** Assistant Professor; A.B., M.A., University of Michigan; English (Humanities) (AL)
- Rapone, Thomas M.;** Instructor; B.A., M.A., SUNY; Speech & Drama (AN)
- Rassai, Rassa;** Associate Professor; B.S., M.S., Ph.D., University of Maryland; Program Head, Engineering (AN)
- Ratcliff, Walter;** Instructor; B.F.A., Virginia Commonwealth University; Communication Design (AL)
- Raymond, Sarah G.;** Assistant Professor; B.A., Allegheny College; M.F.A., Yale University School of Art; Program Head, Photography (AL)
- Reed, Patrick M.;** Associate Professor; B.A., Davidson College; M.A., University of Virginia; History (LO)
- Regan, Mary;** Instructor; B.A., Holy Cross College; M.A.T., Georgetown University; English as a Second Language (AL)
- Reich, William P.;** Instructor; B.A., Catholic University; M.S., Georgetown University; English as a Second Language (AN)
- Reichbart, Howard E.;** Associate Professor; B.S., University of New Hampshire; M.S., V.P.I. & S.U.; Program Head, Hotel, Restaurant & Institutional Management/Travel and Tourism (AN)
- Reynolds, Jim;** Associate Professor; A.A., Prince Georges C.C.; B.A., American University; M.A., George Washington University; Ed.D., V.P.I. & S.U.; Counselor (AL)
- Reynolds, R. Neil;** Professor; B.S., University of Tampa; M.S., Ph.D., Florida State University; Provost (LO)
- Rheams, Patricia A.;** Assistant Professor; B.S., M.Ed., University of New Orleans; Program Coordinator, Cooperative Education (AL)
- Richardson, Patricia L.;** Assistant Professor; B.S., St. Paul's College; M.A., Virginia State University; English (AN)
- Riester, Rebecca;** Associate Professor; B.S., Baldwin Wallace College; M.S.S.T., American University; Chemistry (LO)
- Riggin, Judith M.;** Associate Professor; B.A., M.A., Arizona State University; English (AN)
- Riley, Daniel W.;** Instructor; B.A., Transylvania University; M.T.S., College of William and Mary; Program Head, Computer Science/Computer Information Systems/Office Systems Technology (MA)
- Roark, Bob;** B.S., University of Kentucky; M.B.A., George Washington University; Business Manager (AN)
- Roberts, Cheryl V.;** Instructor; B.S., M.S., James Madison University; Mathematics (MA)
- Roberts, Margaret W.;** Assistant Professor; B.S., Tuskegee Institute; M.A., University of Michigan; CAGS, Boston University; Mathematics (AN)
- Robertson, Sharon N.;** Associate Professor; B.S., M.S., Ph.D., V.P.I. & S.U.; Program Head, Horticulture Technology (LO)
- Robinson, Percy E., Jr.;** Assistant Professor; B.S., U.S. Naval Postgraduate School; B.S., Howard University; Electronics (WO)
- Rortvedt, Sylvia J.;** Instructor; B.A., St. Olaf College; M.L.S., Catholic University of America; Reference Librarian (AL)
- Ross, Alfred K.;** Associate Professor; B.A., Duke University; M.A., George Mason University; History (WO)
- Ross, Helen L.;** Instructor; B.A., M.Ed., Northeastern University; Counselor (LO)
- Roth, Carolyn A.;** Associate Professor; B.A., M.A., George Mason University; Psychology (WO)
- Ruffino, John J.;** Assistant Professor; B.A., Marquette University; M.S., American University; Executive Director, NVCC Educational Foundation (CS)
- Russell, Gail D.;** Assistant Professor; B.S., San Diego State University; M.Ed., Bowie State College; Reading (AL)
- Russell, J. Ford;** Associate Professor; B.A., M.S., Oklahoma State University; Economics (AN)
- Ryan, Anna;** Professor; B.A., Texas Tech. University; M.A., Rice University; Ph.D., SUNY at Stony Brook; English (WO)
- Ryczek, Carole T.;** Assistant Professor; B.A., University of Virginia; M.A., George Washington University; Ph.D., Georgetown University; English/English As A Second Language (AN)
- Rynn, Maria S.;** Assistant Professor; B.A., West Chester State College; M.S., University of Maryland; Computer Information Systems (AN)
- Sabol, Cathy E.;** Associate Professor; B.A., Douglass College; M.L.S., Rutgers University; M.A., George Mason University; Director, Learning Resources (MA)
- Sachs, Arline R.;** Associate Professor; B.S., University of Illinois; M.S., American University; Computer Information Systems (AN)
- Sachs, Steven G.;** Professor; B.A., M.A., Ph.D., Michigan State University; Associate Dean for Instructional Technologies & Extended Learning (ELI)
- Sage, Henry J.;** Assistant Professor; M.A., University of Heidelberg; M.A., Clark University; M.A., University of Maryland; History (AL)
- Saidi, Nazanin;** Assistant Professor; A.A., College of San Mateo; B.S., M.A., University of Maryland; Architectural Technology (AN)
- Samuels, Joyce B.;** Associate Professor; B.A., Houghton College; M.A., American University; Mathematics (LO)
- Santi, Ellyn E.;** Assistant Professor; B.S., M.A., Northern Arizona University; Mathematics (AN)
- Santos, Alicia H.;** Professor; B.S. Ed., M.S., University of Philippines; Ph.D., University of Florida; Mathematics (AN)
- Saperstone, Barbara L.;** Assistant Professor; B.S., University of Maryland; M.S., University of Massachusetts; Assistant Division Chair, Physical Education (AN)
- Sarao, Elaine Mary;** Assistant Professor; A.A., Parsons School of Design; B.F.A., New School of Research; Communication Design (AL)
- Sartorius, John C.;** Professor; A.B., Davidson College; M.A.T., University of North Carolina; Ed.D., Duke University; Dean, Student Development (LO)
- Sass, Sharon A.;** Associate Professor; B.S. Ed., M.Ed., Ph.D., University of Nebraska; Division Chair, Business (AN)
- Sasscer, Monica Flynn;** Associate Professor; B.A., St. Joseph's College; M.S., Georgetown University; Ed.D., V.P.I. & S.U.; Assistant Division Chair, Languages and Philosophy (AL)
- Savkar, Reva A.;** Assistant Professor; B.Sc., M.Sc., Institute of Science, Bombay, India; M.S., V.P.I. & S.U.; Chemistry (AN)
- Saylor, Paul;** Professor; B.S., Washington & Jefferson College; M.A., George Washington University; Ph.D., Catholic University; Developmental English (AN)
- Scango, David E.;** Instructor; B.A., Elon College; M.S., North Carolina A & T State University; Mathematics (MA)

