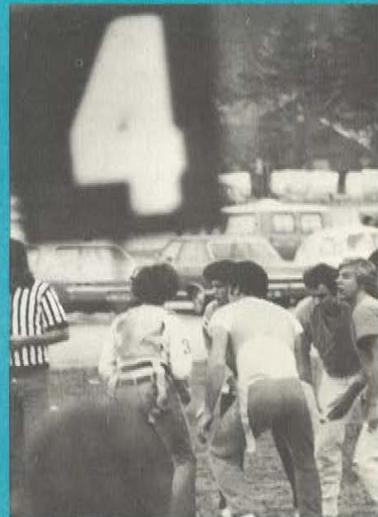
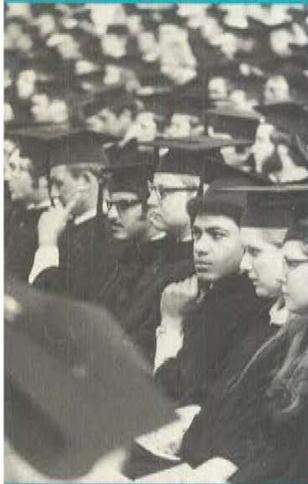


NORTHERN VIRGINIA COMMUNITY COLLEGE



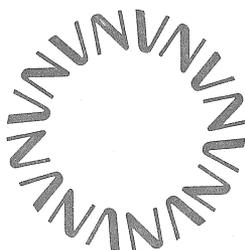
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NORTHERN VIRGINIA COMMUNITY COLLEGE

CATALOG

1973-74



ALEXANDRIA CAMPUS

3001 North Beauregard Street
Alexandria, Virginia 22041
Telephone: 703 323-4285

LOUDOUN CAMPUS

RR 2, Box 165
Sterling, Virginia 22170
Telephone: 703 430-6413

ANNANDALE CAMPUS

8333 Little River Turnpike
Annandale, Virginia 22003
Telephone: 703 323-3333

MANASSAS CAMPUS

10102 Lomond Drive
Manassas, Virginia 22110
Telephone: 703 368-0184

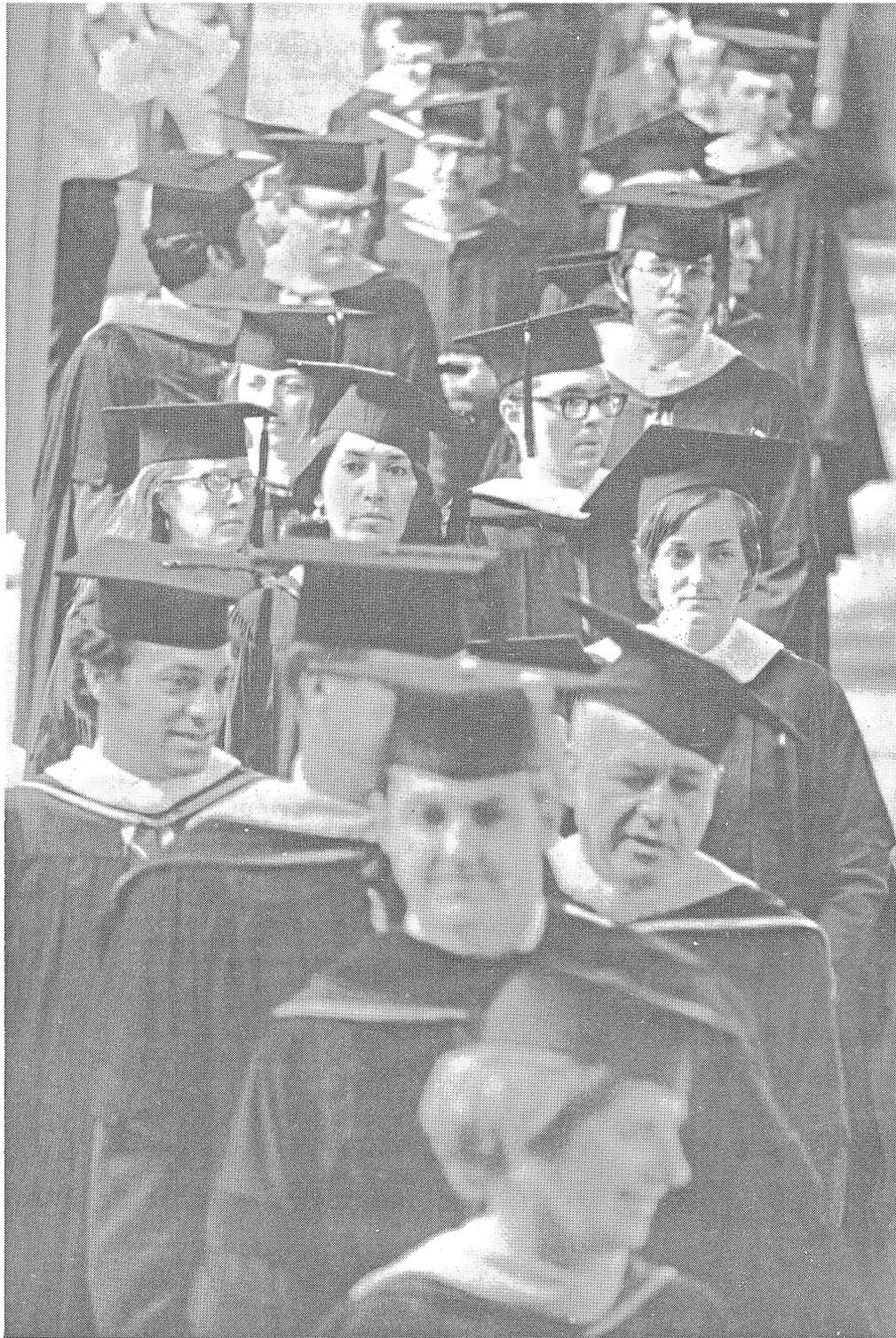
WOODBRIIDGE CAMPUS

2199 York Drive
Woodbridge, Virginia 22191
Telephone: 703 494-1136

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Commencement Exercises 1972, Filene Center, Wolf Trap Farm Park

GENERAL INFORMATION

COLLEGE CALENDAR

Fall Quarter—1973

SEPTEMBER							OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
						1	1	2	3	4	5	6					1	2	3	1	2	3	4	5	6	7	8
2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10	9	10	11	12	13	14	15
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16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24	23	24	25	26	27	28	29
23	24	25	26	27	28	29	28	29	30	31				25	26	27	28	29	30		30	31					
30																											

Registration	September 24-26
Classes Begin	October 1
Last Day to Add or Change Classes	October 5
Last Day to Withdraw Without Grade Penalty	October 19
Thanksgiving Recess	November 22-24
Classes End	December 15
Final Exams	December 18-20

Winter Quarter—1974

JANUARY							FEBRUARY							MARCH							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
						1						1	2							1	2
6	7	8	9	10	11	12	3	4	5	6	7	8	9	3	4	5	6	7	8	9	
13	14	15	16	17	18	19	10	11	12	13	14	15	16	10	11	12	13	14	15	16	
20	21	22	23	24	25	26	17	18	19	20	21	22	23	17	18	19	20	21	22	23	
27	28	29	30	31			24	25	26	27	28			24	25	26	27	28	29	30	
														31							

Registration	January 3-4
Classes Begin	January 7
Last Day to Add or Change Classes	January 11
Last Day to Withdraw Without Grade Penalty	January 25
Last Day to Apply for Graduation in June	January 31
Classes End	March 16
Final Exams	March 18-20

Spring Quarter—1974

MARCH							APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
						1						1	2	3	4							1	2	3	4		
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8
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24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31		23	24	25	26	27	28	29
31																					30						

Registration	March 28-29
Classes Begin	April 1

Last Day to Add or Change Classes	April 5
Last Day to Withdraw Without Grade Penalty	April 19
Classes End	June 8
Final Exams	June 10-12
Graduation	June 14

Summer Quarter—1974

JUNE							JULY							AUGUST							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
						1		1	2	3	4	5	6						1	2	3
2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10	
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23	24	25	26	27	28	29	28	29	30	31				25	26	27	28	29	30	31	
30																					

(Full Ten-Week Session)

Registration	June 17
Classes Begin	June 18
Last Day to Add or Change Classes	June 24
Independence Day Holiday	July 4
Last Day to Withdraw Without Grade Penalty	July 8
Classes End	August 27
Final Exams	August 28-30

**(First Term of Two Five-Week Terms)
Double Class Periods**

Registration	June 17
Classes Begin	June 18
Last Day to Add or Change Classes	June 20
Last Day to Withdraw Without Grade Penalty	June 27
Independence Day Holiday	July 4
Classes and Exams End	July 24

**(Second Term of Two Five-Week Terms)
Double Class Periods**

Registration	July 25
Classes Begin	July 26
Last Day to Add or Change Classes	July 30
Last Day to Withdraw Without Grade Penalty	August 6
Classes and Exams End	August 30

**NORTHERN VIRGINIA COMMUNITY COLLEGE
A MULTI-CAMPUS INSTITUTION**

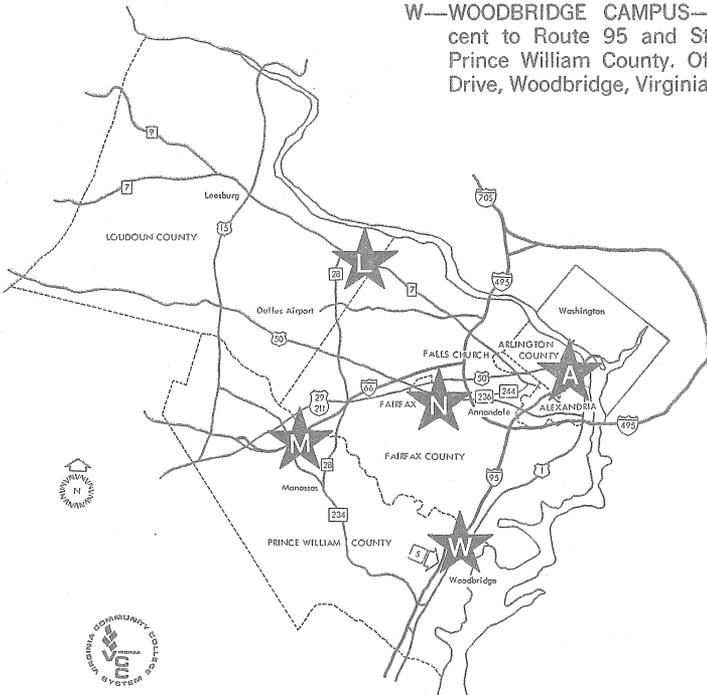
A—ALEXANDRIA CAMPUS—3443 South Carlin Springs Road, Bailey's Crossroads, rented facilities and permanent site 28 acres at 3001 North Beauregard Street, Alexandria. Construction of Phase 1 occupied, Summer 1973.

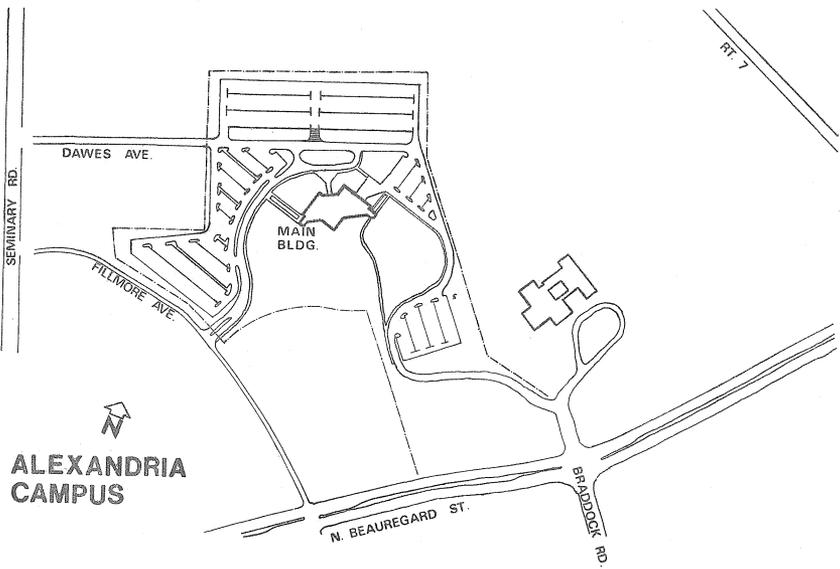
N—ANNANDALE CAMPUS—8333 Little River Turnpike, Annandale, 78 acres, six permanent buildings.

L—LOUDOUN CAMPUS—98 acres on Route 7 in Loudoun County. Office on Route 7 at State Route 637. Mailing address is RR 2, Box 165, Sterling, Virginia.

M—MANASSAS CAMPUS—100 acres, off Route 66 on State Route 234 near Manassas. Office at 10102 Lomond Drive, Manassas, Virginia.

W—WOODBRIIDGE CAMPUS—112 acres, adjacent to Route 95 and State Route 638 in Prince William County. Office at 2199 York Drive, Woodbridge, Virginia.

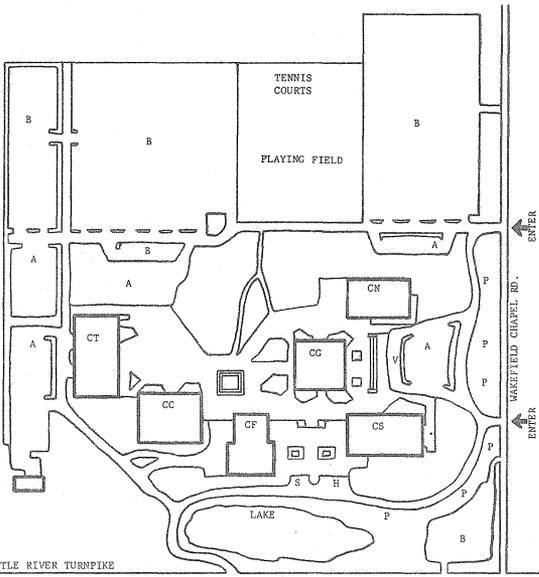




**ALEXANDRIA
CAMPUS**

KEY

- A FACULTY AND STAFF PARKING
- B STUDENT PARKING
- CC CLASSROOM BLDG.
- CF FOOD SERVICE BLDG.
- CG OODWIN BLDG.
- CN NURSE TRAINING BLDG.
- CS SCIENCE BLDG.
- CT TV/TECHNICAL BLDG.
- H HANDICAPPED
- P OPEN PARKING - RIGHT HAND SIDE OF ROAD
- V VISITOR PARKING - 30 MINUTES. PICK UP PASS IN SECURITY OFFICE IN CS BLDG. FOR LONGER TIME ON CAMPUS. 5-MINUTE PARKING ZONE IS AVAILABLE FOR THIS PURPOSE.



INHERSTATE 495

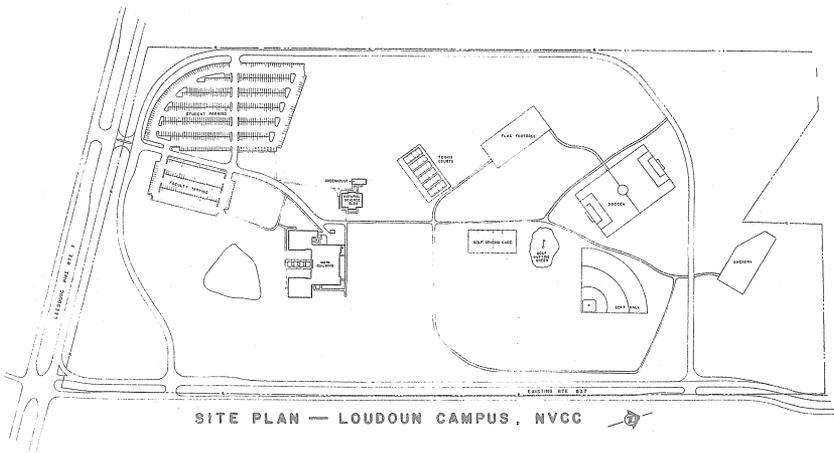
EXIT 6

TO FAIRFAX RTE 236 LITTLE RIVER TURNPIKE

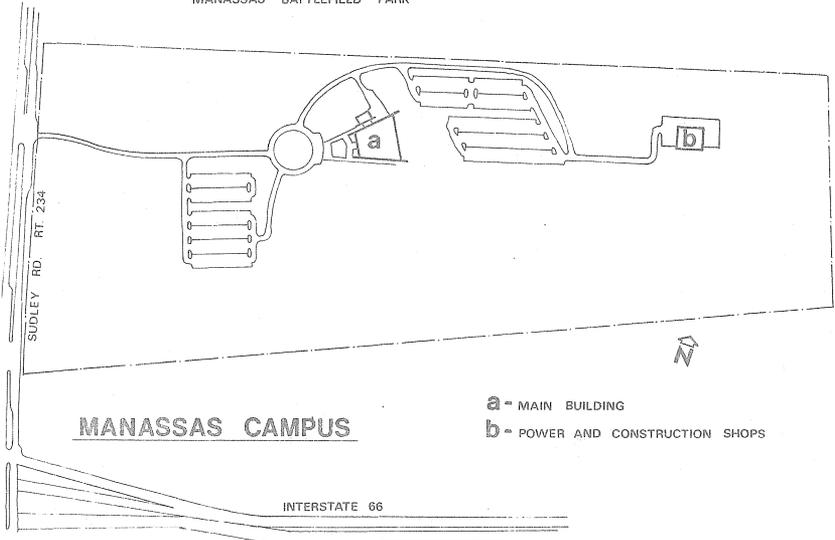
ANNANDALE CAMPUS

ENTER

ENTER



MANASSAS BATTLEFIELD PARK



PRESIDENT OF THE COLLEGE

Richard J. Ernst

NORTHERN VIRGINIA COMMUNITY COLLEGE BOARD

T. Marcus Gillespie	<i>Chairman, City of Alexandria</i>
Charles S. Monroe	<i>Vice Chairman, Loudoun County</i>
Irving Berman	<i>City of Falls Church</i>
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William C. Parrish	<i>Fairfax County</i>
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DEPARTMENT OF COMMUNITY COLLEGESDana B. Hamel, *Chancellor***STATE BOARD FOR COMMUNITY COLLEGES**Daniel C. Lewis, *Chairman*

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THE COLLEGE

The College is a two-year institution of higher education established under a state-wide system of Community Colleges in Virginia and serving the counties of Arlington, Fairfax, Loudoun, Prince William, and the cities of Alexandria, Falls Church and Fairfax. The programs of the College are designed to offer the training and education needed by the citizens of Northern Virginia to qualify them for the jobs available in the region, and for further education at four-year institutions.

The College operates on policies established by the State Board for Community Colleges and with the support and advice of a local Community College Board; and is financed primarily by State funds, supplemented by funds from the seven local jurisdictions for purchase of sites, site development, and a small maintenance and operation budget.

LOCATION AND FACILITIES

The multi-campus plan for the College consists of five campus locations. The five sites have been purchased throughout the Northern Virginia area for the convenience of potential students.

The College is presently operating all five campuses. The Alexandria and Annandale campuses have complete facilities to coordinate the students' needs, including: administrative offices, business office, admissions and records office, classrooms, laboratories, counseling services, faculty offices, bookstore, library, student lounge, snack bar, and cafeteria. A Learning Resources Center is located on each campus. Each Center houses a Library, a Learning Laboratory and the Audio-Visual Services. The Loudoun, Manassas and Woodbridge campuses have offices located in their area of Northern Virginia and share the student services on the other two campuses.

The Alexandria Campus is located at 3001 North Beauregard Street, Alexandria. The megastructure accommodates the various campus functions on four levels, including student services, a teaching auditorium and rehearsal hall, faculty and administration, general classrooms, laboratories and studios.

The Annandale Campus, located at 8333 Little River Turnpike (Route 236) two miles west of Annandale, Virginia, has a general classroom building, a laboratory building, an Administration-Library Building, a Food Services Technology Building, a TV-Technical Building, and a Nurse Training Building.

The Loudoun Campus is temporarily located at RR 2, Box 165, Sterling, Virginia. Evening classes are being offered at Sterling Middle School and Loudoun County High School. Funds have been approved,

and construction is under way for Phase I of the new campus on the 98-acre site on Route 7 at State Route 637 in Loudoun County. It is expected to open for fall 1974.

The Manassas Campus has offices temporarily in a trailer at 10102 Lomond Drive, Manassas, Virginia. Evening classes are available at Stonewall Jackson Senior High School. Construction is also under way for this campus on the 100-acre site off Route 66 on State Route 234 near Manassas. It is also planned for this campus to open in the fall of 1974.

The Woodbridge Campus is offering evening courses at Woodbridge Senior High School and Fort Belvoir. Offices are in a trailer at 2199 York Drive, Woodbridge, Virginia. The permanent site, not yet funded for construction, consists of 112 acres adjacent to Route 95 and State Route 638 in Prince William County.

HISTORY OF COLLEGE

Although covering a brief period of time, the history of the College is one of rapid growth and development. The College was established under the name of Northern Virginia Technical College, as a result of legislation by the 1964 Virginia General Assembly. It became the first of an expanding system of technical colleges in the State.

In early 1965 the College was approved by the State Board for Technical Education, the present College Board was formally established, and the President of the College was appointed. Less than four months later, the College opened at Bailey's Crossroads with an initial enrollment of 761 students and a staff and faculty of 46. The College was officially opened by Governor Albertis S. Harrison on November 16, 1965.

The 1966 Session of the General Assembly enacted legislation which changed the Virginia Technical College System to the Virginia Community College System. This college became Northern Virginia Community College at that time. The role of the College was expanded to include University Parallel/College Transfer programs. Enrollment increased to 2,226 in the fall of 1966.

A site of 78 acres was purchased by the NVCC Board in 1966 for the Annandale Campus at Annandale, from funds provided by the seven local cooperating jurisdictions. The first permanent building was constructed and opened on the Annandale Campus in 1967. Sites for the Loudoun, Manassas and Woodbridge Campuses were purchased in 1967. The enrollment was 3,359 in the fall of 1967 and jumped to 5,271 in 1968.

Dr. Richard J. Ernst became the second president of the College on September 16, 1968. The next phase of construction consisted of three buildings opened in early 1969. Local funds from the seven supporting jurisdictions and matching federal funds were used for construction. Normally, state and federal funds are required. One of the three, the Godwin Building, was dedicated in honor of Governor Mills E. Godwin on June 3, 1969. In the fall of 1969, there were 7,629 students enrolled. A 28-acre site was purchased for the Alexandria Campus in 1969.

A TV/Technical Building was also completed on the Annandale Campus in 1970, utilizing only local funding. Enrollment that fall was 9,718. Construction began on Phase I of the permanent Alexandria Campus in August of 1971. It replaced the temporary facilities at Bailey's Crossroads in the spring of 1973. A Nurse Training Building was completed in the summer of 1972 on the Annandale Campus. Master site plans have been designed for each of the three other campuses, and the 1972 General Assembly approved funds for construction of Phase I of the Loudoun and Manassas Campuses. Construction began in January of 1973 and is expected to be completed by the fall quarter of 1974.

The Loudoun, Manassas and Woodbridge Campuses opened in the fall quarter of 1972, offering evening courses in local facilities. Temporary offices for the three new campuses were established in the communities served by each.

Northern Virginia Community College is the fourth largest college, of any kind, in the Commonwealth of Virginia with 13,974 students for the fall of 1972.

PURPOSE

Northern Virginia Community College is dedicated to the belief that each individual should be given a continuing opportunity for the development and extension of his skills and knowledge along with an opportunity to increase in awareness of his role in and responsibility toward society. The college, operating under an open admissions policy, accepts any person who has a high school diploma or the equivalent, or is at least 18 years of age, and in any case, is able to benefit from a program of instruction. The College is devoted to serving the educational needs of its community and assumes a responsibility for helping meet the requirements for trained manpower in its region through a cooperative effort with local industry, business professions, and government.

Educational opportunities are provided for post high school age

youth and adults. These opportunities include high-quality instructional programs at the associate degree level, in occupational and technical programs designed to develop technicians, semi-professional workers and skilled craftsman, as well as programs at the developmental level. A strong counseling program, including a number of other comprehensive student personnel functions, is also provided to help each student make sound decisions regarding his occupational, educational, and personal goals and objectives. These functions include: pre-college and freshman orientation, counseling, job placement, financial aid, student health service, psychological service, veterans affairs, and student activities.

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, semi-professional workers and skilled craftsmen for employment in industry, business, the professions, and government. The curriculums are planned primarily to meet the needs for workers in the region being served by the College.
2. *University Parallel-College Transfer Education.* The university parallel-college transfer program includes college freshman and sophomore courses in arts and sciences and pre-professional programs meeting standards acceptable for transfer to baccalaureate degree programs in four-year colleges and universities.
3. *General Education.* The programs in general education encompass the common knowledge, skills, and attitudes needed by each individual to be effective as a person, a worker, a consumer and a citizen.
4. *Continuing Adult Education.* These programs are offered to enable the adults in the region to continue their learning. This work includes both degree credit and non-degree credit work offered during the day and evening hours.
5. *Special Training Programs.* Special training may be provided where specific job opportunities are available for new and expanding industries. This special training shall be considered with Virginia's economic expansion efforts and with the needs of employers.

6. *Developmental Studies Programs.* Developmental programs are offered to help prepare individuals for admission to the occupational-technical program and to the university parallel-college transfer program in the Community College. These programs are designed to help develop the basic skills and understandings necessary to succeed in other programs of the Community College.
7. *Specialized Regional and Community Services.* The facilities and personnel of the College are available to provide specialized services to help meet the cultural and educational needs of the region served by the Community College. This service includes the non-classroom and non-credit programs, cultural events, workshops, meetings, lectures, conferences, seminars, and special community projects which are designed to provide needed cultural and educational opportunities for the citizens of the region.

ACCREDITATION AND RECOGNITION

The College, a division of the Virginia Community College System, is approved by the State Board for Community Colleges in Virginia. The associate degree programs of the College have also been approved by the State Council of Higher Education for Virginia. The College is accredited by the Southern Association of Colleges and Schools.



One of Two Faculty Wives Club Child Care Centers

ADMINISTRATIVE INFORMATION

ADMISSION REQUIREMENTS

General Admission to the College

Any person who has a high school diploma or the equivalent, or is at least 18 years of age, and in any case is able to benefit from a program of instruction at Northern Virginia Community College, may be admitted to the College as a regular student or accepted as a special student when the following items have been received by the Office of Admissions on his home campus.

The College reserves the right to evaluate special cases and to refuse admission to applicants when considered advisable in the best interest of the College.

For all regular students, the following items are required:

1. A completed "Application for Admission as a Regular Student." (NOTE: Social Security Number is required.)
2. A \$5 application fee (non-refundable unless the program or course is not offered.)
3. Official transcripts from all high schools, colleges, and universities attended.
4. A completed Northern Virginia Community College Health Form.

For all special students, the following items are required:

1. A completed official application. (NOTE: Social Security number is required.)
2. A \$5 application fee (non-refundable unless the program or course is not offered).

NOTE: Please direct all inquiries concerning applications to the College to: Northern Virginia Community College, Post Office Box 1285, N. Springfield, Virginia 22151.

Persons wishing to apply for the non-credit community service programs should contact the Office of Continuing Education on any campus for additional information.

Applicants will be accepted on a first-come, first-served basis subject to the quotas established for each curriculum. It is important that applications be made early if entrance to the desired program is to be achieved.

To insure consideration for admission or readmission to a desired degree program, an applicant must have submitted an application with all necessary supporting documents to the College at least 30 days prior to registration for the quarter in which admission is being sought. All students not admitted to a degree, certificate, or diploma program shall be considered special students.

General admission to the College does not imply admission to a specific curriculum. A person who has been accepted by the College, before becoming a "regular" student, will be required to meet with one of the College Counselors (a) to discuss the applicant's educational interests, (b) to determine what additional tests he may need, and (c) to plan his application for admission to a specific curriculum or program at the College. He will also be required to submit a health certificate, emergency consent form (forms to be furnished by the College) and any additional information required by the College for admission to a specified program or curriculum.

This College does not discriminate on the grounds of race, color, or national origin and is in compliance with the Civil Rights Act of 1964.

The act of enrolling as a student is an acceptance of the rules and regulations of the College. Any violation may be subject to appropriate institutional action.

Admission to Specific Curricula

In addition to the general admission requirements listed above, specific requirements are usually prescribed for each curriculum of the College. Among the items generally considered in determining the eligibility of a student for admission to a curriculum in the College are his educational and occupational experiences and other reasonable standards to insure that the student possesses the potential to meet program requirements.

The specific requirements for each curriculum in the College are listed in the Curricula of Study section of the College Catalog. Persons who do not meet the requirements for a specific curriculum or course may be eligible to enter the curriculum or course after they have completed preparatory course work.

Regular students entering the College may be required to take the Comparative Guidance and Placement Test (CGP). The test battery is administered at the College normally prior to registration. An appointment may be made through Counseling Services at the home campus indicated.

Persons applying to enter one of the associate degree programs (Associate in Science, Associate in Arts, or Associate in Applied Science) shall be high school graduates or the equivalent or have completed an approved developmental program.

In addition, all students who plan to transfer to a four-year college or university which requires the Scholastic Aptitude Test (SAT) of the College Entrance Examination Board may be requested to submit these test scores to that institution.

Special Admission Requirements for International Students

International Students will not be admitted on a temporary basis. They must complete all general and special requirements for admission. Foreign students who are present in the United States on a temporary visa are considered non-residents for purposes of tuition payments. Length of the stay, payment of taxes, ownership of property, etc., in themselves do *not* qualify them for the status of *legal resident*.

Students who acquired a student visa through acceptance by another school or college will not be considered until they have successfully completed at least one term's work and have secured a written release from the original institution. Students for whom an I-20 form has been submitted must maintain their status as full-time students. The College will not approve nor recommend employment of non-immigrant aliens who are students, except during the summer.

Applicants whose native language is other than English are required to take the "Test of English as a Foreign Language" (TOEFL). The applicant is responsible for making early arrangements for taking the test and should address inquiries to: TOEFL, Educational Testing Service, Princeton, New Jersey 08540, U.S.A. The Bulletin of Information, obtainable without charge, contains a description of the test as well as rules regarding application, fees, reports, and the conduct of the test; lists of examination centers; examination dates; and an application blank. On the application for the test, the student should specify that the scores be sent to Northern Virginia Community College Post Office Box 1285, North Springfield, Virginia 22151. The results of the TOEFL must be received at NVCC well in advance of the term for which the applicant seeks admission.

Residence Requirements

Applicants will be required to submit a residence affidavit to determine state residency eligibility for tuition purposes. See the section on tuition in this catalog. The Application Form contains an affidavit which must be completed by those students or their parents or guardians

who are legal residents of the Commonwealth of Virginia. Applicants and parent/guardian are responsible for the complete accuracy of their affidavit. The right to recoup deficiency charges is reserved. If there is any question as to the status of an individual, the applicant should contact the Coordinator of Admissions and Records for clarification.

When enrollments must be limited for any curriculum or course, first priority must be given to all qualified students who are legal residents of the political subdivisions supporting the College as listed under General Information, provided such students apply for admission to the curriculum a reasonable length of time prior to registration. The priority list is as follows: (1) residents of the political subdivisions supporting the College, (2) other Virginia residents, (3) out-of-state and International students.

Students Transferring from Other Colleges

Usually, a student from another college who is eligible for re-entrance at the last college shall also be eligible for admission to the Community College.

It is the role of the Community College to help each student succeed in a program from which he can benefit. Early application and submission of all transcripts is required.

Each student transferring from another college should consult the Admissions and Records Office at the Community College for an assessment of credits. Generally, no credit will be given for subjects with a grade lower than "C." A transfer student may be advised to repeat courses if it is clearly to his advantage to do so in order to make satisfactory progress in his curriculum.

Such an evaluation (of credits that a student has earned at other institutions) will be made during the admission process after all of the official documents have been received. When the course contains similar or like content and credit, the course will transfer as the equivalent of this institution's course. When the content is unlike any course offered at Northern Virginia Community College, elective credit may be granted. The division in which the student is enrolled will then determine if and how the evaluated transfer credit may be used.

Transfer credit is usually granted during the admission process. Students taking credit courses at other institutions for transfer to Northern Virginia Community College must receive prior written approval of the Office of Admissions and Records.

Credit from non-regionally accredited colleges and universities may be transferred according to the recommendations in the current issue of the Directory published by the U.S. Dept. of Health, Education and Welfare or in the current issue of the AACRAO Guide, and/or if the colleges and universities have approval by their state accrediting agencies.

Credit may be allowed for military service schools if this credit is recommended in *A Guide to the Evaluation of Educational Experiences in the Armed Services*, and if work is applicable to the program being pursued.

Advanced Placement

Northern Virginia Community College subscribes to the philosophy that the placement function of the College includes helping the student to accumulate his past experiences, to identify where he is in his educational development, and to move on toward his goals at the most efficient and rapid rate possible. Advanced standing is the administrative placement of a student beyond the basic or first course(s) in a curriculum, allowing college credit for subject matter and/or other appropriate training, upon the submission of transcripts showing previous academic study, examination, or occupational experience.

Advanced standing may be granted students who successfully complete examinations in any of the following programs.

1. CLEP Examinations from ETS for Advanced Standing.
The College Examination Program from the Educational Testing Service has been approved in five basic liberal arts areas and in specific Subject Examination areas, depending on the score attained. Students desiring to participate in the CLEP Program may contact the Counseling Office at their respective campuses for information and applications.
2. USAFI credits for Advanced Standing.
NVCC will award specific course credit for acceptable scores on USAFI (United States Armed Forces Institute) college-level examinations as reported on the USAFI form, "Official Report of Educational Achievement through the United States Armed Forces Institute," Madison, Wisconsin, 53713. For evaluation the student must have the official USAFI "Report" form sent to his home campus Records Office.
3. AP Program for Advanced Standing.
Specific college course credits will be granted for scores of 3, 4, or 5 on the Advanced Placement Examinations of the College Entrance Examination Board. For evaluation students must have official AP Score Reports forwarded from ETS to NVCC for inclu-

sion in the permanent record in the Records Office of their home campus.

4. Locally Constructed (ABLE) Examinations for Advanced Standing. Tests not available from outside sources such as the CLEP will be available for a considerable number of NVCC courses through ABLE (*Assessment by Local Examination*) exams. The College will grant specific course credit for acceptable performance on ABLE examinations.

Waiver of Requirements

Veterans may receive a waiver for Physical Education upon submission of a discharge certificate, however, no credit is granted for this waiver. Other credits should be substituted to meet the total requirements of the specific curriculum. Application for granting of credit or waiver should be made well in advance of the beginning of the quarter.

Auditing a Course

Students desiring to attend a course without taking examinations or receiving credit for the course, may do so by registering to audit that course. Students desiring to audit a course will register in the regular manner and pay the regular tuition. Audited courses carry no credit. Students desiring to change status in a course from audit to credit must complete the change during the first week of class or by the second class meeting for those classes which meet only once each week. Changes from credit to audit must be made by the last day for students to withdraw from a class without penalty. (First three weeks of classes.) Permission of the instructor and the Division Chairman is required to audit a course. The student should contact Admissions and Records for instructions.

NOTE: Please direct all inquiries concerning applications to the College to: Northern Virginia Community College, Post Office Box 1285, N. Springfield, Virginia 22151.

CLASSIFICATION OF STUDENTS

Classification of Students by Home Campus

All students are required to select a home campus (Alexandria, Annandale, Loudoun, Manassas, or Woodbridge) at the time of application. A change in a student's home campus classification will be permitted no later than 30 days before the beginning of the preregistration period.

All students records will be maintained at the home campus of the student. All actions, such as registration, dropping of courses, shifting

from credit to audit, withdrawal, transcript request, etc., must be accomplished at the home campus.

Students are generally expected to take all of their course work at their home campus. Division Chairmen may approve exceptions for non-availability of courses or other substantial reason.

ALL STUDENTS ARE CLASSIFIED ACCORDING TO THE FOLLOWING CATEGORIES:

Regular Student

A student is designated as a regular student when his file in the Admissions Office contains all of the information required for general admission to the College as a regular student and when he has been admitted to one of the curricula of the College. A regular student is a full-time or part-time student working toward completion of an associate degree, diploma, certificate, or developmental program, or for transfer to a higher degree granting institution. Thus, the regular student's admission will normally follow a counseling interview and will be substantiated by a written letter specifying the curriculum to which he is admitted and any developmental work that he must accomplish.

Special Student

A special student is one who is permitted to register under special conditions including the following:

1. A part-time student taking a credit course(s) as an audit for no credit;
2. A high school senior who with the written permission of his high school principal is concurrently enrolled in a college course;
3. A part-time or full-time student not enrolled in an associate degree, diploma, or certificate program who may be taking a course for credit (such students may later apply to the College for admission to a curriculum as a regular student);
4. A person who has not yet fulfilled all of the requirements as a regular student but who is admitted under special consideration by the Admission Committee of the College. It is expected that such persons would fulfill all requirements prior to the mid term of the quarter.

Full-time Student

A student is considered a full-time student if he is carrying 12 or more credits of course work. (Note: The Veterans Administration considers 12 credit hours as full-time except for course work in certificate and diploma programs.)

Part-time Student

A student is considered a part-time student if he is carrying less than 12 credits of course work.

Freshman

A student is classified as a freshman until he has completed 45 credits of work.

Sophomore

A student is considered a sophomore after he has completed 45 or more credits of course work. Transferred credits are included providing they apply toward meeting the requirements of the student's curriculum.

Reapplicant

A student who interrupts his enrollment at the College for one quarter or more (exclusive of the summer) is required to reapply by submitting again the standard application form. In this way, the College is assured of current student information, such as address and telephone number. A second application fee, of course, is not required.

EXPENSES

Application Fee

An application fee of \$5 must accompany the application for admission to the College for each regular and special student. This is a one-time charge. No additional application fee shall be charged. This fee is not applicable to tuition, nor refundable unless the program or course is not offered.

Tuition

Full-time Student (12 or more credits):

Virginia Resident	\$ 75.00 per quarter
Out-of-State Resident	250.00 per quarter

Part-time Student (Less than 12 credits):

Virginia Resident	\$ 6.25 per credit (or equivalent)
Out-of-State Resident	\$21.00 per credit (or equivalent)

TUITION IS DUE AND PAYABLE AT TIME OF REGISTRATION EACH QUARTER

Entitlement to In-State Tuition Fees

In order to qualify for in-state tuition rates, a person must be a legal resident and domiciliary of the State of Virginia. This means that a person must actually have lived as a legal resident in Virginia for one full year (12 months) immediately prior to the beginning date of the school quarter for which he seeks acceptance and that during that year, he must have had a continuing intention to remain permanently and indefinitely in Virginia.

It will be presumed that people falling within the following categories do not have the requisite intent to be a Virginia domicile: holders of temporary visas, persons who by law must maintain their domicile or legal residence in another state, persons who have by their actions selected another state or country as their legal residence. Military personnel and dependants whose home of record is other than Virginia are considered as out-of-state residents.

Children who receive at least 50% of their support from their parents are presumed to maintain the same residence and domicile as their parents. Wives are considered to hold the legal residence of their husbands, unless legally separated.

Being present, maintaining a home, paying taxes, voting and registering for the military draft in Virginia are all factors which bear on the question but do not in themselves establish residency or domicile.

Payment of tuition also enables the student to use the library, bookstore, student lounge, and other facilities of the College except parking. There are no special laboratory or library fees, but students are expected to pay charges for any school property (such as laboratory or shop equipment, supplies, library books and materials) that they damage or lose.

Graduation Fee

A non-refundable graduation fee of \$10.00 shall be charged each graduating student to cover the necessary expenses. This fee is payable with the application on or before the announced application cut-off date for any quarter, but not later than January 31, 1974 for the June 1974 commencement.

Identification Cards

Student Identification cards are issued without charge at the time of initial registration. Lost cards will be replaced at a charge of \$3.00 upon request, to the home campus Admissions and Records Office. ID cards are required for registration, course changes, transcript re-

quests, Library material use, admissions to special student activities, etc.

Books and Materials

Students are expected to obtain their own books, supplies, and consumable materials needed in their studies. It has been estimated that the cost of these items will average approximately \$35-\$50 per quarter for a full-time student.

Transcripts

The first copy of a transcript will cost \$1.00. All subsequent transcript copies will cost \$3.00 each.

Vehicle Registration Fee

A vehicle registration fee of \$5.00 a quarter must be paid by any student who wishes to park his car in the student parking lots on the Alexandria and Annandale Campuses. There is a \$2.00 fee for replacement of lost decal upon presentation of original receipt.

Refunds

Full-time Students

No refunds will be made for individual course changes where a course is dropped, and the student continues to be enrolled for at least 12 credit hours.

During the first week of classes, if a full-time student drops individual courses (or, the College cancels a course in which the student is enrolled before the first class meeting and he does not elect to take an alternate course) which would result in his being enrolled for less than 12 credit hours, he will be eligible for partial refund for the difference in hours between those for which he is enrolled and the 12 credit hours which is considered full time.

After the first week of classes, full-time students will not be authorized refunds unless they officially withdraw completely from the College.

If a student registers for a program which is cancelled by the College before start of classes, and the student does not elect to enter an alternate program, he is eligible for a *total* refund of tuition.

Part-time Students

If a course is cancelled by the College before the first class meeting

and the student does not elect to take an alternate course, he is eligible for a *total* refund of tuition for that course.

During the first week of classes, if a student drops a course, he will be eligible for partial refund of tuition for that course. (See "Determination of Refund" below)

After the first week of classes, part-time students will not be authorized refunds unless they officially withdraw completely from the College.

Determination of Refund

To be eligible for refund under any of the circumstances set forth in the foregoing paragraphs, a student must execute an official drop form. Other than where *total* refunds are authorized, refunds will be based upon the length of the course, i.e., full quarter course; six week course; five week course, etc. From the beginning until the passage of one-fifth of the course length of time, the refund will be two-thirds of the tuition. From one-fifth until the passage of one-third of the course length of time, the refund will be one-third of the tuition. After that there will be *no refunds*. (Example: If a student is authorized for a refund after two weeks in a twelve week course he would be entitled to a two-thirds tuition refund. In a six week course he would be entitled to a one-third tuition refund. In a five week course he would not be entitled to a refund.)

Official resignation for a student shall become effective on the date that written notification of intent to resign is received by the Office of Admission and Records and not the date of the last class attended, unless the two dates coincide. Resignations and course withdrawals should be presented in person or by the student's authorized representative. The College cannot undertake to accomplish contact with the student's instructors, except for the most serious of reasons.

All services will be withheld from a student who owes money to the college for any reason, or who has books or materials outstanding from the Learning Resource Center. This means that no transcripts will be issued, the student will not be permitted to register, no recommendations will be written nor other services provided.

CREDITS

A credit is equivalent to one collegiate quarter hour credit or two-thirds of a collegiate semester hour credit. Usually, one credit for a course is given for approximately three hours of work *weekly* by each student as follows:

- a. One hour of lecture plus an average of two hours of out-of-class study, or
- b. Two hours of laboratory or shop work plus an average of one hour of out-of-class study, or
- c. Three hours of laboratory or shop work with no regular out-of-class assignments.
- d. Fixed credit and variable hours with behavioral objectives are assigned to each Developmental Course;
- e. Variable Credit (1-5 credits) are assigned to all Supervised study, Seminar and Project, and Coordinated Internship courses.

GRADING SYSTEM

- A = Excellent—Four grade points per credit
- B = Good—Three grade points per credit
- C = Average—Two grade points per credit
- D = Poor—One grade point per credit
- F = Failure—0 grade points
- S = Satisfactory—No grade point credit (Applies only to specialized courses and seminars)
- R = Re-Enroll—No grade point credit (A grade of “R” implies that the student was making satisfactory progress but did not complete all the course objectives. Students making satisfactory progress shall be graded with an “R” and must re-enroll to complete the course objectives.)
- U = Unsatisfactory—No grade point credit (Applies only to specialized courses and seminars)
- W = Withdrawal—No credit (A grade of withdrawal implies that the student was making satisfactory progress in the course at the time of his withdrawal or that the withdrawal was officially made.)
- I = Incomplete—No credit (A grade of incomplete is assigned only in cases of student absence from a limited number of class sessions near the end of a term or grading period and when the absence was for a verifiable unavoidable reason; i.e., sickness verified by medical statement, accident verified by police records, etc., or absence from final examination for a verifiable and unavoidable reason. Such circumstances must be reported to the Instructor so that the “I” grade can be assigned. It is the joint responsibility of the instructor and student to make up an “incomplete” during the next term following its issuance. All “I” grades not completed in the subsequent quarter will revert to a “W”.)
- X = Audit—No credit. (Permission of the Instructor and the Division Chairman is required to audit a class.)

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. When a course is repeated only the last grade will be used in the GPA computation for graduation. The following example illustrates a GPA of 2.0 obtained by dividing 36 by 18.

Course	Credit Hours Attempted	Grade	Grade Points	Credit Hours Completed	Total Grade Points
FREN 101	4	A	4	4	16
ENGL 101	3	B	3	3	9
PSYC 110	3	C	2	3	6
MATH 121	5	D	1	5	5
ECON 160	3	F	0	0	0
ELEC 114	0	W	0	0	0
	<u>18</u>			<u>15</u>	<u>36</u>

Any grade errors or other errors on Grade Reports should be reported to the Office of Admissions and Records at the student's Home Campus within 30 days after the close of the Quarter in which grades were received or these may be assumed to be correct.

GRADING—DEVELOPMENTAL STUDIES COURSES

An "S" (Satisfactory) shall be assigned to indicate satisfactory completion of the course objectives for each developmental course.

Students making satisfactory progress but not completing all of the objectives for a developmental course shall be assigned an "R" (Re-enroll) and be re-enrolled to complete the course objectives.

Students not making satisfactory progress in a developmental course shall be assigned a "U" (Unsatisfactory). These students should consult with a counselor for possible re-evaluation of their goals and a determination of the direction of any subsequent academic work.

Credits earned for developmental courses are not counted in grade-point computations toward graduation nor in determining sophomore status.

HONOR ROLL AND DEAN'S LIST

The name of every student who has a cumulative grade point of 3.50 or higher and who has earned a minimum of 30 quarter hours of credit at the College is placed on the Honor Roll.

A student with a cumulative grade point average of 3.20 or higher who has earned a minimum of 15 quarter hours of credit is placed on the Dean's List.

DEGREES, DIPLOMAS, AND CERTIFICATES

Northern Virginia Community College offers the following degrees, diplomas, or certificates for students who successfully complete approved curriculums at the College.

1. *The Associate in Applied Science degree (A.A.S.)* is awarded to students majoring in one of the occupational-technical curricula and who may plan to obtain full-time employment immediately upon graduation from the College.
2. *A Diploma* is awarded to students who complete one of the two-year diploma occupational curricula.
3. *A Certificate* is awarded to students who complete one of the approved curriculums that are usually less than two years in length.
4. *The Associate in Arts degree (A.A.)* is awarded to students majoring in the liberal arts and who may plan to transfer to four-year colleges or universities after completing their community college programs.
5. *The Associate in Science degree (A.S.)* is awarded to students majoring in specialized curriculums such as business administration, teacher education, pre-engineering, and other pre-professional programs and who may plan to transfer to four-year colleges or universities after completing their community college programs.

GRADUATION REQUIREMENTS

Associate Degree Requirements

To be eligible for graduation with an Associate Degree (A.A.S., A.A., or A.S.) from the College a student must:

1. Have made application and been admitted to the program in which he seeks a degree;
2. Have fulfilled all of the course and credit hour requirements of his particular 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 a student's initial registration to the College or any subsequent Catalog. In any case, the Catalog to be used shall be no older than five years.)
3. Have been recommended for graduation by the appropriate instructional authority in his curriculum;
4. Have acquired at least 45 credits applicable to an Associate Degree at the College;
5. Have completed the general education requirements for an Associate Degree;

6. Have earned a grade point average of at least 2.0 on all courses attempted which are applicable toward graduation in his particular curriculum;

7. Have filed an application for graduation in the Office of Admissions and Records on or before January 31, 1974, for June graduation 1974;

8. Have resolved all financial obligations to the College and returned all materials including library books;

Diploma Requirements

To be awarded a Diploma from the College, a student must:

1. Have made application and been admitted to the curriculum in which he seeks a diploma;

2. Have fulfilled all of the course and credit hour requirements of his particular 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 a student's initial registration to the College or any subsequent Catalog. In any case, the Catalog to be used shall be no older than five years.)

3. Have been recommended for graduation by the appropriate instructional authority in his curriculum;

4. Have acquired at least 45 credits applicable to a diploma at the College;

5. Have completed the general education requirements for a diploma;

6. Have filed an application for graduation in the Office of Admissions and Records on or before January 31, 1974, for June graduation 1974;

7. 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 from the College a student must:

1. Have made application and been admitted to the program in which he seeks a certificate;

2. Have fulfilled all of the course requirements of his particular Certificate curriculum as outlined in the College Catalog which includes achieving at least 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 a student's initial registration to the College or any subsequent Catalog. In any case, the Catalog to be used shall be no older than five years.)

3. Have been recommended for graduation by the appropriate instructional authority in the student's curriculum;
4. Have completed the prescribed total quarter hours of credit for the Certificate, at least one-half of which must have been taken at the College;
5. Have filed an application for graduation in the Office of Admissions and Records on or before January 31, 1974, for June Graduation 1974;
6. Have resolved all financial obligations to the College and returned all materials including library books.

Certificate of Completion

If a student successfully completes a program of instruction which does not lead to an associate degree or diploma, he may be awarded a Certificate of Completion. Also, if he pursues a degree or diploma program but fails to meet the degree or diploma requirements, he may, upon recommendation of the appropriate instructional division and the Provost, be issued a certificate, provided the portion of study successfully completed is equivalent to an approved certificate program offered at the College.

Graduation Honors

Students who have attended Northern Virginia Community College for a minimum of 45 credit hours in degree and diploma programs and for at least 50% of the credit hours in certificate programs are eligible for graduation honors.

Appropriate honors based upon scholastic achievements are recorded on the student's degree as follows:

<i>Grade Point Average</i>	<i>Honor</i>
3.2	Cum laude (with honor)
3.5	Magna cum laude (with high honor)
3.8	Summa cum laude (with highest honor)

ACADEMIC REGULATIONS

Attendance

Regular attendance at classes is required. It is a student's responsibility to attend regularly *only* the section for which he is registered. Credit will not be granted for work in classes in which a student is not registered. When absence from a class becomes necessary, it is the responsibility of the student to inform the instructor prior to the absence whenever possible. Frequent unexplained absences may result in a dismissal from a course. The student is responsible for making up

all work missed during an absence. Any instruction missed and not made up will necessarily affect the grade of the student, regardless of the reason for the absence.

Change of Registration

In all cases students should follow established procedures for making any change in their programs after registration. Failure to do so could place their college records in jeopardy. Changes, refunds, etc., are effective as of the time requested and approved. Retroactive changes are usually not permitted.

1. Withdrawal from a class—

Withdrawal from a class without academic penalty may be made within the first three weeks after the beginning of a quarter. After that time the student may receive a grade of "W" if his work has been satisfactory or may receive a failing grade of "F" if his work has been unsatisfactory up to the time of official withdrawal. Withdrawal from a class may be permitted during the last three weeks of classes of a given quarter upon the recommendation of the instructor and with the approval of the Provost or his designees.

2. Addition of a course—

In most cases a student may not enter a new class after the first week of a quarter. Any request for entry after that period must be approved by the instructor, division chairman concerned and the Provost through the Admissions and Records Office.

3. Withdrawal from the College—

A student who wishes to withdraw from the College should contact a counselor to determine the appropriate procedure. Failure to follow established procedures could place the student's college record in doubt and affect his return to this or another college. This must be done in person, except under the most serious circumstances (hospitalization, death in family, etc.). The Admissions and Records Office should be contacted for instructions.

4. Cancellation of a section or course by the College—

A student must follow the withdrawal procedures in order to get a refund or add another course or section to replace the cancelled section.

5. Transfer of Students between Curriculums—

A student who wishes to transfer from one curriculum to another must initially consult a counselor before effecting the transfer.

Academic Warning

Any student who fails to make a grade point average of 2.0 or higher for any one quarter, or who fails any course, will receive an Academic Warning.

Academic Probation

Any student who fails to maintain a cumulative grade point average of 1.5 will be placed on academic probation. The statement, "Placed on Academic Probation," will be placed on the student's permanent record.

A student on academic probation shall be required to consult with his counselor and may be required to take less than the normal academic load while on probation. A student pursuing a degree program is cautioned that, although an average between 1.5 and 1.99 may not result in formal academic probation, a minimum of 2.0 in his curriculum is a prerequisite to the receipt of an Associate Degree.

Academic Suspension

The student on academic probation who fails to make a grade point average of 1.5 for the next quarter that he is in attendance will be subject to academic suspension. Academic suspension normally will be for two quarters unless the student reapplies, and is accepted, for readmission to another curriculum of the College. The statement, "Placed on Academic Suspension" will be placed on the student's permanent record. The student must apply for readmission under all circumstances of academic suspension.

Academic Dismissal

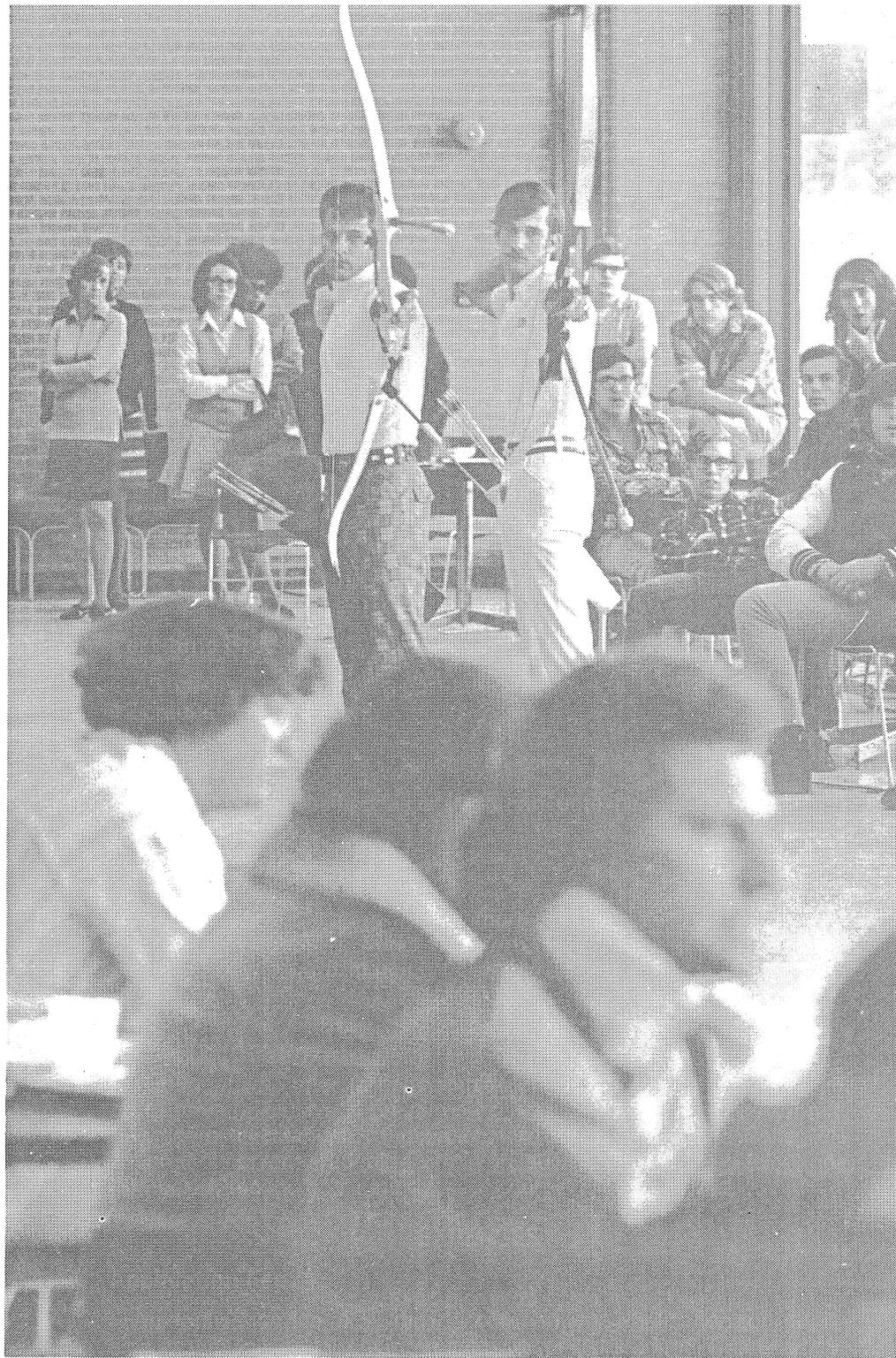
A student who does not maintain at least a 2.0 average for the quarter following reinstatement to the College after having been on academic suspension will be academically dismissed from that curriculum. Students who have been placed on academic suspension and achieved a 2.0 for the quarter following his reinstatement must maintain at least a 1.5 in each subsequent quarter of attendance. The student remains on probation until his overall grade point average rises to 1.5 or higher. Failure to make a 1.5 in each subsequent quarter will result in academic dismissal. Academic dismissal normally is permanent unless, with good cause, the student reapplies and is accepted under special consideration, for readmission by the Admissions Committee of the College. The statement "Placed on Academic Dismissal" will be placed on the student's permanent record.

Examinations

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

Normal Academic Load

The normal academic load for students is 15-17 credits. The minimum full-time load is 12 credits and the normal maximum full-time load is 18 credits. A student wishing to carry an academic load of more than 18 credits must ordinarily have a 3.0 average or higher and must have the approval of the Provost or his designee and usually the student's faculty advisor or counselor.



Hardy Ward and 1972 Olympic Gold Medalist John Williams, Archery Demonstration, Annandale Campus

STUDENT SERVICES

The College provides a number of services which are designed to contribute to each student's educational, career, and personal development. These services include Counseling, Testing, Information, Faculty Advising, Financial Aid, Job Placement, Health Services, Student Activities, several miscellaneous services and, as described elsewhere in this *Catalog*, Admissions and Records. Students are encouraged to take advantage of these services and to feel free to contact, for assistance, the College's Coordinator of Student Services and/or the Dean of Student Services or other staff members of the Student Services Division on each campus. Some of the services listed below are administered by the Campus Business Office or Instructional Divisions.

COUNSELING SERVICES

A staff of one or more professional Counselors is available on each Campus to assist students in any facet of their total development whether it be of an educational, career, or personal nature. Interviews with Counselors are confidential. Should a student's personal need require assistance beyond the scope of the services of the Counselors, referrals will be made to qualified persons.

Counselors can help students explore and develop career goals and appropriate educational plans to achieve these goals. For a new student this may mean planning a developmental program to enable him to become qualified for full admission to one of the curriculums, securing admission to an appropriate curriculum, or planning to transfer to a senior college or university upon completion of his studies at the College. A student who wishes to enroll in a Degree, Certificate or Diploma curriculum plans his first quarter of work at the campus of his choice in consultation with a Counselor. Upon admission into a curriculum, he is then referred to a Faculty Advisor who assists him in planning his program of study each succeeding quarter. Students may continue to utilize the educational counseling services of the Counselors at any time. A change-of-curriculum is made through a Counselor.

The Counselors are also specialists in assisting students with their personal and social adjustment and development. In doing this, a Counselor may help the student explore the various demands and implications of college life, as well as find meaning for himself as an individual.

In helping students, Counselors use appropriate standardized tests and inventories, career, educational and personal information materials, financial aid information, volunteer service placement information, job placement information, and special group programs such as Career Planning Seminars and Personal Exploration Groups.

Counseling services are also made available to citizens of the community on a limited basis.

Testing Services

A well-planned testing program for all students is coordinated by the Counseling Department on each campus. The Comparative Guidance and Placement (CGP) program is generally required for all new students planning to enter one of the Associate Degree, Certificate or Diploma curriculums. The CGP is administered at the College after the student applies for admission. A reservation to take the CGP is included with each student's general admission letter or may be made through the Counseling Department at the applicant's home campus. The CGP is used by Counselors in assisting students to plan their career goals and educational experiences.

Other supplementary tests and inventories are also available in the Counseling Department of each campus to provide special information for helping students know themselves, their abilities, and their interests. These tests and inventories are administered and interpreted by the Counselors at no charge to the student.