- Scarborough, Charles W., Jr.; Professor; B.A., University of Virginia; M.A., Ph.D., University of Maryland; English (AN)
- Schmeissner, Volker; Associate Professor; B.A., University of Tuebingen; M.A., Yale University; German (AL)
- Schnare, Diane; Associate Professor; B.S.N., M.S.N., University of North Carolina; Nursing (AN)
- Schneider, Julie S.; Assistant Professor; B.S., M.F.A., University of Wisconsin; Art (AL)
- Schocke, Douglass; Associate Professor; B.A., Greensboro College; M.S., Florida State University; Sociology (AN)
- Schran, William R.; Instructor; A.A., Montgomery Community College; B.S., Frostburg State College; M.F.A., George Washington University; Program Head, Fine Arts (AL)
- Scott, Shepherd; Assistant Professor; B.S., St. Augustine's College; M.S., Agricultural & Technical State University of North Carolina; Mathematics (AL)
- Scott, Terry A.; Assistant Professor; B.S., Miami University (Ohio); M.B.A., Ohio State University; Business Management (AL)
- Scott, Thomas E., Jr.; Assistant Professor; B.S., George Mason University; M.A., George Washington University; Accounting (AL)
- Seaman, Barbara A.; Associate Professor; B.A., Keane College; M.A., Seton Hall University; English (AL)
- Selinger, Barry M.; Associate Professor; B.A., M.A., American University; Reading (AL)
- Sellers, Martha W.; Professor; B.S., College of St. Theresa; Ph.D., Catholic University; Chemistry (AN)
- Sellers, Ralph S.; Professor; B.A., St. Mary's College; M.A., St. Louis University; Ph.D., Catholic University of America; English (AN)
- Semmler, Richard D.; Associate Professor; B.S., SUNY, Plattsburgh; M.A., SUNY, Binghamton; M.S., University of Delaware; Mathematics (AN)
- Serbousek, Jane L.; Instructor; B.S., East Carolina University; M.Ed., University of Virginia; Mathematics (LO)
- Sexton, Sherman J.; Associate Professor; B.A., Catholic University; M.S., Georgetown University; Chemistry (AL)
- Seyler, Dorothy U.; Professor; B.A., William & Mary; M.A., Columbia University; Ph.D., State University of New York; English (AN)
- Shaban, Hanney H.; Assistant Professor; B.A., George Mason University; M.A., Old Dominion University; Computer Information Systems (MA)
- Shannon, William T.; Professor; B.A., Georgetown University; J.D., College of William & Mary; Legal Administration (AL)
- Shapira, Lawrence M.; Assistant Professor; B.Sc., Pennsylvania State University; M.Sc., University of Reading, England; Horticulture (LO)
- Shapiro, Allan; Assistant Professor; B.S.E.E., City College of New York; M.A., George Mason University; Program Head, Electronics (AN)
- Sharpe, Susan G.; Associate Professor; B.A., Swarthmore College; M.A.T., Yale University; Ph.D., University of Massachusetts; English (AN)
- Sheridan, Genevieve; Professor; B.A., M.A., Ph.D., George Washington University; Art History (AL)
- Sichenze, Celeste M.; Professor; B.S., M.S., Long Island University; Ph.D., George Washington University; Program Head, Business Management, Finance, Marketing, Office Systems Technology, and Real Estate (AN)
- Simmons, Linda J.; Assistant Professor; B.A., Blue Mountain College; M.S., University of Mississippi; Assistant Division Chair, Social Sciences (MA)
- Simonian, Armen; Assistant Professor; M.A., National University of Iran; Program Head, Architecture (AN)
- Simpson, Cathy A.; Assistant Professor; B.A., M.A., University of Maryland; English (MA)
- Sinderbrand, J. Marilyn; Instructor; B.S., George Washington University; Program Head, Radiography (AN)
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- Tebow, Duncan E.;** Assistant Professor; A.B., George Washington University; B.F.A., M.F.A., Yale University; Assistant Division Chair, Humanities (AN)
- Tebow, Elizabeth Lang;** Professor; B.F.A., M.F.A., University of Texas; Ph.D., University of Maryland; Art (AN)
- Teklu, Dawit;** Assistant Professor; B.A., George Williams College; M.S., University of Wisconsin; Coordinator, Institutional Research (CS)
- Templeman, Donald R.;** Assistant Professor; A.A., Valley College; B.A., Cal. State Los Angeles; M.B.E., Claremont Graduate School; Economics (MA)
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- Thomas, Bernadine C.;** Professor; B.S., University of Illinois; M.Ed., Virginia State College; Ph.D., University of Maryland; Director, Learning Resources (LO)
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- Thompson, Susan P.;** Assistant Professor; B.S., West Virginia University; M.S., George Mason University; Physical Education (AN)
- Tiffany, James R.;** Professor; B.A., B.S., Lynchburg College; M.A., Wake Forest University; Ed.D., Nova University; Physical Education (LO)
- Townend, Jayne E.;** A.A.S., Northern Virginia Community College; Manager, Records and Registration (ELI)
- Trabandt, Joan S.;** Assistant Professor; B.S., Pennsylvania State University; Ed.M., Oregon State University; Instructional Technologist (ELI)
- Trachtman, Sherry T.;** Instructor; B.A., M.F.A., American University; Art (AL)
- Tredway, M'Kean M.;** Associate Professor; B.A., M.A., American University; M.A., University of Denver; Director, Continuing Education & Community Services (MA)
- Trott, Edith E.;** Associate Professor; B.A., Florida State University; M.A., M.P.H., University of California at Los Angeles; Natural Science (AN)
- Trumbull, Eric W.;** Assistant Professor; B.S., Frostburg State University; M.A., University of Maryland; Ph.D., University of Maryland; Speech (WO)
- Tumminia, Patricia A.;** Professor; B.S.N., M.A., Ed.M., Teacher's College, Columbia University; Nursing (AN)
- Turpyn, Ann C.;** Assistant Professor; B.S., Virginia Commonwealth University; M.L.S., Catholic University; Librarian (WO)
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- Tynan, Edith P.;** Assistant Professor; B.S., Marquette University; M.S., Boston University; Dental Hygiene (AN)
- Underwood, Larry S.;** Associate Professor; B.A., University of Kansas; M.S., Syracuse University; Ph.D., Pennsylvania State University; Biology (WO)
- Underwood, Rachel;** Assistant Professor; B.S.N., University of Virginia; M.S.N., University of Pennsylvania; Nursing (AN)
- Valesey, Mark N.;** Assistant Professor; B.S., SUNY at Oswego; M.S., Old Dominion University; Automotive (AL)
- Vandevender, Donna;** Registrar (MA)
- Van Dyke, James A.;** B.A., Michigan State University; M.A., Central Michigan University; Director, Human Resources (CS)
- Vathing, Gale S.;** Associate Professor; B.A., Luther College; M.A., Washington State University; English (AL)
- Venskus, Diana G.;** Instructor; B.S., George Mason University; M.A., George Washington University; Program Head, Physical Therapist Assistant (AN)