Information about national testing programs, such as the "Test of English as a Foreign Language" (TOEFL) and "College Level Examination Program" (CLEP) is available from the Counseling Department of each campus.

Information Services

1. Orientation

A multi-phased orientation program is offered to new students to assist them in making a success of their college experience at NVCC. The orientation program for regular students begins weeks before registration when the student is asked to meet with a Counselor at the College for an interview. In this interview, the student's vocational and educational interests and goals are explored, the need for any additional tests or other information is determined, his application for admission to a specific curriculum is evaluated, and his first quarter's program of study is planned. As a part of this process, or after admission to a specific curriculum, the student is referred to a Faculty Advisor for assistance in planning his subsequent program of studies.

The second phase is an Orientation Day, which may be scheduled for all new students prior to registration, for group orientation to the College and a discussion of student services and activities. Some instructional divisions also provide orientation activities for students in selected curriculums.

A third phase is an orientation course (GENL 100) which is required of all regular students, preferably in their first quarter at the College. This course is led by the College Counselors. Through it students not only gain additional information and experiences to help them succeed at the College but are also given assistance in their educational, career, and personal development. A wide assortment of options are available to students in this course to provide for individual needs. Counselors serve as facilitators of individual student development so that the college experience is as meaningful and vital as possible for each student.

2. Career, Educational & Personal Information

Students have available in the Counseling Department and in the Learning Resources Center at each campus published materials which supply them with helpful information to make career, educational and personal plans. These include books listing colleges and professional schools and a large collection of current catalogs from many of them. Other books and pamphlets describe the entrance requirements, working conditions, and compensations of thousands of career and job opportunities. Some materials are designed to help students learn how to go about planning their educational and career futures.

3. Student Handbook

A *Student Handbook* is furnished each student to provide additional information of interest and importance. The *Handbook* describes the student activities and organizations and lists the responsibilities and rights of students at the College. It is important that each student become familiar with the contents of the *Student Handbook*. Additional statements on student activities and student conduct are included later in this section of the *Catalog*.

FACULTY ADVISING

Each student who has been admitted to a specific curriculum through an interview with a Counselor is referred in subsequent quarters to a Faculty Advisor to assist him in planning his program of study each quarter. In order to graduate a student must obtain certification by his Faculty Advisor that he has met all course requirements for his Degree, Certificate, or Diploma. Regular Students are encouraged to seek information and assistance from their Faculty Advisors not only in planning their program of study each quarter but also in their career and occupational planning.

Special Students may seek assistance from Faculty Advisors and Counselors for selecting courses during registration periods. When assistance is needed prior to registration, Special Students may seek

the help of Counselors. Special Students may become Regular Students after submitting all necessary credentials and having an interview with a Counselor. After admission to a curriculum they will then be referred to a Faculty Advisor for further academic advising.

PLACEMENT SERVICE

The College maintains placement services for students who wish to secure employment while attending college, during vacations, or after graduation.

The College cooperates with local businesses to assist students in securing part-time employment. An effort is made to place students in fields which relate to their college programs. Students who work more than 20 hours per week are advised to adjust their course loads accordingly. Placement information may be secured from the Placement Officer on each Campus.

STUDENT HEALTH SERVICES

A Student Health Service, staffed by two registered nurses, are centrally located on the Alexandria and Annandale campuses. The nurse is available for individual health counseling, and, for those in need, to refer problems to the appropriate community resources. The nurse on duty provides emergency care for any on-campus illness or injuries.

Two staff members from the Fairfax-Falls Church Mental Hygiene Clinic are available for consultations, by appointment, through the Health Services, to assist students, faculty and staff members with problem situations.

A student accident & health insurance is offered for a nominal fee.

STUDENT ACTIVITIES

The student activities program is designed to compliment the instructional program by providing a variety of meaningful, educational, cultural, and social experiences. The Office of the Coordinator of Student Activities assists students and faculty in the planning of extra-curricular events and in the development of student organizations. The Student Government provides support to special planning groups and interested students in the promotion of activities on campus. The activities and organizations are open to interested students, faculty and staff.

Activities

Art Exhibits / Fairs
 Campus Beautification
 Canoeing
 Car Rallies
 Coffee House
 Concerts
 Dances
 Environmental Action Projects
 Film Series
 Intramural Sports
 Fishing
 Formals
 Flying
 Student-Faculty Coffees
 Services to various community agencies
 Hikes
 Lecturers
 Mountain-climbing
 Picnics and Camping
 Speaker Series
 Spelunking
 Skiing
 Plays
 Promoting Human Rights
 Student Publications
 Campus Newspapers
 Campus Newsletters
 Student Literary Magazines

Organizations

Alexandria Campus Student Government
 Phi Delta
 Phi Theta Kappa (National Business Fraternity)
 Alpha Phi Omega (National Service Fraternity)
 Annandale Campus Student Government
 Anthropology Club
 Black Student Association
 Black Student Union
 Bridge Club
 Chemical Society
 College Republicans
 Drama Club
 Epsilon Kappa Psi (Service Fraternity)
 Gamma Sigma Sigma (National Service Sorority)
 Ham Radio Club
 Harlequin's Cloak Players
 HIRM Society
 International Club
 Karate Club
 Lambda Theta Chi (Service Sorority)
 Outing Club
 Phi Alpha Epsilon
 Phi Beta Lambda (National Business Fraternity)
 Ski Club
 Students for Environmental Action
 Student Nurses Association
 Veterans Club

OTHER STUDENT SERVICES.**SELECTIVE SERVICE**

If a student becomes eligible for the draft after registration he should notify the Office of Admissions and Records. Because of recent changes in laws relating to Selective Service operations, deferments, appeal procedures, etc., students should consult their local board and/or the Office of Admissions and Records promptly when a question concerning their status arises.

SNACK BAR AND CAFETERIA

Hot and cold food and beverages may be obtained from the snack bar throughout the day. The dispenser service is commercially operated and a portion of the profits goes into the student activities fund.

Cafeteria service is provided in the Food Service Building on Annandale Campus and on Level I of the Alexandria Campus. Hours of operation are posted at each location.

BOOKSTORE

Students may purchase text books and supplies in the College bookstore during posted hours. Many used textbooks may be sold back to the Bookstore at prescribed times each quarter. Check with the Bookstore managers for details.

PARKING

Large parking lots (B lots) have been reserved at Alexandria and Annandale campuses for the convenience of students. Students are not permitted to park in the faculty (A lots), visitor or reserved parking areas.

Parking and traffic regulations are printed in the student handbook and are available at the security office. Every student is requested to abide by them.

VEHICLE REGISTRATION FEE

All students, full or part-time, who wish to use Northern Virginia Community College student parking facilities on Alexandria and Annandale campuses must register their vehicles with the campus security office. The registration fee is \$5.00 per quarter. Vehicles can be registered during registration or during the first week of classes each term.

CHILD CARE CENTERS

Two non-profit Child Care Centers operated by the Northern Virginia Community College Faculty Wives' Club enable student-parents to attend college classes while at the same time provide a wholesome educational experience at nominal cost for their pre-school aged children from two through six. Under the supervision of a highly qualified staff, the Centers are housed in churches convenient to two of the campuses, the First Presbyterian Church of Annandale and the Culmore United Methodist Church near Bailey's Crossroads. Both Centers are open from 7:30 a.m. to 5:15 p.m. Monday through Friday beginning with the first day of Fall Quarter and continuing until the end of Spring final exam week. Students schedule their children at a Center on a quarterly basis. Hourly, daily and weekly fees are available. Fees are payable on a bi-monthly schedule. Adjustments in fees can be made on the basis of individual need through application at the Financial Aid Office of any NVCC campus. Pre-registration, including a registration fee, is required. Further information and registration packets may be obtained from the Receptionist of Counseling Department of any NVCC campus.

FINANCIAL AID SERVICES

It is the desire of the College that no qualified student be denied the privilege of attendance because of financial need. The Student Financial Aids Committee—composed of representatives of the administration, the student body and the financial aids and instructional staffs—is appointed by the President of the College for the purpose of providing information concerning aid programs, administering funds granted by donors, determining need, assessing applications and granting awards.

Students wishing to apply for financial aid may secure application blanks from the Financial Aids Officer located on each campus. Application should be made well in advance of the Quarter for which assistance is required.

SCHOLARSHIPS

Private citizens, business agencies, non-profit institutions, and associations have generously donated scholarship awards to the College. These scholarships are either presently in use by, or available for, Northern Virginia Community College students. Many are selected by the Scholarship and Financial Aids Committee, others by the donor. Some are continuing in nature while others are temporary. Interested students, therefore, should see the Financial Aids Officer on their campus for the current availability status, etc. of these scholarships.

Bailey's Cross Roads Lion Club

This \$275 scholarship is awarded on the basis of potential as an individual and a citizen, from that area, first year and second year student.

Bull Run Chapter of the Forty and Eight

A scholarship in the amount of \$250, awarded to a student of Nursing.

Burke Lions Club

A scholarship in the amount of \$250, awarded to a Fairfax County resident who has financial need and educational potential.

Charles P. and Judith A. Adams

This scholarship in the amount of \$60 per Quarter is given by the donor to a veteran who has fulfilled his military obligation and is a member in good standing of the NVCC Veterans Club.

Club Managers Association of America

The amount of this annual fund is \$400. Scholarships are awarded from this fund on the basis of need and potential as a student in the food service program.

Elizabeth G. Blinebury Memorial Award

This scholarship in the amount of \$30 per Quarter is given to a veteran who is a member of the NVCC Veterans Club.

Fairfax County Council of PTA's

Five scholarships of \$200 each. These awards are made by the donor.

Fairfax County Medical Society Women's Auxiliary

A \$440/year for a Nursing student, County resident, having completed two quarters.

Fairfax Education Association

This scholarship of \$175 is given to former students of Fairfax County high schools. Application must be made to Organization.

Falls Church Rotary Club

A \$760 scholarship for 7 quarters and a \$225 scholarship for one year. For Nursing students from Falls Church area.

Food Services Executives Association

Scholarships of varying amounts awarded to students in the food service program. The 1972-73 scholarships totaled \$250.

Ford Motor Company Scholarship Fund

This scholarship is offered only to dependents of Ford Motor Company dealership employees. Applicants must meet criteria established by Ford and be attending college in order to earn an associate degree in automotive technology.

Gretchen Gamble Scholarship Fund

A \$100 scholarship to a student in Dental Technology.

Hotel Association of Washington, D. C.

Two scholarships in the amount of \$300 each. The awards are made to students in the Hotel, Restaurant, and Institutional Management program.

IBM Corporation Scholarships

These awards are made to minority group students on the basis of financial need. \$2500 to be awarded for 1972-73.

Doctor Lloyd and Elizabeth Iddings Scholarship

Three \$125 scholarships to be awarded to students 30 years or older.

Junior Women's Club of Fairfax County

One scholarship in the amount of \$150 to be given to a student in nursing, mental health or health services field.

Kiwanis Foundation Scholarship of Arlington

\$300 scholarships for handicapped students from the Arlington area.

Ladies Auxiliary, Virginia Society of Professional Engineers

One scholarship of \$250, open to any pre-engineering or engineering technology student attending the College and is to be awarded on the basis of financial need, scholastic aptitude and achievement.

Marriott Foundation

Four scholarships of \$250 each annually, given to students in the food service curriculum.

Northern Virginia Board of Realtors

Two awards of \$250 each given to students whose residence is in Northern Virginia and who are majoring in the field of Real Estate.

Northern Virginia Builders Association Auxiliary

A \$280 scholarship for a woman, first year student, in Architectural Technology or Interior Design.

Northern Virginia Dental Assistants Society

Two \$100 scholarships given to students with financial need who are in the Dental Assisting program.

Phi Beta Lambda

This scholarship award of \$180 is given to a second-year student with 45 credits who is enrolled in the Business Science program, on the basis of scholastic achievement and financial need.

Restaurant Association of Metropolitan Washington

One scholarship in the amount of \$500 to be given on the basis of scholastic aptitude in the field of food service and residency in the Washington Metropolitan area.

Soroptimist Club of Fairfax County

One scholarship of \$250 to be given on the basis of potential as a citizen and financial need.

Theta Rho Lambda Chapter, Alpha Phi Alpha

The amount of this annual fund is \$500. Scholarships from the fund are awarded on the basis of need.

Women's Club of McLean

One scholarship in the amount of \$150 to be awarded on the basis of financial need, with preference given to McLean area resident.

AWARDS

Philip Arnow Award in Art

Annual purchase award of \$100 for student Art, Annandale Campus.

OTHER SCHOLARSHIPS

There are frequently other funds (e.g., recently donated scholarships) available in addition to those mentioned above. The Scholarship and Financial Aids Committee makes awards from these funds. All divisions and the Financial Aids Officers may nominate students for these and any other scholarships.

WORK-STUDY PROGRAM

Numerous jobs on campus are available each year under the Work-Study Program. Full-time students who are in financial need may qualify for participation in this program. Application forms are available in the Financial Aids Office on the student's home campus.

STUDENT LOANS

Eligible students at Northern Virginia Community College may take advantage of National Direct Student Loans, Nursing Student Loans, Law Enforcement Education Loans and State Assistance Authority Educational Loans. Students who need loans should contact the financial aids officer for information.

There is a thirty-day-no-interest small (\$50.00) loan fund available. This is available for students with immediate need as determined by the Financial Aids Officer. Applications may be secured from the Financial Aids Officer on the student's home campus.

EDUCATIONAL OPPORTUNITY GRANTS

These federally funded Scholarships are available for financially needy students. E.O.G. scholarships are given in conjunction with other types of financial aid. Applications are available in the Financial Aids Office on the student's home campus.

VOCATIONAL REHABILITATION

The College cooperates with the State Department of Vocational Rehabilitation in providing education and training for persons with handicaps.

VETERAN'S BENEFITS

The curricula of the College have been approved by the Veterans' Administration for the training of eligible veterans, war orphans, and widows under the appropriate Congressional action.

All veterans, widows, and the dependents of qualified veterans who may be eligible for educational benefits should contact the Veterans' Administration Regional Office. Initial enrollment applications for educational benefits are available from the Office of Admissions & Records but must be processed by the local V. A. office. All persons seeking V. A. educational benefits for any given quarter must register and complete the appropriate forms at a specified station during registration for classes. Receipt of benefits in full and on time is dependent on the individual student's attention to these requirements. Full time benefits

are available to students who register for and maintain enrollment in twelve or more credits in degree program courses. Questions regarding benefits should be initially directed to the Office of Admissions and Records.

SERVICEMEN'S OPPORTUNITY COLLEGE

Northern Virginia Community College has been identified as a Servicemen's Opportunity College (SOC) and is committed to the concept of providing educational assistance to active-duty servicemen in obtaining their educational goals. A SOC institution offers the following criteria for servicemen:

1. Liberal Entrance Requirement
2. The opportunity for servicemen to pursue educational program goals through courses offered on base, in the evenings, on weekends, and at other non-traditional time frames.
3. Opportunities for servicemen to complete courses through special means or optional non-traditional modes when education is interrupted by military obligations.
4. The aid of special academic assistance.
5. The offering of maximum credit for educational experiences obtained in the armed forces.
 - a. USAFI
 - b. CLEP
 - c. CASE
 (i.e. The major portion of associate degree requirements can be earned through the above non-traditional learning modes.)
6. Residency requirements adaptable to the mobility and special needs of servicemen.
7. The offering of a liberal policy for the transferring of credits from other institutions.
8. The provision of a local advisory council.

STATEMENT ON STUDENT RIGHTS AND RESPONSIBILITIES

This statement of rights and responsibilities is designed to clarify those rights which the student may expect to enjoy as a member of the student body of a community college, and the obligations which admission to the college places upon the student.

SECTION I—Responsibilities and Rights

- A. The submission of an application for admission to a community college represents a voluntary decision on the part of the prospective student to participate in the programs offered by the

institution pursuant to the policies, rules, and regulations of the community college and rules and regulations of the State Board for Community Colleges. College approval of that application, in turn, represents the extension of a privilege to join the college community and to remain a part of it so long as the student meets the required academic and behavior standards of the college system.

- B. Each individual student is guaranteed the privilege of exercising his rights without fear or prejudice. Such rights include the following:
1. Students are free to pursue their educational goals; appropriate opportunities for learning in the classroom and on the campus shall be provided by the college for curricula offered by the college.
 2. No disciplinary sanctions may be imposed upon any student without due process, except as hereinafter provided.
 3. Free inquiry, expressions, and assembly are guaranteed to all students provided their actions do not interfere with the rights of others or the effective operation of the institution.
 4. Academic evaluation of student performance shall be neither arbitrary nor capricious.
 5. The college and members of the college community have the right to expect safety, protection of property and the continuity of the educational process.

SECTION II—**Campus Organizations**

Organizations may be established, as hereinafter provided, within the college for any legal purpose. Affiliation with an extramural organization such as a national society shall not, in itself, disqualify the college branch or chapter from institution privileges.

- A. A group shall become an organization when formally recognized by the Federation of Student Governments and Administrative Council. The following requirements shall be met:
1. Submission of a list of officers and copies of the Constitution and By-laws to the Federation of Student Governments and Administrative Council. All changes and amendments shall be submitted for approval before they become effective.
 2. Where there is affiliation with an extramural organization

such as a national society, that organization's Constitution and By-Laws shall be filed with the student and faculty governing bodies. All amendments shall be submitted within a reasonable time before their effective date.

3. All outside funds shall be treated consistently with Section 4.45 of the *Policies, Procedures, and Regulations Operating Manual*.
 4. Recognition of an organization implies neither approval nor disapproval of the aims, objectives, and policies of the organization.
 5. Any organization which engages in illegal activities on or off campus may have sanctions imposed against it including admonition, probation, restitution and withdrawal of the college recognition.
 6. Membership in all college-related organizations shall be open to any member of the college community who is willing to subscribe to the stated aim and meet the stated obligations of the organization regardless of race, creed, national origin or sex.
- B. College facilities may be assigned to college organizations and community civic groups for regular business meetings, for social programs, and for programs open to the public, unless in the opinion of the president, the group or the planned program poses a serious threat to the continued well-being and safety of the institution. Reasonable conditions may be imposed to regulate the timeliness of requests, to determine the appropriateness of the space assigned, to regulate time and use, and to insure proper maintenance.
- C. An individual, group, or organization may use the college name only with the expressed authority of the college.

SECTION III—Publications

A student, group, or organization of the college may not distribute written material on campus without prior approval of the Dean of Students Services. Approval shall be granted unless in the opinion of the Dean of Students Services, the material is libelous or obscene. Editorial freedom of the student press entails a corollary obligation under the canons of responsible journalism. All student communications shall explicitly state on the editorial page that the opinions expressed are not necessarily those of the college or its student body.

SECTION IV—Student Conduct

Generally, college punitive action shall be limited to conduct which adversely affects the college community's pursuit of its educational objectives. The following misconduct is subject to disciplinary action:

- A. All forms of dishonesty including cheating, plagiarism, knowingly furnishing false information to the college, and forgery, alteration or use of college documents or instruments of identification with intent to defraud.
- B. Disruption or obstruction of teaching, research, administration, disciplinary proceedings, or other college activities.
- C. Physical and/or psychological abuse or the threat of such abuse of any person on college premises or at college activities. This includes hazing of any sort. Hazing is defined as, "To initiate or discipline (fellow students) by means of horseplay, practical jokes, and tricks, often in the nature of humiliating or painful ordeals."
- D. Participating in or inciting a riot or an unauthorized or disorderly assembly.
- E. Seizing, holding, commandeering, or damaging any property or facilities of the college, or threatening to do so, or refusing to depart from any property or facilities of the college upon direction by college officials or other person authorized by the president.
- F. Use of alcoholic beverages including the purchase, consumption, possession, or sale of such items except where specifically authorized within the regulations of the college.
- G. Gambling, holding a raffle or lottery on the campus or at any college function.
- H. Possessing, using, selling, or distributing any types of drugs for illegal purposes.
- I. Possessing on college property or at any college activity any dangerous chemical or explosive elements or component parts thereof not used by him for lawful college studies, rifle, shotgun, pistol, revolver or other firearm or weapon without an authorization of the president of the college.
- J. Physically detaining or restraining any other person or removing

such person from any place where he is authorized to remain, or in any way obstructing the free movement of persons or vehicles on college premises or at college activities.

- K. Littering, defacing, destroying, or damaging property of the college or property under its jurisdiction or removing or using such property without authorization.
- L. Willfully encouraging others to commit any of the acts which have been herein prohibited.
- M. Violating any local, state or federal laws.
- N. Violating any rule or regulation not contained within the official college publications but announced as administrative edict by a college official or other person authorized by the president.
- O. Violation of campus or college parking regulations.

SECTION V—Sanctions

The following sanctions may be imposed:

- A. *Admonition*: An oral or written statement to a student that he is violating or has violated college rules and may be subject to more severe disciplinary action.
- B. *Disciplinary Probation*: Exclusion from the privilege of participation in extracurricular activities of the college, including the holding of any student office, for a period of time not exceeding one school year.
- C. *Restitution*: Required reimbursement for damage to or misappropriation of property. This may take the form of appropriate services or other compensation.
- D. *Suspension*: Exclusion from attending the college as a student for a definite period of time not to exceed one year.
- E. *Dismissal*: Termination of student status for an indefinite period. The conditions of readmission, if any, will be stated in the order of dismissal.
- F. *Interim Suspension*: If in the opinion of the president, the presence of a student pending a hearing poses a serious threat, the president may suspend him immediately. In such a situation, a hearing shall be held at the earliest reasonable time.

SECTION VI—Disciplinary Procedures

The campus Dean of Student Services is responsible for disciplinary procedures.

An admonition is an action which may be administered by the campus Dean of Student Services without further approval. All cases involving disciplinary probation, restitution, suspension, or dismissal of students will be referred by the Dean of Student Services to the Committee of Review or other appropriate body, unless the student has waived his right to a hearing.

In order to provide an orderly procedure for handling disciplinary cases in accordance with due process and justice, the following elements will be observed:

- A. The college will establish stated rules and regulations.
- B. Written notice will be given to a student charged with violations against such regulations.
- C. A hearing or oral proceeding before an administrative adjudicating body will be provided, when requested by the student. The student will be permitted a reasonable length of time to prepare his defense.
- D. The student has the right if desired, to have present counsel, other advisors, parents and relatives.
- E. Any such persons may advise the student but may not speak for him, may call witnesses in his behalf, and the student may confront all witnesses against him.
- F. A record of the hearing will be kept by the college. Copies will be made available to the student at his expense.
- G. Prompt written decisions will be given following such hearings.
- H. The offender shall be advised of appeal procedures.
- I. A decision may be appealed to the president or his designee within ten (10) days following receipt of the decision. All appeals must be made in writing. Any academic or administrative official, faculty member, or student may file charges with the Dean of Student Services against any student for violations of college regulations. An appropriate committee may conduct a review of the case and make a final determination that proper procedures were followed.

SECTION VII—Administrative Responsibility for the College

The president of each community college is responsible for the entire administration of the college, subject to the control of the Chancellor of the Virginia Community College System, and the State Board for Community Colleges. It is his duty to administer the laws of the Commonwealth of Virginia which may be applicable on the campus(es) as well as the policies, rules, and regulations of the State Board for Community Colleges, the Chancellor of the Virginia Community College System and the College Board. Any authority or responsibility or duty granted to or imposed upon the college president may be delegated to another person or persons on the faculty or staff of the college of which he is president. The president or his delegate may take whatever legal or institutional action is necessary to effectuate this authority.

College Curricula

Accounting—A.A.S. Degree
 Architectural Technology—A.A.S. Degree
 Art (Art Education and Fine Arts)—A.A. Degree
 Automotive Diagnosis and Tune-up—Certificate
 Automotive Machinist—Certificate
 Automotive Mechanics—Diploma
 Automotive Parts Merchandising—Certificate
 Automotive Technology (Diagnostician)—A.A.S. Degree
 Aviation Technology (Air Traffic Control and Aviation Management)—
 A.A.S. Degree
 Broadcast Engineering Technology—A.A.S. Degree
 Building Construction—Certificate
 Business Administration—A.S. Degree
 Business Management—A.A.S. Degree
 Civil Engineering Technology—A.A.S. Degree
 Commercial Art—A.A.S. Degree
 Corrections (Science)—A.A.S. Degree
 Corrections—Certificate
 Data Processing Technology (Computer Programming)—A.A.S. De-
 gree
 Dental Assisting—Certificate
 Dental Laboratory Technology—A.A.S. Degree
 Drafting and Design Technology—A.A.S. Degree
 Early Childhood Development—Certificate
 Education—A.S. Degree
 Educational Assistant—Certificate
 Educational Associate—A.A.S. Degree
 Electronics Technology—A.A.S. Degree
 Engineering—A.S. Degree
 Engineering Drafting—Certificate

Fire Science (Fire Administration, Investigation, and Management)—
 A.A.S. Degree
 Fire Science (Fire Administration, Investigation, and Management)—
 Certificate
 Hotel, Restaurant, and Institutional Management—A.A.S. Degree
 Liberal Arts—A.A. Degree
 Mechanical Engineering Technology—A.A.S. Degree
 Medical Laboratory Technology—A.A.S. Degree
 Medical Records Technology—A.A.S. Degree
 Merchandising Management (Fashion, Retail, and Supermarket Mer-
 chandising)—A.A.S. Degree
 Music—A.A. Degree
 Nursing—A.A.S. Degree
 Occupational Safety and Health Technology—A.A.S. Degree
 Physical Therapist Assistant—A.A.S. Degree
 Police Science—A.A.S. Degree
 Police Science—Certificate
 Real Estate Management—A.A.S. Degree
 Recreation and Parks Leadership—A.A.S. Degree
 Recreational Vehicle-Motorcycle Maintenance—Certificate
 Respiratory Therapy—A.A.S. Degree
 Science—A.S. Degree
 Science Technician Aide—Certificate
 Science Technology—A.A.S. Degree
 Secretarial Science—A.A.S. Degree
 Technical Illustration—Certificate

**MINIMUM GENERAL EDUCATION AND SPECIAL
 REQUIREMENTS FOR ASSOCIATE DEGREES**
Associate in Applied Science (A.A.S.)
Associate in Arts (A.A.)
Associate in Science (A.S.)

General Education Requirements	Number of Credits (Quarter Hours)		
	A.A.S.	A.A.a	A.S.a
<i>Humanities</i>			
English Composition	0	9	9
Communication Skills	6-9	0	0
Literature (English, American, or World)	—-9	6-9	0-3
English or Speech	0-3	0-3	0-3
Art, Drama, Music, Humanities and/or Philosophy	—	0-6	0-3
Foreign Language	—	12-24 ^b	—
<i>Social Sciences</i>			
History (American or Western Civilization)	—	9	3-9
Economics	0-3	0-9	0-9
Government	0-3	0-9	0-9
Psychology or Human Relations	0-3	0-9	0-9
Social Science (101-102-103)	0-9	—	—
Sociology	—	0-9	0-9

<i>Natural Sciences and mathematics</i>	A.A.S.	A.A.a	A.S.a
Natural Sciences (Laboratory) (Biology, Chemistry, Geology, Physics)	—	12-15	12-24
Mathematics	—	9 _e	9 _e

Special Requirements

Physical Education	3-6 _f	3-6 _f	3-6 _f
Orientation	1	1	1
Electives and Other Major Field Requirements	<u>75_d</u>	<u>3-21_a</u>	<u>48</u>
Minimum Total Number of Credits for Degree	97	97	97

a Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and further to consult with the Counseling Services of the Community College in planning his program and selecting his electives.

b Students who have previously studied a foreign language and who wish to continue to study the same language must make arrangements with the Foreign Language program of the Humanities Division to take a placement test at least 3 weeks before registration. Students who have successfully completed (within the last 2 years) the second level of a foreign language should not enroll in 101, 102, 103 of the same language. They should take 106 or 201 depending on the results of their placement test.

c In addition to the history requirements, the student shall complete a total of nine quarter-hours credit in the social sciences which may include economics, government, psychology and/or sociology.

d The Associate in Applied Science degree curriculums should be organized approximately as follows:

Specialized courses in major field	50%
Supporting technical and theory courses in related fields	25%
General education courses	25%

e Mathematics courses should be selected from the following sequences: Math 161-162-163, Math 181-182-183, Math 191-192-193, or Math 141-142-143.

f Students receiving an Associate degree in any of the recognized Degree curricula at Northern Virginia Community College shall successfully complete three courses, three credit hours of physical education. Within the three course requirement, one of the credits must be taken in the Fundamentals of Physical Activity course. This course, PHED 100, should be the first physical education course taken and is scheduled by major curriculum for one of the terms during the first year. The remaining 2 credits are obtained from any two courses selected by the student. Students enrolled in the transfer programs are urged to also complete the physical education requirements of the institution to which transfer is contemplated.

UNIVERSITY PARALLEL-COLLEGE TRANSFER CURRICULA

The student in this program pursues one of seven curricula:

1. One which leads to the Associate in Arts (A.A.) degree via a broad, general preparation for those contemplating a major field of study in the liberal arts or social science, or those whose major field of study has not yet been determined; or one which leads to the A.A. degree through the study of art or music. The art and music curricula are designed to facilitate transfer to university or professional degree programs in these specialized areas.

2. One of four curricula which lead to the Associate in Science degree:

Business Administration

That designated "Science," for those contemplating a major

field of study in the natural or physical sciences or mathematics (e.g., pre-medical, pre-dental, biology, chemistry, mathematics, physics); or

That designated "Engineering," for those intending to transfer to a four-year engineering school.

That designated "Education" for those intending to transfer to a four-year college or university for a degree in Teacher Education.

The student is urged to consult with Counseling Services of the College in selecting the curriculum which he is to follow; and is advised that substitution of courses within a curriculum, or change from one curriculum to another, may be accomplished only with the approval of Counseling Services. Students are also urged to acquaint themselves with the requirements of the department of their intended major field in the college or university to which transfer is contemplated; and to be guided thereby in choosing electives.

DEVELOPMENTAL STUDIES PROGRAM

Developmental programs are offered to help prepare individuals for admission to the occupational-technical program and to the university parallel-college transfer program in the College. These programs are designed to help develop the basic skills and understandings necessary to succeed in other programs of the College.