- Vespucci, Paul D.;** Associate Professor; B.S., M.S., University of Florida; Ph.D., George Washington University; Assistant Division Chair, Computer & Physical Sciences (AN)
- Vessey, Cyrilla M.;** Instructor; B.A., Hamline University; M.Ed., George Mason University; English (AN)
- Vick, Elizabeth J.;** Instructor; B.S., M.S., Illinois State University; Speech (AL)
- Vines, Maryann W.;** Assistant Professor; B.A., St. Bonaventure University; M.A., Georgetown University; History (AN)
- Vitalis, Janet K.;** Professor; B.S., M.S., The Johns Hopkins University; Ed.D., V.P.I. & S.U.; Counselor (WO)
- Voss, Mary;** Instructor; B.A., Marquette University; M.Ed., University of Maryland; Counselor (AL)
- Wagner, Susan F.;** Professor; B.A., M.A., Brooklyn College; Ph.D., University of Maryland; Assistant Division Chair, Mathematics (AN)
- Wall, James T.;** Professor; B.S., Tennessee Technological University; Ph.D., University of Tennessee; History (AN)
- Wang, Amy H.;** Assistant Professor; B.S., Tamkang College of Arts and Sciences; M.S., Ph.D., Texas Christian University; Mathematics (AL)
- Ward, Eileen C.;** Assistant Professor; B.A., College of New Rochelle; M.A., West Virginia University; Interior Design (LO)
- Ward, Virginia J.;** Associate Professor; A.B., M.A., Middlebury College; German (AN)
- Warden, Marietta;** Professor; B.S.N., University of Washington; M.A., Columbia University; Nursing (AN)
- Warren, Robert J.;** B.S., Florida A&M University; M.S., Florida State University; Business Manager (WO)
- Warsowick, John A., Jr.;** Instructor; A.A.S., Northern Virginia Community College; B.S., University of the District of Columbia; Program Head, Civil, Construction, and Building (AL)
- Washington, Craig S.;** Professor; B.S., M.S., Indiana State University; Ed.D., University of Massachusetts; Division Chair, Science and Applied Technologies (AL)
- Watkins, Gladys M.;** Professor; B.M.Ed., Howard University; M.M., D.M.A., Catholic University; Music (AN)
- Wax, Kathleen L.;** Assistant Professor; B.A., University of Massachusetts; M.Ed., Georgia State University; Assistant Division Chair, Developmental Studies (AL)
- Webb, Robert S., Jr.;** Associate Professor; B.M., Ithaca College; M.M., Catholic University; Music (AN)
- Weiner, Wendy F.;** Assistant Professor; B.A., Pennsylvania State University; M.Ed., Ed.D., George Mason University; English (MA)
- Weinfield, Anne Marie;** Professor; B.S.N., University of Virginia; M.S.N., Catholic University; Nursing (AN)
- Wells, Barbara R.;** Professor; B.M., M.M., D.M.A., University of Maryland; Music (AL)
- Wells, Daniel R.;** Assistant Professor; B.S., United States Military Academy; M.S.E.E., Georgia Institute of Technology; Director, Facilities Planning and Support Services (CS)
- Wells, Lloyd L.;** Associate Professor; B.A., Wilberforce University; M.S.Ed., University of Dayton; Counselor (LO)
- Werner, Stuart C.;** Associate Professor; B.A., Ithaca College; M.A., University of Michigan; Counselor (AL)
- West, George G.;** Professor; B.S., Denison University; M.A., Kent State University; Ph.D., University of Pittsburgh; Biology (AL)
- Westberg, Rosemarie C.;** Associate Professor; B.S.N., Seton Hall University; M.S.N., Catholic University; Nursing (AN)
- Westlake, Barbara;** Assistant Professor; B.S., University of Maryland; M.S., V.P.I. & S.U.; Assistant Division Chair, Physical Education (AL)