The developmental program provides an opportunity to obtain needed knowledge and skills for an individual who is not fully prepared for entry into an Associate Degree curriculum because he has previously not had an opportunity to complete an appropriate educational course or program or because he has low achievement in his previous educational programs. A student is placed in the developmental program after a close analysis of his high school transcript, test scores, and other data available on his achievement level.

Through the use of specialized teaching methods and modern equipment with an extensive concentration upon laboratory experiences, the student may, through concentrated effort in the areas of his weakness, progress at his own rate. The student will be tested frequently for the purpose of finding the progress he is making.

The student may use either of two approaches to improve his knowledge and skills in the developmental program. In one approach, he may enroll in the regular developmental courses scheduled each quarter at the College. In the other approach the student may utilize the materials and equipment in the Learning Laboratory for individual study of appropriate units of course materials in the areas of his deficiencies. Personnel in the Learning Laboratory or other faculty members of the College are available to provide individualized assistance for the student. Progressing at his own rate, the student may

complete the unit of study at any time that he demonstrates sufficient mastery of the subject to meet the minimum requirements for the unit or course.

A student in the developmental studies program may be taking all of his work at the developmental level or he may be taking some Associate Degree level courses for which he is qualified in addition to one or more developmental courses. If the student takes any Associate Degree courses, the credit earned in those courses may be transferred to an Associate Degree curriculum when the student is admitted to the Associate Degree curriculum and if the courses are applicable to the curriculum.

The student is urged to consult with the Counseling Services of the College in planning his program and selecting his courses.

EXAMPLE DEVELOPMENTAL STUDIES PROGRAM

Course Number		Course Title	Course Credits
FIRST QUARTER			
ENGL	01	Verbal Studies Lab	5
MATH	01	Developmental Mathematics	5
ENGL	08	Reading Improvement	5
GENL	100	Orientation	1
		Total	16
SECOND QUARTER			
ENGL	01	Verbal Studies Lab	5
MATH	01	Developmental Math	5
PSYC	28	Survey of Human Relations	3
		Total	13
THIRD QUARTER			
ENGL	01	Verbal Studies Lab	5
MATH	01	Developmental Math	5
NASC	100	Survey of Science	4
		Total	14

CONTINUING ADULT EDUCATION AND COMMUNITY SERVICE PROGRAMS

In order to fulfill the ever-increasing educational needs of the community, the Northern Virginia Community College offers a well-planned diversified program which includes the following: (1) An opportunity to pursue degree programs, diploma programs, certificate programs and college credit courses six days a week during the hours of 7:30 A.M. until 11:00 P.M.; (2) Classes, forums, lectures, exhibits, short courses,

art festivals and music festivals to promote cultural affairs of the community; (3) Various community development programs and seminars which focus attention on social issues; (4) An offering of non-catalogued special courses or programs to the community's several industries, businesses, or professions, directed and taught at the College or at the client's site by the faculty and staff of the College; (5) Special services such as use of College facilities, tours and visits, and others as they are needed.

CONTINUING EDUCATION UNIT

Effective July 1, 1973, Continuing Education Units (CEU) will be awarded for certain designated community service courses or program offerings meeting the following standards:

- a. The non-credit activity is planned in response to an assessment of educational needs for a specific target population.
- b. There is a statement of objectives and rationale.
- c. Content is selected and is organized in a sequential manner.
- d. There is evidence of pre-planning.
- e. 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.
- f. There is provision for registration for individual participants.
- g. Evaluation procedures are utilized, and criteria are established for awarding Continuing Education Units to individual students prior to the beginning of the activity.

One Continuing Education Unit represents ten contact hours of participation in an organized educational experience under responsible sponsorship, capable direction, and qualified instructor. (A decimal fraction of a unit may be awarded for an offering of shorter duration.)

COOPERATIVE EDUCATION PROGRAM

Cooperative Education is an academic program of Northern Virginia Community College to provide the student actual, valuable, and practical work experience, carrying academic credit in a supervised, paid situation as a supplement to the formal classroom experience. Its main objective is to bridge the gap between theory and practice. Any curriculum is potentially suitable for cooperative education even though some have more extensive programs than others. It is generally up to the individual student to determine if cooperative education will enhance his particular academic program with the cooperation and advisement of the Cooperative Education Coordinator and his faculty advisor. The employer and the student who are committed to this philosophy will

not only meet the criteria, but will provide a situation where the student will grow on the job and where the employer will benefit from an employee who is receiving valuable training and experience and will be a credit to his firm.

The qualifications for participation in the Cooperative Education program are:

- a. A student should have a clearly stated set of career goals related to the potential work experience and must be enrolled in the curriculum under which the work experience falls.
- b. A student must have a 2.0 grade point average in the quarter preceding entrance to the cooperative education program.
- c. A student must have completed a minimum of 30 quarter hours of course work in his curriculum before entering the program.

For further information, contact the Cooperative Education office.

SPECIAL TRAINING PROGRAMS

Northern Virginia Community College works closely with the Special Training Division of the Virginia Department of Community Colleges in setting up training programs for industries and businesses that are expanding their facilities or are locating in Virginia for the first time.

Under these programs Virginians are trained in the basic skills required by a wide variety of job opportunities.

A few of the skills that have been taught by the Special Training Division include sewing operations, welding, electronics, motor winding, furniture construction, electronic assembly, shoe manufacturing, telephone assembly, paper manufacturing, candy making, printing, metal forming, tire manufacturing, supervisory development and machine operation.

Space, where needed, and qualified instructors are provided at State expense.

Further information may be obtained from the Director of Continuing Education and Community Service Programs or the Special Training Division, Virginia Department of Community Colleges, Richmond, Virginia 23219.

STATE AND REGIONAL SPECIALIZED PROGRAMS

In the Virginia Community College System, certain highly-specialized curricula, though designed to serve all Virginia residents, are limited in offering to selected locations. These curricula generally reflect geographic, demographic, or economic considerations which preclude extensive offering Statewide, and therefore usually are approved for not more than three community colleges to meet State or Regional requirements. As changing circumstances warrant and additional

State and Regional needs are determined, specialized curricula may be located in other community college regions. Accordingly, the following State and Regional Specialized Programs are identified for the Virginia Community College System.

<i>Program</i>	<i>College</i>
Agricultural & Natural Resources Technology Majors: Animal Science Forestry	Blue Ridge Dabney S. Lancaster
Arts & Design Technology Majors: Crafts Production	Mountain Empire
Business Technology Majors: Aviation Administration Hotel-Restaurant-Institutional Management	Northern Virginia Northern Virginia Tidewater
Engineering/Industrial Technology Majors: Broadcast Engineering Chemical Furniture Production Instrumentation Marine Science Mining Textile Production	Northern Virginia John Tyler Patrick Henry New River Thomas Nelson Southwest Virginia Danville
Health Technology Majors: Dental Laboratory Medical Records Physical Therapy Mortuary Science Radiology Respiratory Therapy	J. Sargeant Reynolds Northern Virginia Central Virginia J. Sargeant Reynolds Northern Virginia Northern Virginia Virginia Western John Tyler Central Virginia J. Sargeant Reynolds Virginia Western Northern Virginia Piedmont Virginia
Public Service Technology Majors: Air Traffic Control Occupational Safety & Health Radio & Television Production	Northern Virginia Northern Virginia Thomas Nelson Virginia Western



Architecture, Engineering Division, Annandale Campus

CURRICULA OF STUDY

● OCCUPATIONAL AND TECHNICAL CURRICULA

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

Arts & Design Technology

Majors in:

Commercial Art

Business Technology

Majors in:

Accounting

Aviation Administration

Data Processing

Hotel, Restaurant, Institutional Management

(Areas of Specialization)

Food Service

Hotel-Motel

Institutional

Management

Merchandising

(Areas of Specialization)

Fashion

Retail

Supermarket

Real Estate

Secretarial Science

(Areas of Specialization)

Executive

Legal

Engineering Technology

Majors in:

Architecture

Automotive Diagnostician

Broadcasting

Civil

Drafting and Design

Electronics

Mechanical

Science

Health Technology

Majors in:

Dental Laboratory

Medical Laboratory

Medical Records

Nursing

Physical Therapy
Respiratory Therapy

Public Service Technology

Majors in:

Air Traffic Control
Corrections Science
Educational Services
(Area of Specialization)
Educational Associate
Fire Science
(Areas of Specialization)
Investigation
Administration
Management
Occupational Safety & Health
Police Science
Recreation and Parks

Diploma

Automotive Technology (Automotive Mechanics)

Certificate

Automotive Diagnosis and Tune-up
Automotive Machinist
Automotive Parts Merchandising
Building Construction
Corrections
Dental Assisting
Early Childhood Development
Educational Assistant
Engineering Drafting
Fire Science
Hotel, Restaurant, and Institutional Management
Police Science
Recreational Vehicle-Motorcycle Maintenance
Science Technician Aide
Technical Illustration

● **UNIVERSITY PARALLEL-COLLEGE TRANSFER CURRICULA**

Associate in Arts Degree (A.A.)

Majors in:

Art
Art Education
Liberal Arts
Music

Associate in Science Degree (A.S.)

Majors in:

Business Administration
Education
Engineering
Science

ACCOUNTING

(Alexandria and Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: With the rapid development of business and industry in Virginia, there is a great demand for qualified personnel to assist business management in this economic growth. The Associate in Applied Science Degree curriculum in Accounting is designed primarily for persons who seek full-time employment in the accounting field immediately upon completion of the curriculum. Both persons who are seeking their first employment in an accounting position and those presently in accounting who are seeking a promotion may benefit from this curriculum.

Occupational Objectives:

Accounting Trainee
Accounting Technician
Junior Accountant
Accountant

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Applied Science degree curriculum in Accounting requires proficiency in high school English and mathematics. Students who are not proficient in English and mathematics will be required to correct their deficiencies in the Developmental Program.

Curriculum Requirements: The first three quarters (first year) of the Associate in Applied Science Degree curriculum in Accounting are similar to other curriculums in business. In the second year each student will pursue his specialty in Accounting. The curriculum will include technical courses in accounting, courses in related areas, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in

accounting. Each student is urged to consult with the Counseling Services and his faculty advisor in planning his program and selecting his electives. Courses within this curriculum may be applied to a four-year program at the discretion of the admitting institution. Upon satisfactory completion of the six-quarter curriculum listed, the graduate will be awarded the Associate in Applied Degree in Accounting.

Cooperative Education: All students are encouraged to investigate the opportunities in Cooperative Education. In addition to valuable work experience, it is possible to earn up to 15 hours credit towards graduation. Cooperative Education provides planned and supervised learning situations in on-the-job locations which enable the student to become better acquainted with both the theory and practice of his vocational choice. Inquiries should be directed to the Campus Office of Cooperative Education or the student's advisor.

ACCOUNTING

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ACCT 111	Accounting I*	4
BUAD 100	Introduction to Business	3
MATH 151	or BUAD 101 Business Mathematics I	3
ENGL 101	Communication Skills I	3
ECON 160	American Economics**	3
GENL 100	Orientation	1
	Total	17
SECOND QUARTER		
ACCT 112	Accounting II*	4
BUAD 164	Principles of Business Management I	3
MATH 152	or BUAD 102 Business Mathematics II	3
ENGL 102	Communication Skills II	3
DAPR 106	Principles of Data Processing	3
PHED 100	Fundamentals of Physical Activity	1
	Total	17
THIRD QUARTER		
ACCT 113	Accounting III*	4
BUAD 165	Principles of Business Management II	3
MATH 153	or BUAD 103 Business Mathematics III	3
SPDR 136	Speech Communications or ENGL 180 Business English	3
DAPR 147	Computer Programming (COBOL) or Business Elective	3
	Total	16

Course Number	Course Title	Course Credits
FOURTH QUARTER		
ACCT 221	Intermediate Accounting I	4
BUAD 241	Business Law I	3
BUAD 254	Applied Business Statistics I	3
BUAD 246	Business Finance (or Business Elective)	3
PSYC 110	Principles of Applied Psychology**	3
PHED	Physical Education Elective	1
	Total	17
FIFTH QUARTER		
ACCT 222	Intermediate Accounting II	4
ACCT 234	Cost Accounting I	3
ACCT 244	Business Taxes I	3
BUAD 242	Business Law II	3
GOVT 180	American Constitutional Government**	3
	Total	16
SIXTH QUARTER		
ACCT 223	Intermediate Accounting III	4
ACCT 229	Auditing (or Business elective)	3
ACCT 245	Business Taxes II	3
ACCT 298	Seminar and Project	3
PHED	Physical Education Elective	1
	Total	14
	Total Minimum Credits for the Accounting Degree	97

Note: Credits earned in an approved Cooperative Education Program may be substituted for up to 15 hours of course work. (No more than 5 hours per quarter) Specific substitutions must be approved by the faculty advisor.

* ACCT 211-212-213 may be substituted with approval of the Division. Three additional hours will be required to meet adequate requirements if ACCT 211-212-213 is selected.

** SOSOC 101-102-103 may be substituted for GOVT 180, PSYC 110, and ECON 160. SOSOC 101-102-103 need not be taken sequentially.

ARCHITECTURAL TECHNOLOGY

(Alexandria and Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: With rapid growth of the building and construction industries in Virginia, and the steady demand for qualified technicians, there is a need for trained personnel to meet these requirements. Upon successful completion of the program, the student is able to take full employment immediately or to transfer to universities which offer a baccalaureate degree in Architectural Technology. In this case, the

student is urged to acquaint himself with the requirements of the university to which he expects to transfer.

Occupational Objectives:

- Building designer and Draftsman
- Construction Assistant and Inspector
- Architectural Aide
- Architectural Draftsman
- Architectural Office Assistant
- Field Assistant
- Construction Materials Sales Representative

Admission Requirements: Admission to the program, in addition to the general requirements for admission to the College, requires a high school diploma or its equivalent with a minimum of a grade C average in each of the following areas:

- 4 units of English
- 2 units of Math—(3 units recommended—2 units of Algebra plus 1 unit of Geometry or Trigonometry)
- 1 unit of Laboratory science
- 1 unit of Social Studies or equivalent

Students who do not meet these requirements may be permitted to correct their deficiencies in the Developmental Studies Program or in the Engineering Drafting Certificate Program before entering the Engineering Technology curricula.

Curriculum Requirements: The two-year curriculum in Architectural Technology combines instruction in the many areas required for competence as a draftsman and as an assistant to an architect. Approximately one-half of the curriculum will include courses in architectural technology with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in architectural technology. Students are advised to consult with their faculty advisor and Counseling Services in planning his program and selecting electives. Upon satisfactory completion of the six-quarter curriculum, the graduate will be awarded the Associate in Applied Science Degree in Architectural Technology.

ARCHITECTURAL TECHNOLOGY

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
ENGL 101	Communication Skills I*	3
MATH 121	Engineering Technical Mathematics I	5
	Social Science Elective**	3
ARCH 100	Introduction to Architecture	2
ARCH 111	Architectural Drafting I	3
	Total	17
SECOND QUARTER		
ENGL 102	Communication Skills II*	3
MATH 122	Engineering Technical Mathematics II	5
	Social Science Elective**	3
ARCH 141	Mat. & Methods of Construction	3
ARCH 112	Architectural Drafting II	3
	Total	17
THIRD QUARTER		
	English or speech*	
	Social Science Elective**	3
ARCH 142	Mat. & Methods of Construction II	3
ARCH 113	Architectural Drafting III	3
ENGR 151	Mechanics I (Statics)	4
PHED 100	Fundamentals of Physical Activity	3
	Total	17
FOURTH QUARTER		
PHYS	Intro. Physics	4
ENGR 152	Mechanics II (Strength of Materials)	3
ARCH 237	Building Mech. Equipment	3
ARCH 211	Architectural Drafting IV	3
ARCH 210	Site Planning	3
ENGR 154	Mechanics Laboratory	1
	Total	17
FIFTH QUARTER		
PHED	Physical Education Elective	1
PHYS	Intro. Physics	4
ARCH 236	Building Electric Equipment	3
ARCH 277	Building Codes and Contract Documents	3
ARCH 212	Architectural Drafting V	3
	Technical elective***	3
	Total	17

Course Number	Course Title	Course Credits
SIXTH QUARTER		
PHED	Physical Education Elective	1
ARCH 276	Construction Estimating	3
ARCH 279	Critical Path Method Program	3
ARCH 213	Architectural Drafting VI	3
ARCH 298	Seminar & Project	2
	Math 123 or Technical elective***	3-5
	Total	15-17
	Total Minimum Credits for Architectural Technology Degree	100

* English 111, 112, 113 may be substituted for Engl 101, 102 and third quarter English or Speech.

** Social Science elective may be chosen from the following fields: economics, psychology, government or social science.

*** Technical electives must be chosen in the field of specialization.

ART

(Alexandria and Annandale Campus)

Options:

Art Education

Fine Arts

Degree: Associate in Arts

Length: Six quarters (two years)

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

Admission Requirements: In addition to the admission requirements established for the College, entry into the Art program requires a satisfactory aptitude in visual art, and applicants may be required to submit a portfolio for placement. Students with deficiencies in English will require Developmental Studies.

Curriculum Requirements: The major portion of the Art curriculum will be concerned with specialized art courses and the development of individual performance in several art forms such as drawing, painting and sculpture. Related areas of study include the history of art, and general education as pertinent to the pursuit of a fine arts program. Options and electives are noted for those wishing to pursue a program leading to certification in Art Education. In order to prepare for junior class standing at a four-year college or university, the student usually

must complete a program at the community college which is comparable in length and course content to the first two years of the program at the four-year institution. Students are urged to acquaint themselves with the requirements of the major department in the institution to which transfer is contemplated and also to consult with the counseling officer of the community college in planning their program and selecting electives. Upon satisfactory completion of the six-quarter program, the graduate will be awarded the Associate in Arts Degree in Art with specialization either in Art Education or Fine Arts.

ART

Associate in Arts Degree

Options:

Art Education

Fine Arts

Course Number	Course Title	Course Credits
FIRST YEAR CORE CURRICULUM		
FIRST QUARTER		
ARTS 111	History & Appre. of Art I	3
ARTS 124	Drawing I	4
ARTS 154	Design I	3
ENGL 111	English Composition I	3
GENL 100	Orientation	1
	Social Science Elective*	3
	Total	17
SECOND QUARTER		
ARTS 112	History & Appre. of Art II	3
ARTS 125	Drawing II	4
ARTS 155	Design II	3
ENGL 112	English Composition II	3
PHED 100	Fundamentals of Physical Activity	1
	Social Science Elective*	3
	Total	17
THIRD QUARTER		
ARTS 113	History & Appre. of Art III	3
ARTS 126	Drawing III	4
ARTS 156	Design III	3
ENGL 113	English Composition III	3
PHED	Physical Education Elective	1
	Social Science Elective*	3
	Total	17

**ART EDUCATION
SECOND YEAR OPTION**

Course Number	Course Title	Course Credits
ARTS 251	Advanced Design I	3
ARTS 201 211 278	Painting/Sculpture/Printmaking**	4
ENGL	Literature	5
	Natural Science Elective*	4
	Total	16

FIFTH QUARTER

ARTS 252	Advanced Design II	3
ARTS 202 212 279	Painting/Sculpture/Printmaking**	4
	Natural Science Elective*	4
	Elective*	4
	Total	15

SIXTH QUARTER

ARTS 253	Advanced Design III	3
ARTS 203 213 280	Painting/Sculpture/Printmaking**	4
	Natural Science Elective*	4
	Elective*	3
PHED	Physical Education Elective*	1
	Total	15
	Total Credits for Art Education	97

**FINE ARTS
SECOND YEAR OPTION**

FOURTH QUARTER

ARTS 227	Advanced Drawing I	3
ARTS 251	Advanced Design I	3
ARTS 201 211 278	Painting/Sculpture/Printmaking**	4
ENGL	Literature	5
	Total	15

Course Number	Course Title	Course Credits
FIFTH QUARTER		
ARTS 228	Advanced Drawing II	3
ARTS 252	Advanced Design II	3
ARTS 202	Painting/Sculpture/Printmaking**	4
212		
279		
	Electives*	5
PHED	Physical Education Elective	1
	Total	16
SIXTH QUARTER		
ARTS 229	Advanced Drawing III	3
ARTS 253	Advanced Design III	3
ARTS 203	Painting/Sculpture/Printmaking**	4
213		
280		
	Electives*	5
	Total	15
	Total Credits for Fine Arts	97

* Suggest checking with transfer school to see what is required and selecting all electives accordingly.

** Student should choose Painting or Sculpture or Printmaking and take the 3 quarter sequence in that subject.

AUTOMOTIVE DIAGNOSIS AND TUNE-UP

(Alexandria Campus)

Certificate: Automotive Diagnosis and Tune-up

Length: Three quarters (one year)

Purpose: This curriculum is designed to satisfy a part of the great demand for qualified automotive, diagnostic, and tune-up specialists in the local area. Rapid growth in the number of automobiles in the area and ever increasing complex development in automotive vehicles account for a continued critical shortage of service and repair technicians.

The Automotive Diagnosis and Tune-Up Certificate Program is designed to provide a thorough knowledge of the mechanics of the internal combustion engine and supporting systems used in modern automobiles, to develop an individual's mechanical skills to a point where he has attained tune-up technician status and to develop his interest in an automotive industry career. The curriculum is designed primarily for persons who seek full-time employment in the automotive tune-up

and diagnostic field immediately upon completion of the one-year program. The course will develop the students' skills in the use of the most modern trouble shooting, diagnosing and tune-up test instruments and repair tools. For one to advance successfully in this program of study a thorough understanding of the automobile, its basic operating principles, minor repair techniques and repair skills is required.

Admission Requirements: In addition to the admission requirements established for the College (as indicated in the College Catalog), a minimum of a one-year automotive shop program in high school or the equivalent is usually required for entry into the program. Students may acquire equivalent automotive shop experience by taking AUTO 017.

Curriculum Requirements: The Automotive Diagnostic and Tune-Up Certificate Program will concentrate on practical applications needed to succeed in immediate employment as automotive diagnosticians and tune-up technicians. In addition to the highly technical courses, the curriculum includes basic courses in social studies which will prepare the student to meet the obligations of the citizen in our democratic society.

AUTOMOTIVE DIAGNOSIS AND TUNE-UP Certificate Program

Course Number	Course Title	Course Credits
FIRST QUARTER		
AUTO 284	Automotive Service Procedures and Tune-Up I	3
AUTO 121	Auto Fuel Systems I	4
ENGL 101	Communication Skills I	3
MATH 11	Elements of Math I	3
GENL 100	Orientation	1
AUTO 100	Automotive Shop Practices & Safety	3
	Total	17
SECOND QUARTER		
AUTO 285	Automotive Service Procedures and Tune-Up II	3
AUTO 122	Auto Fuel Systems II	4
ENGL 102	Communication Skills II	3
MATH 12	Elements of Math II	3
PSYC 110	Principles of Applied Psychology	3
	Total	16

Course Number	Course Title	Course Credits
THIRD QUARTER		
AUTO 267	Automotive Suspension and Braking Systems	4
AUTO 198	Seminar and Project	2
	English or Speech	3
MATH 13	Elements of Math III	3
DRFT 144	Auto Drawing Interpretation (or DRFT 171)	2
AUTO 268	Automotive Alignment	2
	Total	16
	Total minimum credits for a Certificate in Automotive Diagnosis and Tune-Up	49

AUTOMOTIVE MACHINIST

(Alexandria Campus)

Pending Approval

Degree: Certificate

Length: One Year (three terms)

Purpose: To satisfy a part of the continuing demand for qualified Automotive Machinists in the local area. Accelerated growth in the number of vehicles combined with rapid and complex changes in their engineering and design account for a continued shortage of Automotive Machinists.

The program is designed to provide a thorough knowledge of the techniques of automotive machine work and the support systems found in a modern automotive machine shop. The program goals are to develop the student's skills to the point where he attains journeymen level and to develop his interest in a career as an Automotive Machinist. The curriculum is designed primarily for persons who seek full-time employment in the Automotive Machine Shop immediately upon completion of the one year program. The course will develop the student's skills in the use of the most modern automotive shop tools and equipment. For one to advance successfully in this program of study, a thorough understanding of the automobile, its basic operating principles, a mechanical aptitude and manual dexterity are required.

Occupational Objectives:

- Automotive Machinist
- Motorcycle Engine Machinist

Admission Requirements: In addition to the admission requirements established for the college, a minimum of a one year comprehensive automotive shop program in high school or its equivalent and a good understanding of arithmetic are usually required for entry into the program. Students who do not meet these requirements may correct their deficiencies in the Developmental Program.

Curriculum Requirements: The Automotive Machinist curriculum will include approximately 75% machining and technical courses, with the remaining courses in related subjects, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in automotive machine work.

AUTOMOTIVE MACHINIST Certificate Program

Course Number	Course Title	Course Credits
FIRST QUARTER		
AUTO 107	Introduction to Automotive Machine Shop	4
AUTO 108	Automotive Disassembly & Inspection Techniques	3
ENGL 101	Communications Skills I	3
MATH 011	Elements of Mathematics I	3
GENL 100	Orientation	1
HLTH 146	Occupational Injury	3
Total		17
SECOND QUARTER		
AUTO 137	Automotive Turning Operations	4
AUTO 141	Cylinder Block Service	4
AUTO 197	Cooperative Education	3
MATH 012	Elements of Mathematics II	3
	Non-Technical Elective	3
Total		17
THIRD QUARTER		
AUTO 142	Cylinder Head Service	4
AUTO 143	Crankshaft, Camshaft and Connecting Rod Service	4
MATH 013	Elements of Mathematics III	3
AUTO 177	Automotive Shop Fabrication Techniques (or Technical Elective)	3
AUTO 197	Cooperative Education	3
Total		17
Total Credits for A Certificate		50

AUTOMOTIVE MECHANICS

(Alexandria Campus)

Degree: Diploma

Length: Six quarters (two years)

Purpose: This curriculum is designed to satisfy a part of the continuing demand for qualified automobile mechanics in the local area. Accelerated growth in the numbers of automobiles in the area and the rapid and complex changes in automobile engineering and design account for a continued critical shortage of mechanics and service technicians.

The Automotive Mechanics program is designed to provide a thorough knowledge of the mechanics of the modern automobile and all its supporting systems, to develop an individual's mechanical skills to the point where he attains journeyman level and to develop his interest in an automotive repair and service career. The curriculum is designed primarily for persons who seek full-time employment in the automotive maintenance and general repair field immediately upon completion of the two-year program. The course will develop the student's skills in the use of the most modern automotive repair tools and equipment. For one to advance successfully in this program of study, a thorough understanding of the automobile, its basic operating principles and a mechanical aptitude and manual dexterity is required.

Occupational Objectives:

Automotive Repair Technician

New Car Make-Ready Technician

Customer Service Representative

Quality Control Technician

Service Estimator

Service Writer

Service Salesman

Tune-up Specialist

Shop Foreman

Admission Requirements: In addition to the admission requirements established for the College (as indicated in the College Catalog), a minimum of a one-year comprehensive automotive shop program in high school or its equivalent and a good understanding of mathematics are usually required for entry into the program. Students who do not meet these requirements may correct their deficiencies in the Developmental Program.

Curriculum Requirements: The Automotive Mechanics curriculum will include approximately sixty-five per cent automotive courses, with the remaining courses in related subjects, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in automotive mechanics. In addition to the highly technical courses the curriculum

includes courses necessary to prepare the student to meet the obligations of the citizen in our democratic society.

AUTOMOTIVE MECHANICS

Diploma Program

Course Number	Course Title	Course Credits
FIRST QUARTER		
AUTO 111	Automotive Engines I	4
AUTO 121	Automotive Fuel Systems I	4
ENGL 101	Communications Skills I	3
GENL 100	Orientation	1
MATH 11	Elements of mathematics I	3
AUTO 100	Automotive Shop Practices and Safety	3
	Total	18
SECOND QUARTER		
AUTO 112	Automotive Engines II	4
AUTO 122	Automotive Fuel Systems II	4
ENGL 102	Communications Skills II	3
MATH 12	Elements of Mathematics II	3
PSYC 110	Principles of Applied Psychology	3
PHED 100	Fundamentals of Physical Activity	1
	Total	18
THIRD QUARTER		
AUTO 113	Automotive Engines III	4
AUTO 136	Automotive Lubrication and Cooling Systems	3
SPDR 136	Speech Communications	3
MATH 13	Elements of Mathematics III	3
DRFT 144	Automotive Drawing Interpretation (or DRFT 171)	2
	Total	15
FOURTH QUARTER		
AUTO 241	Automotive Electrical Systems I	4
AUTO 151	Power Trains I	4
AUTO 116	Automotive Machine Laboratory	3
GOVT 180	American Constitutional Government	3
	Total	14
FIFTH QUARTER		
AUTO 242	Automotive Electrical Systems II	4
AUTO 152	Power Trains II	4
AUTO 238	Automotive Air Conditioning	3
BUAD 174	Small Business Management I	3
ECON 160	American Economics	3
PHED	Physical Education Elective	1
	Total	18

Course Number	Course Title	Course Credits
SIXTH QUARTER		
AUTO 243	Automotive Electrical Systems III	4
AUTO 267	Automotive Suspension and Braking Systems	4
AUTO 298	Seminar and Project in Automotive Technology	2
BUAD 175	Small Business Management II	3
PHED	Physical Education Elective	1
	Total	14
	Total Minimum Credits for a Diploma in Automotive Mechanics	97

AUTOMOTIVE PARTS MERCHANDISING

(Alexandria Campus)

Pending Approval

Certificate: Certificate in Automotive Parts Merchandising

Length of Time: Three Quarters (One Year)

Purpose: The Certificate Program is intended to:

1. Meet the existing and constant demand for people trained in Automotive Parts Merchandising.
2. Provide the basic knowledge and skills necessary to stock, discuss customer problems and sell automotive parts.
3. Provide the minimum experience and training for entry into the Automotive Parts Management field.

Upon successful completion of the program, the student is able to take full employment or continue on in a two-year Parts Management Program.

Occupational Objectives:

- Auto Parts Clerk
- Auto Countermen
- Auto Parts Deliverymen

Admission Requirements:

In addition to the admission requirements established for the college (as indicated in the college catalog), a minimum of a one-year compre-

hensive automotive shop program in high school or its equivalent is required. (AUTO 017 may be substituted).

Curriculum Requirements:

Approximately three quarters of the curriculum will include courses in automotive and business subjects with the remaining courses in general education.