Wharff, Sherrill A.; Associate Professor; B.A., Oakland University; M.A., Michigan State University; M.A.L.S., University of Michigan; M.S., University of Wisconsin (Stout); Reference Librarian (MA)

Wheeler, Laurence P.; Associate Professor; B.M., M.M., Temple University; M.M., Catholic University; Music (LO)

Whipple, David J.; Assistant Professor; B.A., BaldwinWallace College; M.A., Case Western Reserve University; Art (LO)

White, Harriet C.; Instructor; B.A., West Virginia University; M.A. (Equiv.), University of North Carolina; Counselor (AL)

White, Jonathan W.; Instructor; B.S., Arizona State University; Radiography (AN)

Whitmire, Mark A.; Assistant Professor; B.M., Abilene Christian University; M.M., University of Texas; Music (AL)

Wigle, Elva M.; Assistant Professor; B.S., University of Detroit; M.A., University of Michigan; Office Systems Technology (AN)

Wilan, Barbara S.; Assistant Professor; B.A., M.A., University of Maryland; English (AN)

Wilan, Richard A.; Professor; B.A., Amherst College; M.A.T., Harvard University; Ph.D., University of Maryland; English (AN)

Wilhelmi, Mary Charlotte; Associate Professor; B.S., Iowa State University; M.A.Ed., C.A.G.S., V.P.I. & S.U.; Director, College Relations & Development (CS)

Wilkin, Cathy; Assistant Professor; B.F.A., West Virginia University; M.F.A., Kent State University; Art (LO)

Wilkin, Jonathan L.; Assistant Professor; B.S., M.S., University of Illinois; Mathematics (AL)

Williams, David L.; Professor; B.A., V.P.I. & S.U.; M.Ed., University of Virginia; Ed.D., V.P.I. & S.U.; Coordinator, Audiovisual and Instructional Support Services (AL)

Williams, George B.; Assistant Professor; B.F.A., Virginia Commonwealth University; M.F.A., Syracuse University; Art (AN)

Wilson, Philicia J.; Instructor; B.A., M.S., Eastern Washington University; Counselor (AN)

Wimbush, Walter L.; Professor; B.S., Iona College; M.S., Notre Dame University; Ph.D., Rice University; Physics (AL)

Wise, Mary F.; Assistant Professor; B.S., Valparaiso University; M.S., George Washington University; Assistant Division Chair, Science (AL)

Withers, Wistar M.; Associate Professor; A.B., Virginia Union University; M.Ed., University of Virginia; Counselor (AN)