AUTOMOTIVE PARTS MERCHANDISING

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
AUTO 284	Auto Service Procedures & Tune-Up	3
AUTO 121	Auto Fuel Systems	4
SPDR 136	Speech Communications	3
AUTO 201	Automotive Systems Technology	4
AUTO 100	Automotive Shop Practices & Shop Safety	3
	Total	18
SECOND QUARTER		
AUTO 285	Auto Service Procedures & Tune-Up	3
BUAD 100	Introduction to Business	3
PSYC 128	Human Relations	3
AUTO 197	Cooperative Education	3
AUTO 134	Automotive Inside Salesman	3
	Total	15
THIRD QUARTER		
AUTO 267	Auto Suspension & Braking System	4
AUTO 135	Automotive Outside Salesman	3
ECON 160	American Economics	3
AUTO 197	Cooperative Education	3
AUTO 136	Auto Lubrication and Cooling	3
	Total	16
	Total for Certification	49

AUTOMOTIVE TECHNOLOGY (DIAGNOSTICIAN)

(Alexandria Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: To train and develop diagnosticians, technicians and junior managers in the automotive field.

The Automotive Technology curriculum is designed to provide students with a knowledge of the principles of operation and theory of modern automobiles. The program aims to develop skills to a point where students attain diagnostician status, develop interest in an automotive industry career, and provides a background for entry into the automotive field at a "junior manager" level. The curriculum is designed primarily for persons who seek full-time employment in the automotive field in a capacity other than that of a mechanic. For one to advance successfully in this program of study, a thorough understanding of automobile basic operating principles, repair techniques, and repair skills is required. The curriculum is designed to provide a two-phase approach to automotive career development. The first develops knowledge of the operating principles of automobile components, repair techniques, and management aspects of the automotive field. The second phase develops ability to intelligently and efficiently analyze automobile defects, repair and adjustment needs, together with the estimation of customer cost for the repairs and adjustments.

Occupational Objectives:

- Automotive Diagnostician
- Automotive Technician
- Customer Service Representative
- Quality Control Technician
- Service Estimator
- Service Salesman
- Service Writer
- Service Manager
- Tune-up Specialist

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), students should have some knowledge of the automobile and its components. In addition, the student should be qualified to take engineering technical mathematics (MATH 121) and Introductory Physics. Students who do not meet these requirements will be required to correct their deficiencies in the Developmental Studies Program before entering the Automotive Program. In addition, the student should have a firm background in communication skills, basic science, and core subjects.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in automotive technology with the remaining

courses in related subjects, general and practical applications needed for future success in Automotive Technology. Each student is advised to consult with his faculty advisor and Counseling Services of the college in planning his program and selecting his electives. Students satisfactorily completing the six-quarter planned program described will be awarded the Associate in Applied Science degree with a major in Automotive Technology.

AUTOMOTIVE TECHNOLOGY (Diagnostician)

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
AUTO 101	Automotive Systems Technology I	4
AUTO 181	Automotive Diagnostic Technology I	3
GENL 100	Orientation	1
MATH 121	Engineering Technical Math I *	5
AUTO 100	Automotive Shop Practices & Safety	3
	Total	16
SECOND QUARTER		
AUTO 102	Automotive Systems Technology II	4
AUTO 182	Automotive Diagnostic Technology II	3
ENGL 101	Communication Skills I	3
MATH 122	Engineering Technical Math II*	5
PHED 100	Fundamentals of Physical Activity	1
	Total	16
THIRD QUARTER		
AUTO 103	Automotive Systems Technology III	4
AUTO 183	Automotive Diagnostic Technology III	3
ENGL 102	Communication Skills II	3
GOVT 180	American Constitutional Govt	3
PHED	Physical Education Elective	1
	Elective	3
	Total	17
FOURTH QUARTER		
AUTO 201	Automotive Systems Technology IV	4
AUTO 281	Automotive Diagnostic Technology IV	3
PHYS 101	Introductory Physics I	4
PSYC 110	Principles of Applied Psychology	3
ENGL 137	Technical Writing	3
	Total	17

Course Number	Course Title	Course Credits
FIFTH QUARTER		
AUTO 202	Automotive Systems Technology V	4
AUTO 282	Automotive Diagnostic Technology V	3
AUTO 287	Shop Management & Customer Relations I	3
PHYS 102	Introductory Physics II	4
ECON 160	American Economics	3
	Total	17
SIXTH QUARTER		
AUTO 203	Automotive Systems Technology VI	4
AUTO 283	Automotive Diagnostic Technology VI	3
AUTO 288	Shop Management & Customer Relations II	3
AUTO 298	Seminar and Project	2
PHYS 103	Introductory Physics III (or Technical Elective)	4
PHED	Physical Education Elective	1
	Total	17
	Total Minimum Credits for the Automotive Technology (Diagnostician) Degree	100

* MATH 161-162-163 may be substituted by students who meet course prerequisites.

AVIATION TECHNOLOGY

(Annandale Campus)

(Air Traffic Control Option)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The Air Traffic Control curriculum is designed to prepare students for entry into the occupational field of Air Traffic Control for employment and advanced training with the Federal Aviation Administration (FAA). Successful completion of the classroom and practical application program will normally prepare the student to take the entrance exams for the FAA Air Traffic Control Training Program. Final acceptance of the individual by the FAA is subject to FAA examinations and standards.

Occupational Objectives: In cooperation with the Federal Aviation Administration (FAA) and its standards of acceptance, this program has the objective of preparing the student for acceptance by the FAA Air Traffic Control field. The Federal Government is the sole employer.

Admission Requirements: In addition to the admission requirements of the College, students are advised to have at least two units of college preparatory mathematics (two years of algebra, or one of algebra and one of geometry). Students with deficiencies may require prior study in developmental studies programs. Further, final acceptance in the program is subject to satisfactory completion of a personal interview with Program Head, Aviation Technology.

Curriculum Requirements: Approximately one-half of the curriculum is devoted to technical-related courses in Aviation Technology. The remainder of courses provide for general education and the necessary support courses for the technical subjects of the curriculum. The first year of the Air Traffic Control curriculum is very similar to the first year of the Aviation Administration option, thus facilitating transfer when educational objectives change or where a new situation demands. Upon satisfying the college requirements, final acceptance by the Federal Aviation Administration is subject to a written examination administered by a governmental agency.

It should be noted that AERO 176, Primary Flight, is an optional course. Program students who have never flown are encouraged to take it, but an additional expense of approximately \$250.00 is required for the actual flight training.

AVIATION TECHNOLOGY

Associate in Applied Science Degree

Air Traffic Control Option

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I	3
MATH 181	General College Math I	3
PSYC 110	Principles of Applied Psychology	3
AERO 110	History of Air Transportation	3
AERO 176	Primary Flight (Optional)	(1)
GENL 100	Orientation	1
PHED 100	Fundamentals of Physical Activity	1
Total		14

Course Number	Course Title	Course Credits
SECOND QUARTER		
ENGL 102	Communication Skills II	3
MATH 182	General College Math II	3
SOCI 101	Introductory Sociology I	3
AERO 136	The National Airspace System	3
AERO 127	Fundamentals of Flight	3
PHED	Physical Education Elective	1
	Total	<u>16</u>

THIRD QUARTER		
SPDR 136	Speech Communications	3
MATH 183	General College Math III	3
AERO 126	Aviation in the U.S.	3
AERO 137	Aviation Safety	3
SECR 111	Typewriting I*	3
	Elective	3
	Total	<u>18</u>

FOURTH QUARTER		
MKTG 131	Traffic and Transportation	3
AERO 246	Meteorology	3
AERO 247	Aviation Laws & Regulations	3
Aero 290	Coordinated Internship (Optional)	(3)
ENGR 121	Engineering Graphics	2
GEOG 240	Introduction of Physical Geography	3
	Total	<u>14</u>

FIFTH QUARTER		
BUAD 254	Applied Business Statistics	3
AERO 256	Air Navigation	3
AERO 257	Radio Aids, Radar, and Communications	3
AERO 290	Coordinated Internship (Optional)	(3)
PHED	Physical Education Elective	1
PHYS 101	Introductory Physics I	4
DAPR 106	Principles of Data Processing	3
	Total	<u>17</u>

* Students who have completed prior training in typewriting may petition for course waiver by examination.

Course Number	Course Title	Course Credits
SIXTH QUARTER		
ECON 160	American Economics	3
AERO 266	Airport Operations & Management	3
AERO 299	Aviation Problems (Supervised Study)*	1-5
AERO 290	Coordinated Internship (Optional)*	(3)
GOVT 180	American Constitutional Government	3
BUAD 110	Human Relations & Leadership	3
AERO 298	Aviation Seminar and Project*	1-5
	Total	18
	Total Minimum Credits for the Aviation Technology Degree . .	97

* May be taken during 4th, 5th, or 6th quarter if offered.

NOTE—AERO 297 may be substituted for AERO 290.

AVIATION TECHNOLOGY

(Aviation Administration Option)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The curriculum of the Aviation Administration option of Aviation technology is designed to prepare graduates to pursue a career in the non-technical field of aviation. Graduates should be qualified to handle jobs with the airlines at airports in the areas listed under Occupational Objectives subject to individual company policies and vacancies.

Occupational Objectives:

Aviation Administrator:	Reservation Assistant
Transportation (Ticket) Agent	Airline Office Manager
Reservations Sales Agent	Service Manager
Instructor, Aviation Administration	Customer Relations
Assistant Airport Manager	
Operations Officer	

Admission Requirements: All students entering the Aviation Administration option must have been accepted by the Program Head, Aviation Technology, following a personal interview. Students are advised to have at least one year of college preparatory mathematics. Students with deficiencies may require prior study in developmental programs.

Curriculum Requirements: Approximately half of the courses of this curriculum are technical Aviation Technology courses or courses intended to train the student in business management. The remaining courses are general education requirements and support courses needed to develop a basic understanding for Aviation Technology and Business Management studies. The student is expected to participate in the cooperative education work program.

AVIATION TECHNOLOGY
Associate in Applied Science Degree
Aviation Administration Option

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I	3
MATH 151	Introduction to Business Math I	3
PSYC 110	Principles of Applied Psychology	3
AERO 110	History of Air Transportation	3
AERO 176	Primary Flight (Optional)	(1)
GENL 100	Orientation	1
PHED 100	Fundamentals of Physical Activity	1
	Total	14
SECOND QUARTER		
ENGL 102	Communication Skills II	3
MATH 152	Introduction to Business Math II	3
SOCI 101	Introductory Sociology I	3
AERO 136	The National Airspace System	3
BUAD 100	Introduction to Business	3
PHED	Physical Education Elective	1
	Total	16
THIRD QUARTER		
SPDR 136	Speech Communications	3
MATH 153	Introduction to Business Math III	3
SECR 111	Typewriting I*	3
AERO 126	Aviation in the U.S.	3
AERO 137	Aviation Safety	3
BUAD 164	Principles of Business Management	3
	Total	18

* Students who have completed prior training in typewriting may petition for course waiver by examination.

Course Number	Course Title	Course Credits
FOURTH QUARTER		
MKTG 131	Traffic and Transportation	3
ACCT 111	Accounting I	4
AERO 247	Aviation Laws & Regulations	3
AERO 248	Aircraft Support Operations	3
AERO 290	Coordinated Internship (Optional)	(3)
GEOG 240	Introduction to Physical Geography	3
	Total	16
FIFTH QUARTER		
ACCT 112	Accounting II	4
BUAD 254	Applied Business Statistics	3
MKTG 109	Principles of Salesmanship	3
AERO 258	Airline Marketing	3
AERO 290	Coordinated Internship (Optional)**	(3)
PHED	Physical Education Elective	1
DAPR 106	Principles of Data Processing	3
	Total	17
SIXTH QUARTER		
GOVT 180	American Constitutional Government	3
AERO 266	Airport Operations & Management	3
ECON 160	American Economics	3
BUAD 110	Human Relations & Leadership	3
AERO 290	Coordinated Internship (Optional)**	(3)
AERO 299	Aviation Problems (Supervised Study)*	1-5
AERO 298	Aviation Seminar and Project*	1-5
	Total	17
	Total Minimum Credits for the Aviation Technology Degree	97

* May be taken during 4th, 5th, or 6th quarter if offered.

** AERO 267, Airline Operations and management (3 cr.) may be substituted for AERO 290.

NOTE—AERO 297 may be substituted for AERO 290.

BROADCAST ENGINEERING TECHNOLOGY

(Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The rapidly expanding broadcasting industry has created a great demand for qualified engineering technicians. In order to provide flexibility required by the large variety of positions available in the

field of broadcast engineering, the curriculum offers a solid foundation in mathematics, science, electronics, and broadcast engineering. The Broadcast Engineering Tech-Technology Degree program will prepare young men and women to become competent broadcast engineering technicians for employment immediately upon completion of the curriculum.

Occupational Objectives:

Radio Station Technician	Video Tape Station Technician
Commercial TV Station Technician	Sound Reproduction Company Technician
Educational TV Station Technician	Recording Company Technician

Admission Requirements: Admission to the program, in addition to the general requirements for admission to the College, requires a high school diploma or its equivalent with a minimum of a grade C average in each of the following areas:

- 4 units of English
- 2 units of Math—(3 units recommended—2 units of Algebra plus 1 unit of geometry or trigonometry)
- 1 unit of Laboratory science
- 1 unit of Social Studies or equivalent

Students who do not meet these requirements may be permitted to correct their deficiencies in the Developmental Studies Program before entering the Engineering Technology curricula.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in broadcast engineering technology with the remaining courses in related areas, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in broadcast engineering technology. Students are advised to consult with their faculty advisor and Counseling Services in planning their program and selective electives. Upon satisfactory completion of the six-quarter program, the graduate will be awarded the Associate in Applied Science Degree in Broadcast Engineering Technology.

BROADCAST ENGINEERING TECHNOLOGY

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
PHED 100	Fundamentals of Physical Activity	1
ENGL 101	Communication Skills I*	3
MATH 121	Engineering Technical Mathematics I	5
ELEC 114	Fundamentals of Direct Current	4
ELEC 120	Introduction to Tubes and Transistors	4
	Total	18
SECOND QUARTER		
PHED	Physical Education Elective	1
ENGL 102	Communication Skills II*	3
MATH 122	Engineering Technical Mathematics II	5
ELEC 115	Fundamentals of Alternating Current	4
ELEC 125	Introduction to Electronics	5
	Total	18
THIRD QUARTER		
PHED	Physical Education Elective	1
PHYS 101	Introductory Physics I	4
BCST 116	Broadcast Equipment Operation	5
ELEC 116	Introduction to Circuit Analysis	4
ELEC 126	Amplifiers	4
	Total	18
FOURTH QUARTER		
PHYS 102	Introductory Physics II	4
	Social Science Elective**	3
BCST 126	Broadcast Instruments and Measurement	4
ELEC 227	Pulse and Switching Circuits	3
ELEC 241	Communications I	4
	Total	18
FIFTH QUARTER		
	Social Science Elective**	3
BCST 146	Federal Broadcast Regulations	1
BCST 211	Theory of Broadcast Equipment I	4
BCST 224	Broadcast Equipment Maintenance I	3
ELEC 242	Communications II	4
	English or Speech*	3
	Total	18

Course Number	Course Title	Course Credits
SIXTH QUARTER		
	Social Science Elective**	3
BCST 212	Theory of Broadcast Equipment II	4
BCST 225	Broadcast Equipment Maintenance II	3
BCST 298	Seminar and Project	2
ELEC 243	Communication Systems (or Elective)	4
ELEC 287	Advanced Circuits and New Devices	2
	Total	18
	Total Minimum Credits for Broadcast Engineering Technology Degree	104

* English 111, 112, 113 may be substituted for ENGL 101, 102, and the 5th quarter English or speech.
 ** Social Science Electives may be chosen from the following fields: economics, psychology, government, or social science.

BUILDING CONSTRUCTION TECHNOLOGY (Alexandria Campus)

Pending Approval

Certificate: Certificate in Building Construction

Length: Six Quarters (two years)

Purpose: The construction industry is in need of qualified personnel trained in both engineering and management to aid in all areas of a construction firm. The certificate program in Building Construction Technology is designed to prepare people for full-time employment in these employment opportunities immediately upon completion of the program. Therefore, the program is designed to develop an understanding of the construction phase of building construction, project planning, construction management, and building facilities maintenance.

Occupational Objectives:

- | | |
|---------------------------------|------------------------------|
| Engineering Aide | Construction Project Manager |
| Construction Supervisor | Estimator |
| Building Maintenance Supervisor | |

Admission Requirements: In addition to the admission requirements for the college, entry in Building Construction Technology requires proficiency in high school English, and two units of algebra or one unit each of algebra and plane geometry. Students who do not meet these requirements may correct their deficiencies in the Developmental Program

Curriculum Requirements: The curriculum in Building Construction is a two-year program combining instruction in the management and engineering problems of a construction firm. Approximately one-half of the program will include courses in Building technologies. The other half will include general education and courses in business. Students are advised to consult with their faculty advisor and the counseling office in planning their program and selecting electives.

In addition to the highly technical courses, the curriculum includes courses necessary to prepare the student to meet the obligations of the citizen in our democratic society.

BUILDING CONSTRUCTION TECHNOLOGY

Certificate

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
ENGL 101	Communications Skills I	3
MATH	Math 11 or 121*	3-5
ENGR 100	Introduction to Engineering Technology	2
ARCH 111	Architectural Drafting I	3
	Social Science Elective	3
	Total	15-17
SECOND QUARTER		
ENGL 102	Communications Skills II	3
MATH	Math 12 or Math 122*	3-5
ARCH 141	Materials for Construction	3
ARCH 112	Architectural Drafting II	3
	Social Science Elective	3
	Total	15-17
THIRD QUARTER		
ENGL 137	Technical Writing	3
CIVL 181	Surveying I	4
ARCH 142	Methods of Construction	3
CIVL 140	Construction Planning	3
MATH	Math 13 or Math 123*	3-5
	Total	16-18

* If Math 11, 12, 13 are elected, 5 credit hours of Electives must be taken to acquire Total Minimum hours required for graduation.

Course Number	Course Title	Course Credits
FOURTH QUARTER		
CIVL 182	Surveying II	4
ARCH 237	Building Mechanical Equipment	3
CIVL 256	Soils Mechanics	4
INDT 176	Industrial Safety	2
PHED 100	Fundamentals of Physical Activity	1
	Social Science Elective	3
	Total	17

FIFTH QUARTER		
CIVL 227	Structural Drafting I	2
BUAD 276	Personnel Management	3
ARCH 277	Building Codes & Contract Documents	3
CIVL 258	Concrete Technology	4
ARCH 236	Building Electrical Equipment	3
PHED	Physical Education Elective	1
	Total	16

SIXTH QUARTER		
CIVL 297	Cooperative Education	2-4
CIVL 298	Seminar and Project	2
ARCH 279	Critical Path Method Program	3
ARCH 276	Construction Estimating	3
CIVL 228	Structural Drafting II	2
PHED	Physical Education Elective	1
	Total	13-15
	Total Minimum Credits for Certificate	97

BUSINESS ADMINISTRATION

(Alexandria and Annandale Campus)

Degree: Associate in Science

Length: Six quarters (two years)

Purpose: With the rapid development in business and industry in Virginia there is a great demand for qualified personnel in business administration to help provide leadership for this economic growth.

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.

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Science degree curriculum in Business Administration requires the satisfactory completion of the following high school units or equivalent as a minimum:

- 4 units of English
- 2 units of mathematics (algebra and geometry)
- 1 unit of laboratory science
- 1 units of social studies

Students who do not meet these requirements may be permitted to correct their deficiencies in the Developmental Program before entering the Business Administration curriculum.

Curriculum Requirements: The modern business world demands that its staff be knowledgeable in fields over and beyond the every-day business technology. Thus, this curriculum requires courses in the humanities, natural sciences, and social sciences in addition to the principles of economics and principles of accounting usually required in the first two years of a baccalaureate business administration curriculum. *Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with Counseling Services and his faculty advisor in planning his program and selecting his electives.* In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college which is comparable in length and courses to the first two years of the program at the four-year college or university. Many, though not all, four year colleges and universities offering the baccalaureate degree in business require that professional courses be taken in the junior and senior years with the first two years devoted primarily to general education courses. (Specific exceptions are Principles of Accounting and Economics.) In choosing electives, the student who is not following the requirements of a specific four year college should keep this in mind if interested in maximum transferability. Upon completion of the six-quarter program described, the graduate will be awarded the Associate in Science degree with a major in Business Administration.

BUSINESS ADMINISTRATION

Associate in Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 111	English Composition I	3
BIOL 101	Gen. Biology I (or CHEM 101)	4
MATH	Mathematics (MATH 161 or MATH 181)*	3
HIST 101	History of Western Civilization I (or HIST 111)	3
GENL 100	Orientation	1
	Elective	3
	Total	17
SECOND QUARTER		
ENGL 112	English Composition II	3
BIOL 102	General Biology II (or CHEM 102)	4
MATH	Mathematics (MATH 162 or MATH 182)*	3
HIST 102	History of Western Civilization II (or HIST 112)	3
PHED 100	Fundamentals of Physical Activity	1
	Elective	3
	Total	17
THIRD QUARTER		
ENGL 113	English Composition III	3
BIOL 103	General Biology III (or CHEM 103)	4
MATH	Mathematics (MATH 163 or MATH 183)*	3
HIST 103	History of Western Civilization III (or HIST 113)	3
	Elective	3
	Total	16
FOURTH QUARTER		
ENGL	American, English, or World Literature I	3
ECON 211	Principles of Economics I	3
ACCT 211	Principles of Accounting I	3
	Elective	3
	Elective	3
	Total	15
FIFTH QUARTER		
ENGL	American, English, or World Literature II	3
ECON 212	Principles of Economics II	3
ACCT 212	Principles of Accounting II	3
	Elective	3
	Elective	3
PHED	Physical Education Elective	1
	Total	16

Course Number	Course Title	Course Credits
SIXTH QUARTER		
ENGL	American, English, or World Literature III	3
ECON 213	Principles of Economics III	3
ACCT 213	Principles of Accounting III	3
	Elective	3
	Elective	3
PHED	Physical Education Elective	1
	Total	16
	Total Minimum Credits for the Business Administration Degree	97

* Math courses may also be elected from the following sequences: MATH 191-192-193 or MATH 141-142-143.

BUSINESS MANAGEMENT

(Alexandria & Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: With the rapid development of business and industry in Virginia, there is a great demand for qualified personnel to assist business management in this economic growth. The Associate in Applied Science degree program in Business Management is designed primarily for persons who seek full-time employment in business management immediately upon completion of the curriculum. Both persons who are seeking their first employment in a managerial position or those presently in management who are seeking a promotion may benefit from this program.

Occupational Objectives:

- | | |
|---------------------------|--------------------|
| Administrative Assistant | Management Trainee |
| Manager of Small Business | Department Head |
| Office Manager | Branch Manager |
| Supervisor | |

Admission Requirements: In addition to the administration requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Applied Science degree curriculum in Business Management requires a proficiency in high school English and mathematics. Students who are not proficient will be required to correct their deficiencies in the Development Program before entering the Business Management curriculum.

Curriculum Requirements: The first three quarters (first year) of the Associate in Applied Science Degree curriculum in Business Management are similar to other curriculums in business. However, in the second year each student will pursue his specialty in business management. The curriculum will include technical courses in business management, courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in business management. Each student is urged to consult with Counseling Services and his faculty advisor in planning his program and selecting his electives. Courses within this curriculum may be applied to a four-year program at the discretion of the admitting institution. Upon completion of the six-quarter program described, the graduate will be awarded the Associate in Applied Science Degree in Business Management.

Cooperative Education: All students are encouraged to investigate the opportunities in Cooperative Education. In addition to valuable work experience, it is possible to earn up to 15 hours credit towards graduation. Cooperative Education provides planned and supervised learning situations in on-the-job locations which enable the student to become better acquainted with both the theory and practice of his vocational choice. Inquiries should be directed to the Campus Office of Cooperative Education or the student's advisor.

BUSINESS MANAGEMENT

Associate in Applied Science Degree Program

Course Number	Course Title	Course Credits
FIRST QUARTER		
BUAD 100	Introduction to Business	3
ACCT 111	Accounting I**	4
MATH 151	or BUAD 101 Business Mathematics I	3
ENGL 101	Communication Skills I	3
ECON 160	American Economics***	3
GENL 100	Orientation	1
	Total	17
SECOND QUARTER		
BUAD 164	Principles of Business Management I	3
ACCT 112	Accounting II**	4
MATH 152	or BUAD 102 Business Mathematics II	3
ENGL 102	Communication Skills II	3
SECR 111	Typewriting I*	3
PHED 100	Fundamentals of Physical Activity	1
	Total	17

Course Number	Course Title	Course Credits
THIRD QUARTER		
BUAD 165	Principles of Business Management II	3
ACCT 113	Accounting III**	4
MATH 153	or BUAD 103 Business Mathematics III	3
SPDR 136	Speech Communications or ENGL 180 Business English	3
GOVT 180	American Constitutional Government***	3
	Total	16
FOURTH QUARTER		
BUAD 241	Business Law I	3
BUAD 254	Applied Business Statistics I	3
DAPR 106	Principles of Data Processing	3
PSYC 110	Principles of Applied Psychology***	3
BUAD 269	Purchasing and Materials Management	3
PHED	Physical Education Elective	1
	Total	16
FIFTH QUARTER		
BUAD 242	Business Law II	3
BUAD 246	Business Finance	3
BUAD 276	Personnel Management	3
ACCT 244	Business Taxes I	3
	Elective—BUAD, DAPR, ACCT, ECON or MKTG	3
	Total	15
SIXTH QUARTER		
BUAD 110	Human Relations and Leadership Training	3
BUAD 243	Business Law III (or elective)	3
BUAD 298	Seminar and Project	3
ACCT 245	Business Taxes II	3
PHED	Physical Education Elective	1
	Elective—BUAD, DAPR, ACCT, ECON or MKTG	3
	Total	16
	Total Minimum Credits for the Business Management Degree	97

* Waiver for this course but not the credit hours may be granted for the student who has satisfactorily completed one year of typing in high school. Students who have had training in typing may also petition for credit by examination.

** ACCT 211-212-213 may be substituted with approval of the Division.

*** SOSC 101-102-103 may be substituted for GOVT 180, PSYC 110, and ECON 160. SOSC 101-102-103 need not be taken sequentially.

Note: Credits earned in an approved Cooperative Education Program may be substituted for up to 15 hours of course work. (No more than 5 hours per quarter.) Specific substitutions must be approved by the faculty advisor.

CIVIL ENGINEERING TECHNOLOGY

(Alexandria and Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The basic purpose of the Civil Engineering Technology Program is to develop qualified technicians. To accomplish this purpose, the program is designed to give the student a sound foundation of English, Mathematics, Science, and General Education, and a high degree of proficiency in the specialized technical subjects. Upon successful completion of the program, the student is enabled to take full employment immediately or to transfer to universities which offer a baccalaureate degree in Civil Engineering Technology. In this case, the student is urged to acquaint himself with the requirements of the university to which he expects to transfer.

Occupational Objective:

Structural Designer

Surveying and Planning Assistant

Highways and Building Departments Inspector

Construction Supervisor and Foreman

Civil Engineering Technician

Admission Requirements: Admission to the program, in addition to the general requirements for admission to the College, requires a high school diploma or its equivalent with a minimum of a grade C average in each of the following areas:

4 units of English

2 units of Math—(3 units recommended—2 units of Algebra plus 1 unit of geometry or trigonometry)

1 unit of Laboratory science

1 unit of Social Studies or equivalent

Students who do not meet these requirements may be permitted to correct their deficiencies in the Developmental Studies Program or in the Engineering Drafting Certificate Program before entering the Engineering Technology Curricula.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in Civil Engineering Technology with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in civil engineering technology

Upon satisfactory completion of the six-quarter program, the graduate will be awarded the Associate in Applied Science Degree in Civil Engineering Technology.

Curriculum Options: By proper selection of technical courses, the student may pursue one of two curricular options within the Civil Engineering Technology Degree: Building Construction or Surveying. Each student is advised to consult with his faculty advisor and Counseling Services in planning his program and selecting his courses.

CIVIL ENGINEERING TECHNOLOGY

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
ENGL 101	Communication Skills I*	3
MATH 121	Engineering Technical Mathematics I	5
ENGR 100	Introduction to Engineering Technology	2
ARCH 111	Architectural Drafting I	3
	Social Science Elective**	3
	Total	17
SECOND QUARTER		
ENGL 102	Communication Skills II*	3
MATH 122	Engineering Technical Mathematics II	5
CIVL 181	Surveying I	4
ARCH 141	Materials for Construction	3
ARCH 112	Architectural Drafting II	3
	Total	18
THIRD QUARTER		
	English or speech*	3
	Social Science Elective**	3
CIVL 182	Surveying II	4
ARCH 142	Methods of Construction	3
ENGR 151	Mechanics I	4
	Total	17
FOURTH QUARTER		
PHED 100	Fundamentals of Physical Activity	1
PHYS 101	Introductory Physics I	4
ENGR 152	Mechanics II	3
CIVL	Soil Mechanics or Advanced Surveying I	4
CIVL	Structural Drafting I or Suburban Development I	2
ENGR 154	Mechanics Laboratory	1
	Total	15

Course Number	Course Title	Course Credits
FIFTH QUARTER		
PHED	Physical Education Elective	1
PHYS 102	Introductory Physics II	4
CIVL	Steel Design or Advanced Surveying II	4
CIVL	Structural Drafting II or Suburban Development II	2
CIVL	Concrete Technology or Technical Elective***	4
	Social Science Elective**	3
	Total	18
SIXTH QUARTER		
PHED	Physical Education Elective	1
PHYS 103	Introductory Physics III	4
CIVL	Concrete Design or Technical Elective***	4
CIVL 298	Seminar and Project	2
	MATH 123 or Technical Elective***	2.5
	Total	13-16
	Total Minimum Credits for Civil Engineering Technology Degree	97

* English 111, 112, and 113 may be substituted for ENGL 101, 102, and third quarter English or speech.

** Social Science elective may be chosen from the following fields: economics, psychology, government, or social science.

*** Technical Electives must be chosen in the field of specialization.

COMMERCIAL ART

(Alexandria Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The Associate in Applied Science Degree curriculum in Commercial Art is designed primarily for persons who seek full-time employment in the commercial art fields (such as advertising, illustrating, printing, and packaging) immediately upon completion of the community college program. Several adjustments in the curriculum are possible for students who wish to transfer to the baccalaureate degree program in commercial art at a four-year college or university.

Occupational Objectives:

Commercial Artist

Illustrator

Designer

Photographer

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in

Applied Science Degree program in Commercial Art requires proficiency in high school English and a satisfactory aptitude for drawing. Applicants may be required to submit for approval several sample drawings before final admission is granted. Students who are not proficient in English will be required to correct their deficiencies in the Developmental Program.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in commercial art with the remaining courses in related areas which deal with general concepts and practical applications needed for future success in commercial art work. Each student is urged to consult with Counseling Services and his faculty advisor in planning his program and selecting his electives. Upon satisfactory completion of the six-quarter program listed, the graduate will be awarded the Associate in Applied Science Degree in Commercial Art.

COMMERCIAL ART

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ARTS 151	Fundamentals of Design I	3
ARTS 111	History & Appreciation of Art I	3
ARTS 124	Drawing I	4
ARTS 180	Introduction to Photography	2
ENGL 101	Communication Skills I*	3
GENL 100	Orientation	1
Total		16
SECOND QUARTER		
ARTS 152	Fundamentals of Design II	3
ARTS 112	History & Appreciation of Art II	3
ARTS 125	Drawing II	4
ARTS 171	Typography	3
ENGL 102	Communication Skills II*	3
PHED 100	Fundamentals of Physical Activity	1
Total		17
THIRD QUARTER		
ARTS 153	Fundamentals of Design III	3
ARTS 113	History & Appreciation of Art III	3
ARTS 126	Drawing III	4
ARTS 271	Graphic Techniques I	3
ENGL 103	Communication Skills III*	3
PHED	Physical Education Elective	1
Total		17

Course Number	Course Title	Course Credits
FOURTH QUARTER		
ARTS 261	Advertising Design I	3
	Social Science Elective**	3
	Area of Concentration***	9-12
	Total	15-18
FIFTH QUARTER		
ARTS 262	Advertising Design II	3
	Social Science Elective**	3
PHED	Physical Education Elective	1
	Area of Concentration***	9-11
	Total	16-18
SIXTH QUARTER		
ARTS 263	Advertising Design III	3
ARTS 298	Seminar and Project	1-5
	Social Science Elective**	3
	Area of Concentration***	9-11
	Total	18
	Total Minimum Requirements for Commercial Art Degree: . .	97

* English 111-112-113 (English Composition) is recommended for students planning to transfer.
 ** Students are required to take 9 credits in a social science, which may be selected from the following fields: Economics, Geography, Government, History, Psychology, Social Science, or Sociology. If the student plans to transfer, it is suggested that he select a full year sequence in one field rather than some other combination of Social Science courses.
 *** Areas of concentration with corresponding courses are listed below. Required courses are italicized and the number of credit hours needed for those courses are indicated in parentheses.
 ADVERTISING DESIGN: *Typography* (6-9 cr.), *Graphic Techniques* (9 cr.), Design: Color, Illustration, Photography, Filmmaking, Silkscreen, Painting. Other electives with departmental permission.
 ILLUSTRATION: *Illustration* (9 cr.), *Graphic Techniques* (6-9 cr.), Painting, Design: Color, Advanced Drawing, Silkscreen, Photography, Typography. Other electives with departmental permission.
 PHOTOGRAPHY: *Advanced Photography* (9 cr.), *Photojournalism* (3 cr.), *Filmmaking* (3 cr.), *History of Photography* (3 cr.), Silkscreen, *Graphic Techniques*, Illustration, Painting. Other electives with departmental permission.

CORRECTIONS SCIENCE

(Alexandria and Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The curriculum in Corrections has been developed and is maintained in cooperation with state and local corrections officials. The curriculum is not designed to train for any speciality, but rather to provide a broad foundation which will prepare the student to enter any of the varied fields of corrections. Adjustments will be made to enable

a qualified student to prepare for transfer to a baccalaureate degree in Corrections Science.

Occupational Objectives:

- Local, State, and Federal Corrections Officer
- Probation and Parole Aide
- Advancement within the Profession

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Applied Science degree program in Corrections requires the following:

1. A written statement from the law enforcement agency having jurisdiction in the applicant's area of residence as to his record of conduct. (This requirement is waived for employees of governmental investigative or law enforcement or corrections agencies.)
2. A personal interview with a representative of the Police Science (Corrections) Program.
3. Satisfactory results on any additional tests that may be required by the counseling department.

Special Requirements:

- A. Students who wish to enroll in the Corrections Program with the objective of obtaining employment with corrections agencies in Northern Virginia are advised that the usual requirements for such positions include excellent health and excellent moral character.
- B. Qualified students who expect to continue on to a senior institution to complete their requirements for a four-year degree in Corrections may have their programs adjusted to do so under the following conditions:
 1. Obtain permission from the Program Head of Police Science (Corrections).
 2. Maintain a minimum grade point average of 2.5 or better in their Corrections subjects.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in Corrections with the remaining courses in related subjects, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in Corrections. Each student will consult with his faculty advisor and Counseling Services of the Community College in planning his program and selecting his electives. Students who qualify and who plan to transfer to a senior college or university to complete a

baccalaureate degree program in Corrections will be advised to substitute several other courses than those described to conform with the curriculum of the four-year institution to which transfer is contemplated. Upon completion of the six-quarter program described, the student will be awarded the Associate in Applied Science degree with major in Corrections.

Students who possess an adequate background in Corrections may substitute appropriate alternative courses offered by this institution in lieu of courses prescribed in the curriculum for the degree requirement upon obtaining permission of the Program Head.

SPECIAL NOTE TO PRESENTLY EMPLOYED LAW ENFORCEMENT (CORRECTIONS) OFFICERS

Under provisions of the Federal Safe Streets Act of 1968, loans and grants covering the cost of tuition and books may be available to presently employed officers pursuing a college education in Corrections.

After completion of the course, for each year spent in law enforcement or corrections the government will forgive 25% of the loan. Thus, after 4 years of such employment, the loan is considered to be paid in full without any need for the student to make any financial repayment. Provisions are made for military service, disability, etc.

Under the same program grants of amounts up to \$600 per academic year to defray tuition costs are available to law enforcement and corrections officers.

Such grants are forgiven by two years continued service in law enforcement or corrections.

Full details are available at either the Campus Financial Aid Office or the Police Science (Corrections) Program.

CORRECTIONS SCIENCE

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
ENGL 101	Communication Skills I (or ENGL 111)	3
LWNF 120	Intro. to Corrections	3
PSYC 116	Psychology of Personal Adjustment*	3
SOCI 101	Introductory Sociology I	3
LWNF 126	Prevention and Control of Juvenile Delinquency	3
PHED 100	Fundamentals of Physical Activity	1
Total		17

Course Number	Course Title	Course Credits
SECOND QUARTER		
ENGL 102	Communication Skills II (or ENGL 112)	3
SPDR 136	Speech Communications	3
LWNF 127	Criminal Offenses	3
LWNF 176	Criminology	3
SOCI 102	Introductory Sociology II	3
LWNF 155	Assessment of the Correctional Process	3
Total		18
THIRD QUARTER		
ENGL 137	Technical Writing	3
PBSV 256	Interviewing Skills	3
LWNF 156	Corrections and the Community	3
SOCI 103	Introductory Sociology III	3
LWNF 128	Criminal Behavior	3
PHED	Elective	1
Total		16
FOURTH QUARTER		
LWNF 129	Treatment of the Offender	3
LWNF 157	Assessment of Criminology	3
SOCI 186	Social Problems I**	3
PSYC 210	Social Psychology**	3
PHED	Elective	1
ECON 160	American Economics*	3
Total		16
FIFTH QUARTER		
LWNF 124	Jail Operation Management I (BASIC)	3
LWNF 159	Legal Challenge to Corrections	3
SOCI 187	Social Problems II**	3
PSYC 257	Law Enforcement Psychology	3
LWNF 237	Administration of Justice	3
Total		15
SIXTH QUARTER		
LWNF 298	Seminar and Project	3
LWNF 125	Jail Operation and Management II	3
LWNF 228	Law Enforcement and the Community	3
GOVT 180	American Constitutional Government*	3
LWNF 290	Coordinated Internship	3
Total		15
Total Minimum Credits for Degree in Corrections Science		97

* SOSC 101, 102, 103 may be substituted for PSYC 116, ECON 160 and GOVT 180)

** Substitution of appropriate psychology or sociology courses may be made with approval of program head.

CORRECTIONS (Police Science)

(Alexandria and Annandale Campus)

Certificate: Certificate in Corrections

Length: Three quarters (one year)

Purpose: There is a growing community interest in developing adequate corrections facilities staffed with properly trained personnel. The Certificate Program is designed for people who are preparing themselves to enter the field of corrections and to upgrade the professional ability of practitioners in corrections.

Admission Requirements: In addition to requirements for general admission to the College, a personal interview with a member of the faculty of the Police Science Program is required.

Curriculum Requirements: For those persons wishing to improve their skills in the Corrections field, the Corrections curriculum provides the needed concentration of courses. Students will be advised as to which courses are most applicable to their field of interest and will, upon successful completion of 49 credits in the Corrections curriculum, be awarded a Certificate in Corrections.

If, due to their employment commitments, practitioners are not able to carry a full academic program, they will be advised as to the sequence of courses to be taken best suited to their individual needs.

Federal Grants and Loans: Students are advised that corrections officers may be included under the definition of Law Enforcement Officer for purposes of obtaining Grants and Loans under the Safe Streets Act of 1968. For further details, see A.A.S. curriculum description in Police Science in this Catalog.

CORRECTIONS

(Police Science)

Certificate Program

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
ENGL 101	Communication Skills I	3
SOCI 101	Introductory Sociology I (or elective)*	3
GOVT 180	Amer. Constitutional Gov. (or elective)**	3
LWNF 176	Criminology	3
LWNF 120	Introduction to Corrections	3
Total		16

Course Number	Course Title	Course Credits
SECOND QUARTER		
ENGL 102	Communication Skills II	3
SOCI 102	Introductory Sociology II (or elective)*	3
ECON 160	American Economics**	3
LWNF 126	Prevention & Control of Juv. Delinquency	3
LWNF 128	Criminal Behavior	3
LWNF 127	Criminal Offenses	3
Total		18

THIRD QUARTER		
SPDR 136	Speech Communications	3
SOCI 103	Introductory Sociology III (or elective)*	3
PSYC 110	Principles of Applied Psychology**	3
LWNF 156	Corrections and the Community	3
LWNF 157	Assessment in Criminology	3
Total		15
Total Credits		49

* Selection of an elective is subject to the approval of the Program Head.

** SOSOC 101-102-103 may be substituted for GOVT 180, ECON 160, and PSYC 110.

DATA PROCESSING TECHNOLOGY (COMPUTER PROGRAMMING)

(Alexandria and Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The Data Processing Technology curriculum with specialization in computer programming is designed to provide the types of education and training which will be required by both industry and government. Specifically, this includes the skills, knowledges, attitudes, and abilities which will enable employees to function in the current employment market. The objective is to provide the student with a foundation on which he can build his future career and at the

same time provide the student with the basic entry level data processing skills.

The curriculum also provides course options for all transfer students who plan to continue their education at a four-year college or university.

Occupational Objectives:

- Computer Programmer, Business Applications
- Computer Operator
- Related Data Processing Occupations

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Applied Science degree program in Data Processing Technology requires a minimum of one unit of high school algebra or the equivalent and proficiency in high school English. Students who are not proficient in these subject areas will be required to correct their deficiencies in the Developmental Program before entering the Data Processing Curriculum.

Curriculum Requirements: The curriculum will include technical courses in data processing, courses in related subjects, general education, and electives. Instruction will include both theoretical concepts and practical applications needed for future success in Data Processing Technology. Each student is urged to consult with Counseling Services and his faculty advisor in planning his program and selecting his electives. Any student who receives a final grade less than "C" in any of the Data Processing courses must obtain permission from the Program Head to continue the major in Data Processing. Upon satisfactory completion of the six-quarter curriculum with an overall 2.0 grade point average for all Data Processing courses attempted, the student will be awarded the Associate in Applied Science degree with a major in Data Processing Technology and specialization in Computer Programming.

Cooperative Education: All students are encouraged to investigate the opportunities in Cooperative Education. In addition to valuable work experience, it is possible to earn up to 15 hours credit towards graduation. Cooperative Education provides planned and supervised learning situations in on-the-job locations which enable the student to become better acquainted with both the theory and practice of his vocational choice. Inquiries should be directed to the Campus Office of Cooperative Education or the student's advisor.

DATA PROCESSING TECHNOLOGY (COMPUTER PROGRAMMING)

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
DAPR 106	Principles of Data Processing	3
BUAD 100	Introduction to Business	3
ACCT 111	Accounting I*	4
ENGL 101	Communication Skills I	3
MATH 101	Fundamentals of Mathematics I (or MATH elective)**	3
GENL 100	Orientation	1
PHED 100	Fundamentals of Physical Activity	1
	Total	18
SECOND QUARTER		
DAPR 138	Computer System Architecture	3
DAPR 144	Computer Programming (Computer Concepts I) (or equivalent)	3
ACCT 112	Accounting II*	4
ENGL 102	Communications Skills II	3
MATH 102	Fundamentals of Mathematics II (or MATH elective)**	3
	Total	16
THIRD QUARTER		
DAPR 147	Computer Programming (COBOL)	3
ACCT 113	Accounting III*	4
BUAD 164	Principles of Business Management I	3
PSYC 110	Applied Psychology (or Human Relations Elective)***	3
SPDR 136	Speech Communications	3
	Total	16
FOURTH QUARTER		
DAPR 256	Computer Programming (Advanced COBOL)	4
DAPR 281	Systems Analysis I	3
BUAD 254	Applied Business Statistics I	3
ECON 160	American Economics***	3
ENGL 180	Business English (or ENGL Elective)	3
PHED	Physical Education Elective	1
	Total	17
FIFTH QUARTER		
DAPR 287	Computer Operating Systems	3
DAPR	Computer Programming Elective	4
DAPR 286	Computer Programming Applications	4
BUAD 255	Applied Business Statistics II	3
	Elective	1-3
	Total	15-17

Course Number	Course Title	Course Credits
SIXTH QUARTER		
DAPR	Computer Programming Elective	4
DAPR 298	Seminar & Project in Data Processing	5
GOVT 180	American Constitutional Government***	3
	Elective	3-6
PHED	Physical Education Elective	1
	Total	16-19
	Total Minimum Credits for a Data Processing Technology Degree	97

* ACCT 211-212-213 may be substituted with approval of Division.

** MATH Elective includes BUAD 101 and 102.

*** SOSC 101-102-103 may be substituted for GOVT 180, PSYC 110, and ECON 160. SOSC 101-102-103 need not be taken sequentially.

Note: Credits earned in an approved Cooperative Education Program may be substituted for up to 15 hours of course work. (No more than 5 hours per quarter) Specific substitutions must be approved by the faculty advisor.

DENTAL ASSISTING

(Annandale Campus)

Degree: Certificate

Length: Four quarters (one year)

Purpose:

1. To prepare students to perform the following services under supervision of a dentist:
 - a. chairside assistance including preparation of impression and restorative materials
 - b. exposing and handling of intra and extra-oral dental radiographs
 - c. basic laboratory procedures
 - d. basic office management procedures
 - e. dental health education
 - f. oral and systemic emergencies

2. To qualify the student for the American Dental Assistants Association Certification Examination.

Scope and Objectives: There is a continuous and ever-growing need for trained dental assistants in Northern Virginia. This basic

course covers the essential scientific and practical knowledge required for a dental assistant to perform efficiently in a dental office. On the job training experience, both general and specialty, is provided at the College, selected offices of participating dentists, and at nearby large dental facilities.

Admission Requirements: In addition to requirements for general admission to the College each student will have a personal interview with the program Head of the Dental Technologies and/or faculty in the Dental Assisting Program.

Curriculum Requirements: Any student whose overall GPA falls below 2.0 in any one quarter must obtain permission from the Program head to continue the major in Dental Assisting.

Students are responsible for transportation to and from facilities used for clinical laboratory experiences.

DENTAL ASSISTING Certificate Program

Course Number	Course Title	Course Credits
FIRST QUARTER		
DENT 100	Introduction for Dental Auxiliaries	3
DENT 101	Dental Science I	4
DENT 110	Introduction to Dental Materials	4
GENL 100	Orientation	1
ENGL 101	Communication Skills I	3
SECR 156	Personal Development	3
	Total	18
SECOND QUARTER		
DENT 102	Dental Science II	4
DENT 111	Clinical Procedures I	4
DENT 121	Chairside Assisting I	4
GOVT 180	American Constitutional Government	3
SPDR 136	Speech Communications	3
	Total	18
THIRD QUARTER		
DENT 103	Dental Science III	4
DENT 112	Clinical Procedures II	4
DENT 122	Chairside Assisting II	4
SECR 136	Filing and Records Management	3
ECON 160	American Economics	3
	Total	18

Course Number	Course Title	Course Credits
FOURTH QUARTER		
DENT 123	Chairside Assisting III	6
DENT 198	Seminar & Project	2
PSYC 110	Principles of Applied Psychology or Human Relations	3
*SECR 111	Typewriting I	3
	Total	14
	Total Minimum Credits for Certificate in Dental Assisting Program	68

* With typing proficiency demonstrated, elective may be substituted.

DENTAL LABORATORY TECHNOLOGY

(Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The curriculum in Dental Laboratory Technology is designed to train the qualified individual for employment as a dental laboratory technician either in a commercial or public dental laboratory or a dental office to provide an essential support service for the dental profession according to the dentist's prescription or work request. The dental laboratory technician constructs and repairs all types of dental prosthetic appliances.

The course will cover: dental materials, natural science, dental anatomy and physiology, complete and partial denture techniques, and basic crown and bridge and ceramic techniques. Related courses include: business, communication skills, economics, government, and psychology.

Admission Requirements:

In addition to requirements for general admission to the College:

- A. Manual dexterity test
- B. Personal interview by Counseling Services and Program Head

Students majoring in Dental Laboratory Technology are admitted annually in September.

Curriculum Requirements: Any student whose overall GPA falls below a 2.0 must obtain permission from the program head to continue the major in Dental Laboratory Technology.

Upon satisfactory completion of the six-quarter curriculum, the graduate will be awarded the Associate in Applied Science Degree in Dental Laboratory Technology.

DENTAL LABORATORY TECHNOLOGY

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
DENT 100	Introduction for Dental Auxiliaries	3
DENT 141	Dental Laboratory Technology I	7
DENT 137	Dental Anatomy and Physiology for Dental Laboratory	4
NASC 121	Natural Sciences I	4
	Total	18
SECOND QUARTER		
DENT 142	Dental Laboratory Technology II	7
ENGL 101	Communication Skills I	3
NASC 122	Natural Sciences II	4
	Elective	3
GENL 100	Orientation	1
	Total	18
THIRD QUARTER		
DENT 143	Dental Laboratory Technology III	7
BUAD 110	Human Relations and Leadership Training	3
ENGL 102	Communication Skills II	3
PHED 100	Fundamentals of Physical Activity	1
NASC 123	Natural Sciences III	4
	Total	18
FOURTH QUARTER		
DENT 244	Dental Laboratory Technology IV	7
PHED	Physical Education Elective	1
	Social Science Elective*	3
SPDR 136	Speech Communications	3
	Total	14
FIFTH QUARTER		
DENT 245	Dental Laboratory Technology V	8
	Social Science Elective*	3
PHED	Physical Education Elective	1
DENT 210	Dental Laboratory Materials	4
	Total	16

Course Number	Course Title	Course Credits
SIXTH QUARTER		
DENT 246	Dental Laboratory Technology VI	8
DENT 298	Seminar and Project	2
	Social Science Elective*	3
	Total	13
	Total minimum credits for Associate in Applied Science Degree in Dental Laboratory Technology	97

* Social Science Elective Option: SOSOC 101-102-103 or GOVT 180, ECON 160, PSYC 110.

DRAFTING AND DESIGN TECHNOLOGY

(Alexandria Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: There is a need for qualified draftsmen to work with engineers, industry, and civil service agencies. The Associate in Applied Science Degree curriculum in Drafting and Design Technology is designed to prepare persons for full-time employment immediately or transfer to a university which offers a baccalaureate degree in machine design technology upon completion of the program. A student who completes the program will be capable of skilled, neat, rapid lettering and line work, and accurate detail in assembly drawings as expected of a beginning draftsman.

Occupational Objectives:

- Drafting Supervisor
- Draftsman
- Fixture Design Draftsman
- Machine Design Draftsman

Admission Requirements: In addition to the admission requirements established for the College, entry into the Associate in Applied Science Degree program in Drafting and Design Technology requires proficiency in high school English and high school mathematics. Students who are not proficient in English and mathematics will be required to correct their deficiencies in the Developmental Studies Program before entering the Drafting and Design Technology curriculum.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in drafting and design technology with the remaining courses in related areas, general education, and electives.

Instruction will include both the theoretical concepts and practical applications needed for future success in drafting and design technology. Students are advised to consult with their faculty advisor and the counseling office in planning their program and selecting electives. Upon completion of the six quarter curriculum, the graduate will be awarded the Associate in Applied Science Degree in Drafting and Design Technology.

DRAFTING AND DESIGN TECHNOLOGY

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
DRFT 111	Technical Drafting I	2
ENGL 101	Communication Skills I	3
GENL 100	Orientation	1
MATH 121	Engineering Technical Mathematics I	5
PHYS 101	Introductory Physics I	4
PSYC	Psychology	3
	Total	18
SECOND QUARTER		
DRFT 112	Technical Drafting II	2
ENGL 102	Communication Skills II	3
MATH 122	Engineering Technical Mathematics II	5
PHYS 102	Introductory Physics II	4
PHED 100	Fundamentals of Physical Activity	1
	Total	15
THIRD QUARTER		
DRFT 113	Technical Drafting III	2
INDT 111	Materials & Processes of Industry I	3
MATH 123	Engineering Technical Mathematics III (or Elective)	3-5
PHYS 103	Introductory Physics III (or Elective)	4
	English or Speech	3
PHED	Physical Education Elective	1
	Total	16-18
FOURTH QUARTER		
DRFT 211	Advanced Technical Drafting V	3
DRFT	Drafting Elective	2
ECON	Economics	3
ENGR 151	Mechanics I	3
INDT 112	Materials and Processes of Industry II	3
INDT 176	Industrial Safety	2
PHED	Physical Education Elective	1
	Total	17

Course Number	Course Title	Course Credits
FIFTH QUARTER		
DRFT 212	Advanced Technical Drafting VI	3
GOVT	Government	3
MECH 131	Machine Lab I	2
MECH 144	Strength of Materials (or ENGR 152)	3-4
MECH 215	Jig & Fixture Design I	3
	Elective	3
	Total	17-18
SIXTH QUARTER		
DRFT 213	Advanced Technical Drafting VII	3
DRFT 298	Seminar and Project	2
INDT 226	Plant Layout (or Elective)	3
INDT 270	Industrial Management (or Elective)	3
MECH 132	Machine Lab II (or Elective)	2
	Elective	1-3
	Total	14-16
	Total Minimum Credits for Drafting and Design Technology Degree	97

EARLY CHILDHOOD DEVELOPMENT ASSISTANT

(Alexandria Campus)

Pending Approval

Certificate: Early Childhood Development Assistant

Length: Three quarters (one year)

Purpose: The Certificate Program is designed to prepare individuals for employment in a variety of situations wherein care and maintenance of young children is the primary objective. Persons already employed in development positions will benefit from the program by upgrading and broadening their paraprofessional skills and qualifications.

Occupational Objectives: Preparation or upgrading for positions as childhood development assistants (or aides) in the following types of facilities:

- Child Development Centers
- Day Care Centers
- Nursery (pre-kindergarten) Schools
- Residential Facilities
- Family Day Care Homes

Admission Requirements: In addition to requirements for general admission to the College, a personal interview with a program faculty member and evidence of good health is necessary.

Program Curriculum Requirements: The program offers a combination of general education courses and specialized courses intended to provide preparation in the areas most directly applicable to child-development functions. Courses are designed to provide as much practical experience as possible, including supervised activities in a laboratory setting. Students may carry the full curriculum to receive the certificate in one year or may take a lesser number of courses suitable to their own schedules and complete the curriculum over a longer period of time. Graduates will be awarded a Certificate for Early Childhood Development Assistants.

EARLY CHILDHOOD DEVELOPMENT ASSISTANT

Certificate

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
ENGL 101	Communications Skills I	3
EDUC 121	Introduction to Early Childhood Education	3
EDUC 191	Techniques in Child Care	3
PSYC 128	Human Relations	3
PHED 108	Physical Activities for Young Children	3
	Total	16

SECOND QUARTER

HLTH 110	Concepts of Personal & Community Health	3
ENGL 102	Communications Skills II	3
EDUC 192	Techniques in Child Care	3
MUSC 109	Music for Children	
or		
EDUC	Creative Activities for Children	3
GOVT	Political Resources of Community	
or		
SOCI	Child-Parent Community Relation	3
or		
BUAD 116	Personal Finance	
	Total	15

Course Number	Course Title	Course Credits
THIRD QUARTER		
EDUC 193	Techniques in Child Care	3
EDUC 136	Materials & Equipment for Inst'l Aides	3
HLTH 106	First Aid and Safety*	3
EDUC 198	Seminar and Project	3
PSYC 130	Child Growth and Development	3
	Total	15
	Total Minimum Credits Required for Certificate	46

* Students who have completed prior training or certificate may petition for course waiver or credit by examination.

EDUCATION

(Alexandria and Annandale Campus)

Degree: Associate in Science

Length: Six quarters (two years)

Purpose: With the rapid development and emphasis on education in Virginia there is a great demand for qualified teachers and other educational specialists to help provide leadership for the schools.

The Associate in Science degree program in Education is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Teacher Education.

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Science degree program in Education requires the satisfactory completion of the following high school units or equivalent as a minimum:

4 units of English

2 units of mathematics (algebra and geometry)

1 unit of laboratory science

1 unit of social studies

Students who do not meet these requirements may be permitted to correct their deficiencies in the Developmental Program before entering the Education curriculum.

Curriculum Requirements: Modern education demands that its teachers and staff be knowledgeable both in the subjects they plan to teach and in general education. Thus, this curriculum requires courses in the humanities, natural sciences, mathematics, social sciences, and health and physical education in addition to general psychology usually required in the first two years of a baccalaureate teacher education curriculum. The Education curriculum is designed to lead the student toward meeting the state teacher certification requirements for a Collegiate Professional Certificate. Eligible students may also qualify for the State Teachers' Scholarships. *Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and also, to consult with Counseling Services of the Community College in planning his program and selecting his electives.* In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and courses to the first two years of the program at the four-year college or university. Upon satisfactory completion of the six-quarter program listed, the student will be awarded the Associate in Science degree with a major in Education.

EDUCATION

Associate in Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 111	English Composition I	3
GENL 100	Orientation	1
HIST 111	American History I	3
MATH	Mathematics (MATH 161 or 181)*	3
	Natural Science (lab)**	4
	Elective	3
	Total	17
SECOND QUARTER		
ENGL 112	English Composition II	3
HIST 112	American History II	3
MATH	Mathematics (MATH 162 or 182)*	4
	Natural Science (lab)**	4
	Elective	3
	Total	16

Course Number	Course Title	Course Credits
THIRD QUARTER		
ENGL 113	English Composition III	3
HIST 113	American History III	3
MATH	Mathematics (MATH 163 or 183)*	3
	Natural Science (lab)**	4
PHED 100	Fundamentals of Physical Activity	1
	Elective	3
	Total	17
FOURTH QUARTER		
ENGL	American, English, or World Literature I	3
GOVT	Government*	3-5
PSYC 201	General Psychology I (or PSYC 231)	3
	Humanities Elective	3
	Elective	3
	Total	15-17
FIFTH QUARTER		
ENGL	American, English, or World Literature II	3
ECON	Economics*	3
PSYC 202	General Psychology II (or PSYC 232)	3
PHED	Physical Education Elective	1
	Electives	3-6
	Total	13-16
SIXTH QUARTER		
ENGL	Literature (or Elective)	3
PSYC 203	Gen. Psych. III (or PSYC 233)	3
SOCI	Sociology (or Elective)*	3
SPDR 130	Principles of Public Speaking (or Elective)	5
PHED	Physical Education Elective	1
	Elective	3
	Total	18
	Total Minimum Credits for an Education Degree	97

* Courses may also be selected from the sequences MATH 191-192-193 or MATH 141-142-143.

** Natural Science may either be BIOL 101-102-103; CHEM 101-102-103; PHYS 101-102-103, or NASC 121-122-123.

* In addition to the Psychology requirements, students will be advised to complete Government and Economics course or a full year of sophomore level social science if required by the four-year college or university to which they plan to transfer.

Educational Assistant

(Alexandria Campus)

Certificate: Certificate for Educational Assistant

Length: Three Quarters (one year)

Purpose: With the changing patterns in education there is a need for qualified personnel to assist the classroom teacher. The Certificate Program for Educational Assistants consists of academic training, course work and practicum experience needed in working with children in the school-classroom setting. The curriculum is designed to permit upward mobility to the AAS Program for instructional assistants.

Occupational Objectives:

Instructional Aide

Day Care Center Assistant

Admission Requirements: In addition to admissions requirements established for the College, entry into the instructional assistant curriculum requires evidence of good physical health, and an interview with a member of the education faculty.

Curriculum Requirements: Any student who receives a final grade lower than "C" in any of the education courses must obtain permission from the Division Chairman to continue the major in education. The curriculum is designed to provide approximately one half of the requirements in general education and related areas of study. The remainder of the courses are designed to give both theory and practice within the specific area of study. The courses are designed to provide as much practical experience as possible. Graduates will be awarded a certificate for Educational Assistant.