Wolfe, Clarence C.; Professor; B.S., St. Vincent College; M.S., University of Nebraska at Omaha; Ph.D., V.P.I. & S.U.; Assistant Division Chair, Biology and Natural Science (AN)

Wolfe, Mark D.; Instructor; A.A.S., B.S., Rochester Institute of Tech.; Photography (AL)

Wood, Joyce H.; Assistant Professor; B.S., M.S., Virginia Commonwealth University; Program Head, Business Management & Real Estate (AL)

Woodke, Robert S.; Instructor; B.A., Westmar College; M.A., George Washington University; Program Head, Civil and Mechanical Engineering and Drafting (AN)

Wooldridge, John B., Jr.; Professor; B.A., University of Richmond; M.A., Ph.D., University of Maryland; Spanish (LO)

Wooldridge, Linwood M., III; Assistant Professor; B.S., M.Ed., Howard University; Counselor (AL)

Worden, Robert W., Jr.; Instructor; Welding (MA)

Wray, Karen A.; Assistant Professor; B.S., SUNY at New Paltz; M.Ed., Wayne State University; M.B.A., Long Island University; Coordinator, Counseling Services (AN)

Wu, Yen; Professor; B.S., National Taiwan University; M.S., Ph.D., V.P.I. & S.U.; Pre-Engineering (AN)

Wulff, John C.; Associate Professor; A.B., St. Peter's College; M.M., Catholic University; D.A., George Mason University; Music (LO)

Wurzer, Dale J.; Instructor; B.S., Strayer College; Computer Information Systems (AL)

Wyatt, Nancy V.; B.A., Hunter College; Business Manager (MA)

Yoder, Jonathan A.; Associate Professor; B.A., M.A., Indiana University; Ph.D., University of New Mexico; Division Chair, Communications & Humanities (AN)

Yuska, Cecilia T.; Instructor; B.S., University of Oregon; M.Ed., University of Virginia; Counselor (LO)

Zelenka, Ruth S.; Assistant Professor; B.A., M.A., University of Maryland; English (MA)

Ziyad, Dawud B.; Instructor; B.A., Talladega College; M.L.S., University of Maryland; Librarian, Media Processing Services (CS)

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Applying "greasepaint", part of role for NOVA drama students.

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 Gregory Woodsmall

Mechanical/Engineering

Drafting:

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 Kenneth R. Fitzgerald, National Orthopedic Hospital
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 Judith Ivey, Mount Vernon Hospital

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 Penny McConnell, R.D., Fairfax County School Food Service

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Loretta M. Tom, R.D., Fair Oaks Hospital

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Cecilia Godfrey
Donna Kesler, Reston Children's Center
Lawrence McCarthy, American University Child Care Center

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Selby Jacobs, Director, Prince William Co. Dept. of Fire & Rescue
William Kehoe, Friendship Veterans Fire Engine Association
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James Mastin, Major, Prince William Co. Dept. of Fire & Rescue
Gary Mesaris, Chief, Fairfax City Fire & Rescue Dept.
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Fitness Instructor

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Institutional Management:

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Muneeb Deen, Hotel Washington
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Jim Wordsworth, J.R.'s Good Times, Inc.

Human Services:

George Logan-El, Circle Terrace Hospital
Pauline Mahon-Stetson, George Washington University
Page Peary, Alexandria Drug Abuse Services

Legal Assistant:

Linda Baltrusch, Hazel, Beckhorn and Hanes
William Blier, U.S. Attorney's Office
Mark P. Friedlander, Jr., Esq., Friedlander, Friedlander & Brooks, P.C.
John Hartnett
Thomas Hibarger, U.S. Attorney's Office
John E. Kloch, Esq., Commonwealth's Attorney for the City of Alexandria
Richard C. Litman Esq., Litman Law Offices, Ltd.
Trentwell M. White, BDM Corporation
Kathleen Wilson, Office of Co. Attorney, Fairfax Co.

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Site Management Certificate	45	Student Loans	27	Transportation Degree Program	42	Vocational Rehabilitation	29
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Ethnic diversity shines on International Day.

4001 Wakefield Chapel Road
Annandale, VIRGINIA 22003