Educational Assistant

Certificate

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I	3
SOSC	Social Science	3
GENL 100	Orientation	1
EDUC 121	Childhood Education I	3
PSYC 128	Human Relations	3
HLTH 110	Concepts of Personal and Comm. Health	3
	Total	16

Course Number	Course Title	Course Credits
SECOND QUARTER		
ENGL 102	Communication Skills II	3
SOSC	Social Science	3
PHED 108	Physical Activities for Children	3
or	or	
PHED 109	Physical Act. for Pre-Adolesc. & Adolesc.	3
EDUC 136	Materials & Equip. for Instr'l Assistants	3
EDUC 122	Childhood Education II	3
EDUC 161	Educational Techniques I	3
or	or	
EDUC 181	Seminar and Practicum	
	Total	18
THIRD QUARTER		
SPDR 136	Speech Communications	3
SOSC	Social Science	3
EDUC 198	Seminar and Project	3
EDUC 123	Childhood Education III	3
	Elective	2-3
	Total	14-15
	Total minimum credits required for certificate	45

EDUCATIONAL ASSOCIATE

(Alexandria Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: With the changing patterns in education, there is a need for qualified personnel to assist in the classroom. The Associate in Applied Science Degree curriculum is designed to prepare pre-service and in-service students as instructional assistants who will function in those instructional areas designated by the classroom teacher. The curriculum provides the theoretical and practical foundation for developing the necessary skills and knowledge to perform effectively in the classroom setting. Practical experiences in laboratory situations are an integral part of the program.

Occupational Objectives:

Instructional Assistant

Day Care Center Supervisor

Pre-School or Nursery School Assistant

Admission Requirements: In addition to admission requirements established for the College, entry into the Educational curriculum requires evidence of good physical health and a personal interview with a member of the education faculty.

Curriculum Requirements: Any student who receives a final grade lower than "C" in any of the educational courses must obtain permission from the Division Chairman to continue the major in education. The curriculum is designed to give both theory and practice within the specific area of study. Graduates will be awarded an Associate in Applied Science degree.

EDUCATIONAL ASSOCIATE

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I	3
GENL 100	Orientation	1
EDUC 121	Childhood Education I	3
EDUC 161	Educational Techniques I	3
PHED 108	Physical Activities for Children	3
HLTH 110	Concepts of Personal & Comm. Health	3
	Total	16
SECOND QUARTER		
ENGL 102	Communication Skills II	3
EDUC 162	Educational Techniques II	3
PSYC 110	Principles of Applied Psychology	3
EDUC 122	Childhood Education II	3
HLTH	Child Health and Nutrition	3
PHED 100	Fundamentals of Physical Activity	1
	Total	16
THIRD QUARTER		
SPDR 137	Speech Communication	3
MUSC 109	Music for Children	3
PSYC 128	Human Relations	3
ARTS 196	Art Workshop (or Creative Activities for Children)	2
EDUC 123	Childhood Education III	3
HLTH 104	First Aid*	2
PHED	Physical Education Elective	1
	Total	17

Course Number	Course Title	Course Credits
FOURTH QUARTER		
SECR 111	Typing*	3
EDUC 117	Introduction to Reading Methods	3
EDUC 140	Modern Math Concepts	3
PSYC 130	Child Growth and Development	3
or PSYC 236	Psychology of Adolescence	
SOSC	Social Science	3
	Total	15
FIFTH QUARTER		
EDUC 163	Educational Techniques III	3
EDUC 116	Library Utilization for Instr. Asst.	3
EDUC 150	Modern Science Concepts	3
PSYC 246	Educational Psychology	3
SOSC	Social Science	3
PHED	Physical Education Elective	1
	Total	16
SIXTH QUARTER		
EDUC 136	Materials & Equip. for Instr'l Assistants	3
EDUC 298	Seminar and Project	3
SOSC	Social Science	3
	Electives	8-9
	Total	17-18
	Total Minimum Credits for Educational Technology	
	A.A.S. Degree	97

* Students who have completed prior training or certificate may petition for course waiver or credit by examination.

ELECTRONICS TECHNOLOGY

(Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: With the rapid growth of the electronics and manufacturing industries in Virginia and the steady demand for qualified electronics technicians there is a need for trained personnel to meet these requirements. Upon successful completion of the program, the student is enabled to take full employment immediately or to transfer to universities which offer a baccalaureate degree in Electronics Technology. In this case, the student is urged to acquaint himself with the requirements of the university to which he expects to transfer.

Occupational Objectives:

Electronics and Industrial Electronics Technician
Instrument and Laboratory Technician
Radio and Television Technician
Electronics Products Sales Representatives
Communications Technician

Admission Requirements: Admission to the program, in addition to the general requirements for admission to the College, requires a high school diploma or its equivalent with a minimum of a grade C average in each of the following areas:

- 4 units of English
- 2 units of Math—(3 units recommended—2 units of Algebra plus 1 unit of geometry or trigonometry)
- 1 unit of Laboratory science
- 1 unit of Social Studies or equivalent

Students who do not meet these requirements may be permitted to correct their deficiencies in the Developmental Studies Program before entering the Electronics Technology curriculum.

Curriculum Requirements: The program in Electronics Technology is a two-year curriculum combining instruction required for competence as a technician in industry. The first year of the Electronics Technology curriculum is designed to establish a general base in mathematics and electronics circuits. The second year develops this base in a number of important areas of electronics such as computers, control circuits, measurements, and communications. The graduate should have sufficient background, both in depth and diversity, to allow him employment in any area of the electronics field as a technician. Approximately one-half of the curriculum will include courses in electronics technology with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in electronics technology. Upon satisfactory completion of the six-quarter curriculum, the graduate will be awarded the Associate in Applied Science Degree in Electronics Technology.

ELECTRONICS TECHNOLOGY

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
PHED 100	Fundamentals of Physical Activity	1
ENGL 101	Communication Skills I*	3
MATH 121	Engineering Technical Mathematics I	5
ELEC 114	Fundamentals of Direct Current	4
ELEC 120	Introduction to Tubes and Transistors	4
	Total	18
SECOND QUARTER		
PHED	Physical Education Elective	1
ENGL 102	Communication Skills II*	3
MATH 122	Engineering Technical Mathematics II	5
ELEC 115	Fundamentals of Alternating Current	4
ELEC 125	Introduction to Electronics	5
	Total	18
THIRD QUARTER		
PHED	Physical Education Elective	1
PHYS 101	Introductory Physics I	4
MATH 123	Engineering Technical Mathematics III	5
ELEC 116	Circuit Analysis	4
ELEC 126	Amplifiers	4
	Total	18
FOURTH QUARTER		
PHYS 102	Introductory Physics II	4
	Social Science Elective**	3
ELEC 227	Pulse and Switching Circuits	3
ELEC 241	Communications I	4
ELEC 276	Instruments and Measurements	4
	Total	18
FIFTH QUARTER		
	Social Science Elective**	3
ELEC 242	Communications II	4
ELEC 250	Introduction to Computers	4
ELEC 260	Control Circuits	4
DRFT 256	Electronics Drafting	2
	Total	17

Course Number	Course Title	Course Credits
SIXTH QUARTER		
	English or Speech*	3
	Social Science Elective**	3
ELEC 243	Communications Systems	4
ELEC 249	Principles of Television Electronics	3
ELEC 287	Advanced Circuits and New Devices	2
ELEC 298	Seminar and Project	2
	Total	17
	Total Minimum Credits for an Electronics Technology Degree	106

* English 111, 112, 113 may be substituted for ENGL 101, 102 and sixth quarter English or speech.

** Social Science Elective may be chosen from the following fields: economics, psychology, government, or social science.

ENGINEERING

(Alexandria and Annandale Campus)

Degree: Associate in Science

Length: Six quarters (two years)

Purpose: The demand for technically trained people is increasing rapidly in Virginia as well as throughout the world. The engineer is a most important member of the technical team, which includes the scientist, engineer, technician, and skilled craftsman. Opportunities are unlimited for men and women in the field of engineering which is so diversified now that one may enter almost any specialization and find employment. The preparation for the engineering profession is based on a vigorous program, especially in mathematics and science.

The Associate in Science degree program in Engineering is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in one of the following engineering fields:

- Aerospace Engineering
- Agricultural Engineering
- Architectural Engineering
- Ceramic Engineering
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Engineering Mechanics

Engineering Science
Engineering Technology
Industrial Engineering
Mechanical Engineering
Metallurgical Engineering
Mining Engineering
Nuclear Engineering
Ocean Engineering

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Science degree curriculum in Engineering requires the satisfactory completion of the following high school units or equivalent as a minimum:

4 units of English

4 units of mathematics (2 units of algebra, 1 unit of geometry and trigonometry, 1 unit of Advanced Math.)

1 unit of a laboratory science (2 preferred—Chemistry and Physics)

1 unit of social studies

Students who do not meet the requirements listed above may be permitted to correct their deficiencies in the Developmental Program or one of the Engineering Technology curricula before entering the Engineering curriculum.

Curriculum Requirements: This program includes the English and humanities, mathematics, science, social science, and introductory engineering courses. *Each student is urged to acquaint himself with the requirements of the major department in the college or university to which he expects to transfer and also to consult with Counseling Services of the community college in planning his program and selecting his electives.* In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and course to the first two years of the program at the four-year college or university. Upon satisfactory completion of the six-quarter curriculum described, the student will be awarded the Associate in Science degree with a major in Engineering.

ENGINEERING****Associate in Science Degree Program**

Course Number	Course Title	Course Credits
FIRST QUARTER		
CHEM 111	General Inorganic Chemistry I	4
ENGL 111	English Composition I	3
GENL 100	Orientation	1
ENGR 101	Introduction to Engineering	2
ENGR 121	Engineering Graphics I	2
MATH 141	Introductory Mathematical Analysis I	5
PHED 100	Fundamentals of Physical Activity	1
	Total	18
SECOND QUARTER		
CHEM 112	General Inorganic Chemistry II	4
ENGL 112	English Composition II	3
ENGR 102	Introduction to Engineering Methods	2
ENGR 122	Engineering Graphics II	2
MATH 142	Introductory Mathematical Analysis II	5
PHED	Physical Education Elective	1
	Total	17
THIRD QUARTER		
CHEM 113	General Inorganic Chemistry III	4
ENGL 113	English Composition III	3
ENGR 123	Engineering Graphics III	2
MATH 143	Introductory Mathematical Analysis III	5
ENGR 103	Conceptual Design and Analysis	2
PHED	Physical Education Elective	1
	Total	17
FOURTH QUARTER		
ENGR 251	Engineering Mechanics I (Statics)	4
	Social Science Elective*	3
MATH 241	Advanced Mathematical Analysis I	4
PHYS 221	General University Physics I	4
HIST	History (or Elective)	3
	Total	18
FIFTH QUARTER		
ENGR 253	Engineering Mechanics III (DYNAMICS)	4
MATH 242	Advanced Mathematical Analysis II	4
PHYS 222	General University Physics II	4
ENGR 206	Engineering Economics	3
	Humanities Elective	3
	Total	18

Course Number	Course Title	Course Credits
SIXTH QUARTER		
ENGR 252	Engineering Mechanics II (Mechanics of Solids) or ELEC 217/218***	4-5
MATH 243	Advanced Mathematical Analysis III	4
PHYS 223	General University Physics III	4
	Social Science Elective*	3
	Total	15-17
	Total Minimum Credits for the Engineering Degree	103

** The Engineering student is encouraged to take approximately 18 hours each quarter so he may obtain full Junior standing upon transfer.

* Students are required to take 9 credits of Social Science which may be selected from the following fields: Economics, Geography, Government, History, Psychology, Social Science, or Sociology. The Social Science course selected should be the one acceptable by the four-year college or university to which the student plans to transfer.

*** Students transferring for a B.S. in E.E. may substitute Circuits for Mechanics.

ENGINEERING DRAFTING

(Alexandria and Annandale Campus)

Certificate: Certificate in Engineering Drafting with options in Specific Areas of Drafting:

- Architectural Drafting
- Mechanical Engineering Drafting
- Structural Drafting

Length: Three quarters (one year)

Purpose: The certificate programs are intended:

- 1) To meet the ever-increasing demand for people trained in the areas of Architectural and Engineering Drafting;
- 2) To provide the minimum specialized training necessary to enter the Engineering field;
- 3) To improve the general education level to meet the demands of our society.

Upon successful completion of the program, the student is enabled to take full-employment immediately or transfer in one of the A.A.S. programs. In this case, he will receive advanced credit for parallel courses.

Admission Requirements: High school diploma or its equivalent with minimum of:

- a) three units of English
- b) one unit of mathematics
- c) one unit of lab science

Occupational Objectives: Draftsman or Engineering aide

Curriculum Requirements: Approximately one-half of the curriculum will include courses in Architectural or Engineering Drafting with the remaining courses in related subjects and General Education. An advisor specialized in the field is assigned to each student to help him to plan his program and select his electives.

ENGINEERING DRAFTING

Certificate Program

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
ENGL 101	Communication Skills I	3
MATH 11	Elements of Math I	3
ENGR 10	Introduction to Technical Engineering	2
	Non-Technical Elective*	3-4
	Drafting Electives**	3-4
	Total	15-17
SECOND QUARTER		
ENGL 102	Communication Skills II	3
MATH 12	Elements of Math II	3
ENGR 53	Elements of Statics & Strength of Material	3
	Technical Electives***	3-5
	Drafting Electives**	3-4
	Total	15-18
THIRD QUARTER		
ENGL 137	Technical Writing	3
MATH 13	Elements of Math III	3
	Drafting Electives**	3-4
	Technical Electives***	3-5
	Project and Seminar	2
	Total	14-17
Total Minimum Credits for an Engineering Drafting Certificate		44

* Non-Technical electives may be chosen from the following fields: government, economics, psychology, social science, natural science, or humanities.

** Drafting electives may be either ARCH 111, 112, 113 for Architectural Draftsmen or DRFT 111, 112, 113, 114, 211 for Engineering Draftsman.

*** Technical electives may be ARCH 141, 142, for Architectural Draftsmen or INDT 111, 112 and MECH 131, 132 for Engineering Draftsman.

FIRE SCIENCE

(Alexandria and Annandale Campus)

Options: Fire Investigation, Administration and Management

Degree: Associate in Applied Science

Length: Six Quarters (two years)

Purpose: With the increasing complexity of modern technology and the continuing emphasis upon professionalism, it is apparent that the fire service has evolved as a highly technical and sophisticated science requiring competently trained specialists. The general concern in the community demands the best possible protection against fire. The Fire Science Curriculum provides three areas of specialization within the framework of the curriculum:

Investigation
Administration
Management

Occupational Objectives: A variety of career fields either in the public or private sector exist for the educated, well-trained fire specialist. The following list suggests some of the choices:

1. College Instructor or Administrator
2. Fire Suppression (Local, State, Federal)
3. Equipment Manufacturing (Research & Development, Sales, Service)
4. Fire Prevention (Local, State, Federal)
5. Aero-space Technology (Technicians, Consultants, Specialists)
6. Underwriting Organizations
7. Industrial Fire Brigades
8. Fire Communications (Local and State)
9. Fire Protection (Industry, Local and State)
10. Fire Suppression (Forestry, State and Federal)

Admission Requirements: In addition to the general admission requirements for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Applied Science Degree curricula in Fire Investigation, Administration, or Management requires a personal interview with a representative of the fire science program; satisfactory performance on general aptitude test as required.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in Fire Investigation, Administration and Management with the remaining courses in related areas, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in Fire Investigation, Administration and Management.

Each student is urged to consult with his faculty advisor and Counseling Services of the College in planning his program and selecting his electives. Upon satisfactory completion of the six-quarter program described, the graduate will be awarded the Associate in Applied Science Degree in Fire Science with a major in either Fire Investigation or Administration or Management.

FIRE SCIENCE

Associate in Applied Science Degree

Fire Administration Option

Course Number	Course Title	Course Credits
FIRST QUARTER		
FIRE 100	Fire Service Administration	3
FIRE 106	Fire Protection Organization	3
FIRE 108	Fundamentals of Fire Supression	3
ENGL 101	Communication Skills I	3
NASC 121	Natural Science I	4
GENL 100	Orientation	1
Total		17
SECOND QUARTER		
FIRE 116	Fundamentals of Fire Prevention	3
FIRE 141	Fire Administration	3
ENGL 102	Communication Skills II	3
NASC 122	Natural Science II	4
MATH 101	Fundamentals of Mathematics I	3
PHED 100	Fundamentals of Physical Activity	1
Total		17
THIRD QUARTER		
FIRE 120	Fire Protection Equipment and Systems	3
FIRE 146	Fire Administration and Law	3
MATH 102	Fundamentals of Mathematics II	3
MASC 123	Natural Science III	4
PHED	Physical Education Elective	1
	Elective	3
Total		17

Course Number	Course Title	Course Credits
FOURTH QUARTER		
FIRE 206	Rescue Practices	3
BUAD 110	Human Relations and Leadership	3
ENGL 137	Technical Writing	3
PHED	Physical Education Elective	1
	Social Science Elective*	3
	Elective	3
	Total	16

FIFTH QUARTER		
FIRE 227	Building Construction and Codes	4
BUAD 276	Personnel Management	3
SPDR 136	Speech Communications	3
	Social Science Elective*	3
	Elective	3
	Total	16

SIXTH QUARTER		
FIRE 208	Water Distribution Systems	3
FIRE 216	Fire Hydraulics and Equipment	4
FIRE 298	Seminar and Project—Administration	3
	Social Science Elective*	3
	Elective	3
	Total	16
	Total Minimum Credits for Degree	99

* Social Science Elective Option: SOSC 101-102-103 or GOVT 180, ECON 160, PSYC 110

FIRE SCIENCE
Associate in Applied Science Degree
Fire Investigation Option

FIRST QUARTER		
FIRE 106	Fire Protection Organization	3
FIRE 146	Fire Administration and Law	3
ENGL 101	Communication Skills I	3
MATH 101	Fundamentals of Mathematics I	3
NASC 121	Natural Science I	4
GENL 100	Orientation	1
	Total	17

Course Number	Course Title	Course Credits
SECOND QUARTER		
FIRE 111	Hazardous Materials I	3
FIRE 116	Fundamentals of Fire Prevention	3
ENGL 102	Communication Skills II	3
MATH 102	Fundamentals of Mathematics II	3
NASC 122	Natural Science II	4
PHED 100	Fundamentals of Physical Activity	1
	Total	17
THIRD QUARTER		
FIRE 112	Hazardous Materials II	3
FIRE 120	Fire Protection Equipment & Systems	3
NASC 123	Natural Science III	4
PHED	Physical Education Elective	1
	Elective	6
	Total	17
FOURTH QUARTER		
FIRE 206	Rescue Practices	3
FIRE 207	Radiation Control Procedure	3
LWNF 231	Criminal Law, Evidence, and Procedures I	3
PHED	Physical Education Elective	1
	Social Science Elective*	3
	Elective	3
	Total	16
FIFTH QUARTER		
FIRE 227	Building Construction and Codes	4
FIRE 237	Arson Detection & Investigation	3
LWNF 232	Criminal Law, Evidence, and Procedures II	3
ENGL 137	Technical Writing	3
	Social Science Elective*	3
	Total	16
SIXTH QUARTER		
FIRE 298	Seminar and Project—Fire Investigation	3
LWNF 233	Criminal Law, Evidence and Procedures III	3
SPDR 136	Speech Communications	3
	Social Science Elective*	3
	Elective	3
	Total	15
	Total Minimum Credits for Degree	98

* Social Science Elective Option: SOSOC 101-102-103 or GOVT 180, ECON 160, PSYC 110

FIRE SCIENCE

Associate in Applied Science Degree

Fire Management Option

Course Number	Course Title	Course Credits
FIRST QUARTER		
FIRE 106	Fire Protection Organization	3
FIRE 108	Fundamentals of Fire Suppression	3
ENGL 101	Communication Skills I	3
MATH 101	Fundamentals of Mathematics I	3
NASC 121	Natural Science I	4
GENL 100	Orientation	1
	Total	17
SECOND QUARTER		
FIRE 111	Hazardous Materials I	3
FIRE 116	Fundamentals of Fire Prevention	3
ENGL 102	Communication Skills II	3
MATH 102	Fundamentals of Mathematics II	3
NASC 122	Natural Science II	4
PHED 100	Fundamentals of Physical Activity	1
	Total	17
THIRD QUARTER		
FIRE 112	Hazardous Materials II	3
FIRE 120	Fire Protection Equipment & Systems	3
FIRE 109	Suppression Operations	3
NASC 123	Natural Science III	4
	Elective	3
	Total	16
FOURTH QUARTER		
FIRE 206	Rescue Practices	3
FIRE 207	Radiation Control	3
SPDR 136	Speech Communications	3
PHED	Physical Education Elective	1
	Social Science Elective*	3
	Elective	3
	Total	16
FIFTH QUARTER		
FIRE 137	Tactics and Strategy	3
FIRE 227	Building Construction and Codes	4
ENGL 137	Technical Writing	3
	Social Science Elective*	3
	Elective	3
	Total	16

Course Number	Course Title	Course Credits
SIXTH QUARTER		
FIRE 208	Water Distribution Systems	3
FIRE 216	Hydraulics	4
FIRE 298	Seminar and Project—Fire Management	3
PHED	Physical Education Elective	1
	Social Science Elective*	3
	Elective	3
	Total	17
	Total Minimum Credits for Degree	98

* Social Science Elective Option: SOSC 101-102-103 or GOVT 180, ECON 160, PSYC 110

FIRE SCIENCE

(Alexandria & Annandale Campus)

Options: Fire Investigation, Administration and Management

Certificate: Certificates in Fire Investigation, Fire Administration and Fire Management

Length: Three quarters (one year)

Purpose: The Certificate Programs are designed for practitioners in fire service occupations who wish to upgrade and broaden their professional abilities and for others who are preparing to enter the broad field of the fire service.

Occupational Objectives: A variety of career fields either in the public sector or private sector exist for the educated, well-trained fire specialist. The following list suggests some of the choices:

1. Insurance Companies
2. Equipment Manufacturing (Sales—Service)
3. Fire Prevention (Local, State, Federal)
4. Industrial Fire Brigades
5. Fire Suppression (Local, State, Federal)
6. Communications (Local—State)

Admission Requirements: In addition to the admission requirements of the College, a personal interview with a member of the Fire Science faculty is required.

Curriculum Requirements: The programs offer training in advanced fire protection, fire investigation, administration and management techniques. Selected arts and science courses which have direct application to the programs and contribute to the advancement of social understanding and communication make up approximately one-half of the curriculums. Upon successful completion of the certificate program, the student will be awarded a Certificate in Fire Science with an option in Administration, Investigation, or Management.

FIRE SCIENCE
Certificate Program
Fire Administration Option

Course Number	Course Title	Course Credits
FIRST QUARTER		
FIRE 100	Fire Service Administration	3
FIRE 106	Fire Protection Organization	3
BUAD 110	Human Relations and Leadership	3
ENGL 101	Communications Skills I	3
GENL 100	Orientation	1
NASC 121	Natural Science I	4
	Total	17
SECOND QUARTER		
FIRE 116	Fundamentals of Fire Prevention	3
FIRE 141	Fire Administration	3
ENGL 102	Communications Skills II	3
NASC 122	Natural Science II	4
MATH	MATH 11 Elements of Mathematics or MATH 101 Fundamentals of Mathematics	3
	Total	16
THIRD QUARTER		
FIRE 120	Fire Protection Equipment and System	3
FIRE 146	Fire Administration and Law	3
MATH	MATH 12 Elements of Mathematics II or MATH 102 Fundamentals of Mathematics II	3
	Social Science Elective	3-4
NASC 123	Natural Science III	4
	Total	16-17
	Total Minimum Credits for Certificate in Administration	49

Social Science Elective Option: SOSO 100 (4 cr.), GOVT 180 (3 cr.), PSYC 110 (3 cr.), or ECON 160 (3 cr.)

FIRE SCIENCE
Certificate Program
 Fire Investigation Option

Course Number	Course Title	Course Credits
FIRST QUARTER		
FIRE 106	Fire Protection Organization	3
FIRE 146	Fire Administration and Law	3
ENGL 101	Communication Skills I	3
MATH	MATH 11 Elements of Mathematics I or MATH 101 Fundamentals of Mathematics I	3
GENL 100	Orientation	1
NASC 121	Natural Science I	4
	Total	17
SECOND QUARTER		
FIRE 111	Hazardous Materials I	3
FIRE 116	Fundamentals of Fire Prevention	3
ENGL 102	Communication Skills II	3
MATH	MATH 12 Elements of Mathematics II or MATH 102 Fundamentals of Mathematics II	3
NASC 122	Natural Science II	4
	Total	16
THIRD QUARTER		
FIRE 120	Fire Protection Equipment & Systems	3
FIRE 237	Arson Detection and Investigation	3
NASC 123	Natural Science III	4
	Social Science Elective	3-4
	Total	13-14
	Total Minimum Credits for Certificate in Investigation	46

Social Science Elective Option: SOSC 100 (4 cr.), GOVT 180 (3 cr.), PSYC 110 (3 cr.), or ECON 160 (3 cr.)

FIRE SCIENCE
Certificate Program
 Fire Management Option

FIRST QUARTER		
FIRE 106	Fire Protection Organization	3
FIRE 108	Fundamentals of Fire Suppression	3
NASC 121	Natural Science I	4
ENGL 101	Communication Skills I	3
MATH	MATH 11 Elements of Mathematics I or MATH 101 Fundamentals of Mathematics I	3
GENL 100	Orientation	1
	Total	17

Course Number	Course Title	Course Credits
SECOND QUARTER		
FIRE 111	Hazardous Materials I	3
FIRE 116	Fundamentals of Fire Prevention	3
NASC 122	Natural Science II	4
ENGL 102	Communication Skills II	3
MATH	MATH 12 Elements of Mathematics II or MATH 102 Fundamentals of Mathematics II	3
	Total	16
THIRD QUARTER		
FIRE 109	Fire Suppression Operations	3
FIRE 112	Hazardous Materials II	3
FIRE 120	Fire Protection Equipment and Systems	3
NASC 123	Natural Science III	4
	Social Science Elective	3-4
	Total	16-17
	Total Minimum Credits for Certificate in Management	49

Social Science Elective Option: SOSOC 100 (4 cr.) GOVOT 180 (3 cr.) PSYC 110 (3 cr.) or ECON 160 (3 cr.)

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT

(Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: With the rapid development of the public hospitality industry in Virginia, there is great demand for qualified personnel to assist in its management and growth. The Associate in Applied Science Degree curriculum in Hotel, Restaurant, and Institutional Management is designed primarily for persons who seek full-time employment in the public hospitality industry immediately upon completion of the community college curriculum. This curriculum is designed to enable young men and women to enter executive training and management positions in:

- Hotels, Motels and Motor Hotels
- Food Establishments
- Recreation Centers
- College Feeding Complexes
- Hospitals
- Resorts
- Private Clubs
- Travel and Tourist Operations
- Airlines

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog) entry into the Associate in Applied Science degree curriculum in Hotel, Restaurant, and Institutional Management requires one year of science and a proficiency in mathematics and English. Students who are not proficient in these subject areas will be required to correct their deficiencies in the Developmental Program before entering the curriculum.

Curriculum Requirements: This curriculum aims at providing a general education, yet a realistic and practical concentration in the area of public hospitality administration. The student develops a working grasp of the principles of hotel, restaurant, and institutional management and becomes familiar with the technical methods to successfully meet the challenges of one of the largest and most important of America's business enterprises. The Hotel, Restaurant, and Institutional Management curriculum provides three areas of specialization within the framework of the curriculum:

- Hotel-Motel Management
- Institutional Management or Dietetic Technician (General)
- Food Service Management

A new option is being developed which closely relates to the present Institutional Management Option. The first year of the curriculum is outlined within the Institutional Management curriculum and may be elected.

Upon completion of the six-quarter curriculum described, the student will be awarded the Associate in Applied Science degree in Hotel, Restaurant, and Institutional Management with a major in either Food Service Management, Hotel-Motel Management, Institutional Management, or Dietetic Technician.

HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT

Associate in Applied Science Degree

Hotel/Motel Management Option

Course Number	Course Title	Course Credits
FIRST QUARTER		
HRIM 146	Hotel/Restaurant Org. & Mgt	3
ENGL 101	Communication Skills I	3
ACCT 111	Accounting I	4
HRIM 124	Food Preparation I	4
HRIM 111	Food Science I	3
GENL 100	Orientation	1
Total		18

Course Number	Course Title	Course Credits
SECOND QUARTER		
ENGL 102	Communication Skills II	3
ACCT 112	Accounting II	4
HRIM 125	Food Preparation II	4
HRIM 112	Food Science II	3
HRIM 156	Club Management	3
PHED 100	Fundamentals of Physical Activity	1
	Total	18
THIRD QUARTER		
SPDR 136	Speech Communications	3
HRIM 113	Food Science III	3
HRIM	Elective*	3
ACCT 126	Hotel/Restaurant Accounting	3
HRIM 221	Quantity Food Preparation I	5
	Total	17
SUMMER SESSION		
HRIM 297	Cooperative Education	1-5
FOURTH QUARTER		
MATH 151	Business Mathematics I	3
HRIM 287	Hotel/Motel Front Office Procedure	3
HRIM 236	Sanitation	3
ECON 160	American Economics**	3
PHED	Physical Education Elective	1
GOVT 180	American Constitutional Government**	3
	Total	16
FIFTH QUARTER		
MATH 152	Business Mathematics II	3
PSYC 110	Principles of Applied Psychology or Human Relations**	3
HRIM 264	Food & Beverage Cost Control I	3
HRIM 266	Food Purchasing	3
HRIM	Elective*	3
	Total	15
SIXTH QUARTER		
HRIM 168	Executive Housekeeping	3
HRIM 289	Hotel/Motel Law	3
HRIM 298	Seminar and Project (or HRIM Elective*)	3
HRIM 277	Personnel Mgt for Hotel/Rest./Inst.	3
HRIM 286	Catering	3
HED	Physical Education Elective	1
	Total	16
	Total Minimum Credits for Degree	100

* HRIM Electives include: HRIM 134, HRIM 147, HRIM 186, HRIM 256, HRIM 297.

** SOSC 101-102-103 may be taken in place of ECON, GOVT, PSYC.

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Associate in Applied Science Degree

Food Service Option

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I	3
HRIM 146	Hotel/Restaurant Org & Mgt.	3
HRIM 124	Principles of Food Preparation I	4
HRIM 111	Food Science I	3
GENL 100	Orientation	1
HRIM 236	Sanitation	3
	Total	17
SECOND QUARTER		
ENGL 102	Communication Skills II	3
HRIM 147	Restaurant/Inst. Org & Mgt.	3
HRIM 125	Principles of Food Preparation II	4
HRIM 112	Food Science II	3
PHED 100	Fundamentals of Physical Activity	1
MATH 151	Business Mathematics I	3
	Total	17
THIRD QUARTER		
SPDR 136	Speech Communications	3
HRIM 140	Principles of Baking	4
HRIM 113	Food Science III	3
HRIM 186	Equipment Layout-Design or HRIM Elective	3
MATH 152	Business Mathematics II	3
PHED	Physical Education Elective	1
	Total	17
SUMMER SESSION		
HRIM 297	Cooperative Education	1-5
FOURTH QUARTER		
ACCT 111	Accounting I	4
HRIM 221	Quantity Food Preparation I	5
PSYC 110	Principles of Applied Psychology or Human Relations**	3
HRIM	Elective	3
ECON 160	American Economics**	3
	Total	18

Course Number	Course Title	Course Credits
FIFTH QUARTER		
HRIM	Elective*	6
HRIM 222	Quantity Food Preparation II	5
HRIM 264	Food & Beverage Cost Control	3
HRIM 266	Food Purchasing	3
PHED	Physical Education Elective	1
	Total	18
SIXTH QUARTER		
GOVT 180	American Constitutional Government**	3
HRIM	Elective*	3
HRIM 298	Seminar and Project (or HRIM Elective*)	3
HRIM 277	Personnel Management for Hotels, Restaurants Institutions	3
HRIM 286	Catering	3
	Total	15
	Total Minimum Credits for Degree	102

* HRIM Electives include: HRIM 135, HRIM 156, HRIM 265, HRIM 289, HRIM 297, ACCT 126.

** SOSC 101-102-103 may be taken in place of GOVT, PSYC, & ECON.

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Associate in Applied Science Degree

Institutional Management Option

FIRST QUARTER		
ENGL 101	Communication Skills I	3
HRIM 146	Hotel/Restaurant Org. & Mgt. or HRIM Elective	3
HRIM 124	Food Preparation	4
HRIM 111	Food Science I	3
GENL 100	Orientation	1
HRIM 236	Sanitation	3
	Total	17
SECOND QUARTER		
ENGL 102	Communication Skills II	3
MATH 151	Business Mathematics I	3
HRIM 147	Restaurant/Inst. Org. & Mgt.	3
HRIM 125	Food Preparation II	4
HRIM 112	Food Science II	3
PHED 100	Fundamentals of Physical Activity	1
	Total	17

Course Number	Course Title	Course Credits
THIRD QUARTER		
SPDR 136	Speech Communications	3
HRIM 140	Principles of Baking	4
HRIM 113	Food Science III	3
MATH 152	Business Math	3
HRIM 134	Nutrition I	3
	Total	16
SUMMER SESSION		
HRIM 297	Cooperative Education (Elective)	1-5
FOURTH QUARTER		
HRIM 135	Nutrition II	3
HRIM 221	Quantity Food Preparation I	5
PSYC 110	Principles of Applied Psych. or Human Relations**	3
ECON 160	American Economics**	3
ACCT 111	Accounting I	4
	Total	18
FIFTH QUARTER		
HRIM 222	Quantity Food Preparation II	5
HRIM 264	Food & Beverage Cost Control I	3
HRIM	Elective*	3
HRIM 234	Therapeutic Nutrition	3
HRIM 266	Food Purchasing	3
PHED	Physical Education Elective	1
	Total	18
SIXTH QUARTER		
GOVT 180	American Constitutional Government**	3
HRIM 186	Equipment Layout-Design or HRIM Elective	3
HRIM 265	Catering	3
HRIM 277	Personnel Management for HRIM	3
HRIM 298	Seminar and Project (or Elective)	3
PHED	Physical Education Elective	1
	Total	16
	Total Minimum Credits for Degree	100

* HRIM Electives include: HRIM 297, HRIM 265, HRIM 156, ACCT 126.

** SOSC 101-102-103 may be taken in place of GOVT, ECON, PSYC.

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Certificate Program

(Annandale Campus)

Certificate: Options of—Hotel/Motel Management and Food Service Management.

Length: Three quarters (one year)

Purpose: There is a community requirement to update employees in the Hospitality Industry as well as to introduce formal classroom teaching to augment the present on the job training of the many thousands of Hotels, Motels, Restaurants, and Institutions in the Northern Virginia area. The HRIM Certificate program is designed to accomplish this need.

Admission Requirements: The general admission requirements of the College.

Curriculum Requirements: The Certificate curriculum must and does provide a realistic and practical concentration of technical courses so needed by the Hospitality Industry but also provides subjects to yield an all around general education. Students may carry either the full curriculum to receive the certificate in one year or may take the number of courses to suit their allowed time and receive their certificate upon completion of the required number of courses.

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Certificate Program

Food Service Management Option

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
HRIM 124	Principles of Food Preparation I	4
HRIM 184	Hotel-Restaurant Organization & Mgt. I or Elective	3
HRIM 236	Sanitation	3
ECON 160	Survey of American Economics	3
HRIM 134	Nutrition I or Elective	3
	Total	17

Course Number	Course Title	Course Credits
SECOND QUARTER		
HRIM 125	Principles of Food Preparation II	4
HRIM 185	Restaurant Organization & Mgmt II	3
HRIM 266	Food Service Purchasing	3
ENGL 101	Communication Skills I	3
HRIM	Elective*	3
	Total	16
THIRD QUARTER		
PSYC 110	Principles of Applied Psychology or Human Relations	3
HRIM 186	Equipment Layout/Design or Elective	3
HRIM 140	Principles of Baking	4
HRIM 277	Personnel Mgt. for HRIM	3
HRIM	Elective*	3
	Total	16
	Total Minimum Credits for Certificate	49

* HRIM Electives include: HRIM 264, HRIM 265, HRIM 168, HRIM 111-112-113, or MATH 151.

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

Certificate Program

Hotel/Motel Management Option

FIRST QUARTER		
GENL 100	Orientation	1
ECON 160	Survey of American Economics	3
HRIM 184	Hotel-Restaurant Organization & Mgmt I	3
HRIM 287	Hotel-Motel Front Office Procedure	3
MATH 151	Business Mathematics I	3
HRIM 124	Principles of Food Preparation I	4
	Total	17
SECOND QUARTER		
ENGL 101	Communication Skills I	3
HRIM 125	Principles of Food Preparation II	4
HRIM 266	Food Purchasing	3
HRIM 156	Club Management	3
MATH 152	Business Mathematics II	3
	Total	16

Course Number	Course Title	Course Credits
THIRD QUARTER		
PSYC 110	Principles of Applied Psychology or Human Relations	3
HRIM 277	Personnel Management and Training for Hotels, Restaurants, & Institutions	3
HRIM 168	Executive Housekeeping	3
HRIM	Elective*	6
	Total	15
	Total Credits for a Certificate	48

* HRIM Electives include: HRIM 264, HRIM 265, HRIM 289, ACCT 126, ACCT 111, HRIM 111-112-113.

LIBERAL ARTS

(Alexandria and Annandale Campus)

Degree: Associate in Arts

Length: Six quarters (two years)

Purpose: The Associate in Arts degree program in Liberal Arts is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program, usually the Bachelor of Arts degree, in the liberal arts or social sciences. Students in this program may wish eventually to major in the following fields:

- | | |
|------------------|--------------------------------|
| Anthropology | Geography |
| Economics | Government (Political Science) |
| Education | History |
| English | Humanities |
| Foreign Language | Pre-Law |
| Journalism | Psychology |
| Library Science | Sociology |
| Literature | Teacher Education |
| Philosophy | |

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Arts degree program in Liberal Arts requires the satisfactory completion of the following high school units or equivalent as a minimum:

- 4 units of English
- 2 units* of mathematics (algebra and geometry)
- 1 unit of laboratory science
- 1 unit of history

The remaining units are elective subjects, but at least two units of a foreign language are recommended. Students who do not meet these requirements may be permitted to correct their deficiencies in the Developmental Program before entering the Liberal Arts curriculum.

Curriculum Requirements: This curriculum consists of courses in the humanities, including a foreign language, natural sciences, and social sciences usually required in the first two years of a baccalaureate liberal arts curriculum. A minimum of 97 credits is required for the Liberal Arts major in the Associate in Arts degree program. *Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with Counseling Services of the Community College in planning his program and selecting his electives.* In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and courses to the first two years of the program at the four-year college or university. Upon satisfactory completion of the six-quarter program described the student will be awarded the Associate in Arts degree with a major in Liberal Arts.

** Students are urged to check the mathematics requirements of the four-year college or university to which they plan to transfer to determine the proper mathematics courses to be taken in the community college.*

LIBERAL ARTS

Associate in Arts Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 111	English Composition I	3
GENL 100	Orientation	1
HIST	Amer. History (or Hist. of West. Civ.)	3
MATH	Mathematics I (MATH 161 or 181)***	3
	Foreign Language*	4
	Natural Science**	4
	Total	18
SECOND QUARTER		
ENGL 112	English Composition II	3
HIST	Amer. History (or Hist. of West. Civ.)	3
MATH	Mathematics II (MATH 162 or 182)***	3
	Foreign Language*	4
	Natural Science**	4
	Total	17

Course Number	Course Title	Course Credits
THIRD QUARTER		
ENGL 113	English Composition III	3
HIST	Amer. History (or Hist. of West. Civ.)	3
MATH	Mathematics III (MATH 163 or 183)***	3
	Foreign Language*	4
	Natural Science**	4
PHED 100	Fundamentals of Physical Activity	1
	Total	18
FOURTH QUARTER		
ENGL	English, American or World Literature I	3
	Social Science Elective*****	3
	Foreign Language*	4
	Elective***	6
	Total	16
FIFTH QUARTER		
ENGL	English, American or World Literature II	3
	Social Science Elective*****	3
	Foreign Language*	4
PHED	Physical Education Elective	1
	Elective****	6
	Total	17
SIXTH QUARTER		
	Social Science Elective*****	3
ENGL	English, American or World Literature III	3
	Foreign Language*	4
PHED	Physical Education Elective	1
	Elective****	6
	Total	17
	Total Minimum Credits for the Liberal Arts Degree	97

* Students who have previously studied a foreign language and who wish to continue to study the same language must make arrangements with the Foreign Language program of the Humanities Division to take a placement test at least 3 weeks before registration. Students who have successfully completed (within the last 2 years) the second level of a foreign language should not enroll in 101-102-103 of the same language, they should take 106 or 201 depending on the results of their placement test.

** Natural Science may either be BIOL 101-102-103 or CHEM 101-102-103 or PHYS 101-102-103 or NASC 121-122-123.

*** Courses may also be selected from the sequences MATH 191-192-193 or MATH 141-142-143.

**** It is imperative that a student check the requirements of the College or university to which transfer is contemplated. A full sequence of course work that will be transferable is essential.

***** Students are required to take 9 credits in a social science in addition to American History or History of Western Civilization, which may be selected from the following fields: Economics, Geography, Government, History, Psychology, Social Science, or Sociology. The social science course selected should be the one acceptable to the four-year college or university to which the student plans to transfer.

MECHANICAL ENGINEERING TECHNOLOGY

(Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The Associate in Applied Science Degree curriculum in Mechanical Engineering Technology is designed to prepare young men and women for industrial employment as mechanical engineering technicians immediately upon the completion of the program or to transfer to universities which offer a baccalaureate degree in Mechanical Engineering Technology. In this case, the student is urged to acquaint himself with the requirements of the university to which he expects to transfer. The field embraces the manufacture and production of mechanical products and the tools, machines, and processes by which they are made. In a broad sense, mechanical technology is the creation and utilization of mechanical power which enters into every business, industrial, and community activity.

Occupational Objectives: The Mechanical Engineering Technician usually serves as a liaison between the engineering and production departments working with the design and development of engineering plans. He may serve as a draftsman or drafting supervisor. His responsibilities may include estimating, inspecting and testing engineering equipment; operating, maintaining, and repairing engineering plants; research and development; sales and representation; consumer advice; training and education.

Admission Requirements: Admission to the program, in addition to the general requirements for admission to the College, requires a high school diploma or its equivalent with a minimum of a grade C average in each of the following areas:

- 4 units of English
- 2 units of Math—(3 units recommended—2 units of Algebra plus 1 unit geometry or trigonometry)
- 1 unit of Laboratory science
- 1 unit of Social Studies or equivalent

Students who do not meet these requirements may be permitted to correct their deficiencies in the Developmental Studies Program or in the Engineering Drafting Certificate Program before entering the Engineering Technology curricula.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in Mechanical Engineering Technology with

the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in mechanical engineering technology. Students are advised to consult with their faculty advisor and the Counseling Services in planning their program and selecting electives. Upon satisfactory completion of the six-quarter curriculum, the graduate will be awarded the Associate in Applied Science Degree in Mechanical Engineering Technology.

MECHANICAL ENGINEERING TECHNOLOGY

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
ENGL 101	Communication Skills I*	3
	Social Science Elective**	3
MATH 121	Engineering Technical Mathematics I	5
ENGR 100	Introduction to Engineering	2
DRFT 111	Technical Drafting I	2
	Total	16
SECOND QUARTER		
ENGL 102	Communication Skills II*	3
	Social Science Elective*	3
MATH 122	Engineering Technical Mathematics II	5
INDT 111	Materials & Processes of Industry I	3
MECH 131	Machine Laboratory I	2
DRFT 112	Technical Drafting II	2
	Total	18
THIRD QUARTER		
	English or Speech*	3
	Social Science Elective**	3
INDT 112	Materials & Processes of Industry II	3
MECH 132	Machine Laboratory II	2
DRFT 113	Technical Drafting III	2
ENGR 151	Mechanics I	4
	Total	17
FOURTH QUARTER		
PHED 100	Fundamentals of Physical Activity	1
PHYS 101	Introductory Physics I	4
ENGR 152	Mechanics II	3
MECH 246	Metallurgy	4
MECH 264	Thermodynamics	4
ENGR 154	Mechanics Laboratory	1
	Total	17

Course Number	Course Title	Course Credits
FIFTH QUARTER		
PHED	Physical Education Elective	1
PHYS 102	Introductory Physics II	4
ENGR 153	Mechanics III	3
MECH 237	Mech. Design I	4
	Technical Elective***	3-4
	Total	15-16
SIXTH QUARTER		
PHED	Physical Education Elective	1
PHYS 103	Introductory Physics III	4
MECH 238	Machine Design II	4
MECH 298	Seminar & Project	2
	MATH 123 or Technical Elective***	3-5
	Total	14-16
Total Minimum Credits for Mechanical Engineering Technology Degree		97

* English 111, 112, 113 may be substituted for ENGL 101, 102, and third quarter English or speech.

** Social Science Elective may be chosen from the following fields: economics, psychology, government, or social science.

*** Technical electives must be chosen in the field of specialization.

MEDICAL LABORATORY TECHNOLOGY

(Alexandria Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The Medical Laboratory Technology curriculum is designed to prepare selected students for employment, upon graduation and certification, as Medical Laboratory Technicians.

Occupational Objectives: Positions for Medical Laboratory Technicians are available in hospital laboratories, private laboratories, physicians' office laboratories, health department laboratories, and industrial medical laboratories.

Admission Requirements: In addition to the admission requirements established for the College, entry into the Medical Laboratory Technology curriculum requires: 2 units of mathematics and 2 units of laboratory science in high school; evidence of good physical health; and a satisfactory interview with the Program Head.

Curriculum Requirements: Any student who receives a final grade lower than "C" in any of the major courses must obtain permission from the program head to continue in the program. Students must maintain a grade of "C" or better in all major courses in order to be eligible for clinical experience which will be provided in local hospitals and laboratories. Each student will be responsible for transportation to and from the hospitals, and for securing required uniforms and liability insurance. Students who qualify and who plan to transfer to a senior college or university to complete a baccalaureate degree program will be advised to substitute appropriate course to conform with the curriculum of the four-year institution to which transfer is contemplated. Upon satisfactory completion of the six-quarter program the graduate will be awarded the Associate in Applied Science Degree in Medical Laboratory Technology.

MEDICAL LABORATORY TECHNOLOGY

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
CHEM	Chemistry 101 or 111	4
MATH	Math 181 or 161	3
ENGL 101	Communication Skills I	3
HLTH 100	Introduction to Allied Health Careers	1
GENL 100	Orientation	1
MDLB 100	Introduction to Medical Laboratory Technology	2
BIOL 154	Human Anatomy & Physiology I	4
Total		18
SECOND QUARTER		
CHEM	Chemistry 102 or 112	4
MATH	Math 182 or 162	3
ENGL 102	Communication Skills II	3
PHED 100	Fundamentals of Physical Activity	1
MDLB	Introduction to the Clinical Laboratory	3
BIOL 155	Human Anatomy & Physiology II	4
Total		18
THIRD QUARTER		
CHEM	Chemistry 103 or 113	4
MATH	Math 183 or 163	3
	English or Speech	3
MDLB	Principles of Hematology	4
BIOL 176	Microbiology	4
Total		18

Course Number	Course Title	Course Credits
FOURTH QUARTER		
MDLB 225	Clinical Hematology	7
MDLB 256	Clinical Bacteriology	6
MDLB	Diagnostic Microbiology	3
PHED	Physical Education Electives	1
	Total	17
FIFTH QUARTER		
MDLB	Principles of Blood Banking & Serology	4
MDLB 264	Principles of Clinical Chemistry	4
	Government	3
	Psychology	3
	Economics	3
PHED	Physical Education Elective	1
	Total	18
SIXTH QUARTER		
MDLB 235	Clinical Blood Banking & Serology	7
MDLB 265	Clinical Chemistry	8
MDLB 298	Seminar and Project	1
	Total	16
Total Minimum Credits for an A.A.S. Degree in Medical Laboratory Technology Degree		105

Students must complete the "on campus" Medical Laboratory courses with a grade of "c" or better before entering the corresponding clinical courses.

All electives must be approved by the program director.

MEDICAL RECORD TECHNOLOGY

(Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: To prepare selected students to work as medical record technicians in the medical record department of a hospital, outpatient facility or nursing care facility. The medical record technician is trained to perform all of the functions in a medical record department which can include: analyzing medical reports, typing medical reports, compiling census, discharge and vital statistics, coding diseases and operations, assisting medical staff committees, attending legal proceedings and releasing medical information. In addition the technician is prepared to accept the responsibilities of supervising the daily operation of a medical record department.

The Program is fully accredited by the Council on Medical Education, American Medical Association, and graduates are eligible to take the national accreditation examination given by the American Medical Record Association.

Admission Requirements: In addition to requirements for general admission to the College, placement in the medical record technology curriculum requires the following:

1. High School Courses
 - a. 1 unit of science earned with a minimum grade of "C". Biology and/or chemistry recommended.
 - b. 1 unit of algebra earned with a minimum grade of "C".
 - c. The overall high school record of achievement must reflect a "C" average.
2. Successful completion of a math proficiency test.
Students who do not meet these requirements must correct their deficiencies in the Developmental Program prior to entering the M. R. T. curriculum.
3. Successful completion of the College typing proficiency test at the 40 wpm level. Students who do not meet this requirement will be required to enroll in a typing course prior to Program placement.
4. A program placement interview with a health technology counselor.
5. Evidence of good physical and mental health.

In all cases placement will not be completed until all of the above requirements are met. The final decision regarding acceptance into the M. R. T. curriculum rests with the M. R. T. Program Head. Student may elect to enter the Program on a part-time basis and take support courses prior to enrolling in the major medical record science courses. However, once the student begins the medical record science sequence, it normally will take six (6) quarters to complete the curriculum. (Note: The medical record science, medical terminology and natural science courses are corequisites and must be taken in sequence.)

Curriculum Requirements:

Any student whose final average falls below a "C" in any medical record science course must obtain permission from the program head to continue in the curriculum.

Students are totally responsible for transportation to and from the College and the various hospitals and other health agencies which are utilized for coordinated practical experience. In addition, students are responsible for purchasing laboratory jackets and accessories prior to beginning their practical experience.

MEDICAL RECORD TECHNOLOGY

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST YEAR		
FIRST QUARTER		
MDRS 111	Medical Record Science I	3
ENGL 101	Communication Skills*	3
HLTH 100	Orientation to Allied Health Careers	1
HLTH 120	Medical Terminology	5
GENL 100	Orientation	1
NASC 111	Health Science 1	4
	Total	17
SECOND QUARTER		
ENGL 102	Communication Skills*	3
HLTH 150	Concepts of Disease	3
MDRS 112	Medical Record Science II	3
MDRS 190	Coordinated Practice I	1
SECR 136	Filing and Records Management	3
NASC 112	Health Science II	4
	Total	17
THIRD QUARTER		
	English or Speech*	3
MDRS 100	Medical Report Transcription	3
MDRS 190	Coordinated Practice	2
NASC 113	Health Science III	4
DAPR 106	Principles of Data Processing	3
	Total	15
SECOND YEAR		
FOURTH QUARTER		
SOSC 101	Contemporary American Civilization	3
MDRS 213	Medical Record Science III	3
MDRS 290	Coordinated Practice	4
BUAD	Elective	3
PHED 100	Fundamentals of Physical Activity	1
	Total	14
FIFTH QUARTER		
SOSC 102	Contemporary American Civilization	3
BUAD 110	Human Relations	3
MDRS 214	Medical Record Science IV	4
MDRS 290	Coordinated Practice	5
PHED	Physical Education Elective	1
	Total	16

Course Number	Course Title	Course Credits
SIXTH QUARTER		
MDRS 298	Seminar	3
MDRS 290	Coordinated Practice	5
SOSC 103	Contemporary American Civilization	3
BUAD 276	Personnel Management	3
PHED	Physical Education Elective	1
	Elective	3
	Total	18
	Total Minimum Credits for a Medical Records Technology Degree	97

* ENGL 111, 112, & 113 may be substituted for ENGL 101, 102, and third quarter English or Speech.

MERCHANDISING MANAGEMENT

(Alexandria and Annandale Campus)

Options:

Fashion Merchandising

Retail Merchandising

Supermarket Merchandising

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: With the rapid development of business in Virginia, there is a great demand for qualified personnel to assist management in this economic growth. The Associate in Applied Science Degree curriculum in Merchandising Management is a middle management program designed for persons who seek full-time employment in merchandising and related occupations immediately upon completion of the curriculum. Three options are available within the context of this curriculum: Fashion Merchandising; Retail Merchandising; and Supermarket Merchandising. Both persons who are seeking their first employment and those who are seeking promotion may benefit from this curriculum.

Occupational Objectives:

Manager or Manager Trainee

Sales Supervisor

Assistant Manager
Floor Manager
Department Manager
Sales Representative
Buyer and Assistant Buyer
Fashion Coordinator
Other related merchandising occupations

Admission Requirements: In addition to the admission requirements established for the College, entry into the Merchandising Management program requires proficiency in high school English and mathematics. Students with deficiencies will require Developmental Studies.

Curriculum Requirements: The first three quarters of the curriculum in Merchandising Management are similar for all students. In the second year students may elect specialization in either Fashion, Retail, or Supermarket Merchandising. The curriculum will include technical courses in merchandising, courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical application needed for future success in merchandising occupations. Students are urged to consult with the counseling office and their faculty advisor in planning their program and selecting electives. Upon satisfactory completion of the six-quarter program, the graduate will be awarded the Associate in Applied Science Degree in Merchandising Management with specialization in either Fashion, Retail, or Supermarket Merchandising. For transfer purposes, courses within these curriculums may be applied for credit to a four-year program only at the discretion of the admitting institution.

Cooperative Education: All students are encouraged to investigate the opportunities in Cooperative Education. In addition to valuable work experience, it is possible to earn up to 15 hours credit towards graduation. Cooperative Education provides planned and supervised learning situations in on-the-job locations which enable the student to become better acquainted with both the theory and practice of his vocational choice. Inquiries should be directed to the Campus Office of Cooperative Education or the student's advisor.

MERCHANDISING MANAGEMENT

Associate in Applied Science Degree

(The first year courses are common to all programs or specializations.)

Course Number	Course Title	Course Credits
FIRST YEAR CORE CURRICULUM		
FIRST QUARTER		
ACCT 111	Accounting I*	4
BUAD 100	Introduction to Business	3
ECON 160	American Economics**	3
ENGL 101	Communication Skills I	3
GENL 100	Orientation	1
MATH 151	Or BUAD 101 Business Mathematics I	3
PHED 100	Fundamentals of Physical Activity	1
	Total	18
SECOND QUARTER		
ACCT 112	Accounting II*	4
BUAD 164	Principles of Business Management	3
ENGL 102	Communication Skills II	3
MATH 152	Or BUAD 102 Business Mathematics II	3
MKTG 100	Principles of Marketing	3
PHED	Physical Education Elective	1
	Total	17
THIRD QUARTER		
ACCT 113	Accounting III* (or Business Elective)	4
MKTG 136	Retail Organization and Management	3
PSYC 110	Principles of Applied Psychology**	3
SPDR 136	Speech or ENGL 180 Business English	3
PHED	Physical Education Elective	1
MATH 153	Or BUAD 103 Business Mathematics III (or Elective)	3
	Total	17

* Acct 211-212-213 may be substituted with approval of the Division.

** SOSC 101-102-103 may be substituted for PSYC, ECON, and GOVT. SOSC 101-102-103 need not be taken sequentially.

MERCHANDISING MANAGEMENT
(Fashion Merchandising)
 (Second Year Option)

Course Number	Course Title	Course Credits
FOURTH QUARTER		
GOVT 180	American Constitutional Government**	3
MKTG 109	Principles of Salesmanship	3
MKTG 110	Fundamentals of Fashion	3
MKTG 217	Color Lines & Design in Retailing	3
BUAD 110	Human Relations and Leadership Training	3
	Total	15
FIFTH QUARTER		
BUAD 241	Business Law I	3
MKTG 218	Fashion Merchandising (Buying and Control)	3
MKTG 227	Advertising and Display	4
MKTG 216	Merchandise Information	3
ACCT 244	Business Taxes I (or Business Elective)	3
	Total	16
SIXTH QUARTER		
BUAD 276	Personnel Management	3
BUAD 242	Business Law II (or Elective)	3
MKTG 219	Fashion Sales Promotion	3
MKTG 209	Sales Management	3
MKTG 298	Seminar and Project	3
	Total	15
	Total Minimum Credits for the Merchandising Management Degree in Fashion Merchandising	98

Note: Credits earned in an approved Cooperative Education Program may be substituted for up to 15 hours of course work. (No more than 5 hours per quarter.) Specific substitutions must be approved by the faculty advisor.

MERCHANDISING MANAGEMENT
(Retail Merchandising)
 (Second Year Option)

FOURTH QUARTER		
BUAD 254	Applied Business Statistics I (or Business Elective)	3
DAPR 106	Principles of Data Processing (or Elective)	3
MKTG 109	Principles of Salesmanship	3
GOVT 180	American Constitutional Government**	3
BUAD 110	Human Relations and Leadership Training	3
	Total	15

Course Number	Course Title	Course Credits
FIFTH QUARTER		
MKTG 216	Merchandise Information	3
BUAD 241	Business Law I	3
MKTG 226	Merchandise Buying and Control	3
MKTG 227	Advertising and Display	4
ACCT 244	Business Taxes I (or Business Elective)	3
	Total	16
SIXTH QUARTER		
BUAD 276	Personnel Management	3
BUAD 242	Business Law II (or Elective)	3
MKTG 228	Sales Promotion and Customer Relations	3
MKTG 209	Sales Management	3
MKTG 298	Seminar and Project	3
	Total	15
	Total Minimum Credits for the Merchandising Management Degree in Retail Merchandising	98

Note: Credits earned in an approved Cooperative Education Program may be substituted for up to 15 hours of course work. (No more than 5 hours per quarter.) Specific substitutions must be approved by the faculty advisor.

**MERCHANDISING MANAGEMENT
(Supermarket Merchandising)
(Second Year Option)**

FOURTH QUARTER		
DAPR 106	Principles of Data Processing (or Business Elective)	3
GOVT 180	American Constitutional Government**	3
MKTG 109	Principles of Salesmanship	3
MKTG 180	Introduction to Food Marketing	3
BUAD 110	Human Relations and Leadership Training	3
	Total	15
FIFTH QUARTER		
ACCT 244	Business Taxes I (or Business Elective)	3
BUAD 241	Business Law I	3
MKTG 287	Supermarket Operations	3
MKTG 227	Advertising and Display	4
MKTG 226	Merchandise Buying and Control	3
	Total	16

Course Number	Course Title	Course Credits
SIXTH QUARTER		
BUAD 276	Personnel Management	3
BUAD 242	Business Law II (or Elective)	3
MKTG 286	Supermarket Merchandising	3
MKTG 209	Sales Management	3
MKTG 298	Seminar and Project	3
	Total	15
	Total Credits	
	Total Minimum Credits for the Merchandising Management Degree in Supermarket Merchandising . . .	98

Note: Credits earned in an approved Cooperative Education Program may be substituted for up to 15 hours of course work. (No more than 5 hours per quarter.) Specific substitutions must be approved by the faculty advisor.

MUSIC

(Alexandria and Annandale Campus)

Degree: Associate in Arts

Length: Six quarters (two years)

Purpose: The Associate in Arts Degree curriculum in Music is designed primarily for students who wish to transfer to a four-year college or university to complete the baccalaureate degree in music or music education.

Admission Requirements: In addition to the admission requirements established for the college, entry into the Music program requires the satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English; 2 units of mathematics (algebra and geometry); 1 unit of laboratory science; and 1 unit of social studies. Students with deficiencies will require Developmental Studies. An audition and interview by the music faculty is necessary prior to final acceptance in this program. Students are urged to check the mathematics requirements of the four-year institution to which they plan to transfer to determine the proper mathematics courses to be taken in the community college.

Curriculum Requirements: The major emphasis in the Music curriculum is on performance and basic musical knowledge. All music majors must display the ability to sight-read simple piano accompaniments, play scales, arpeggios and cadences in all major and minor keys, and play pieces equivalent in difficulty to standard classical sonatas, sonatinas, and the little preludes of Bach. These require-

ments may be satisfied by successfully completing six quarter hours of Applied Music 147 and 247, or by satisfactorily completing a proficiency examination. A student satisfying the requirements in less than six quarter hours may either continue in Applied Music or use the remaining hours as music electives. Applied music students will be required to demonstrate performance proficiency before the music faculty at the end of each quarter. This may be in the form of a jury examination and/or a student recital at the discretion of the instructor.

In order to prepare for junior class standing at a four-year college or university, the student usually must complete a program at the community college which is comparable in length and course content to the first two years of the program at the four-year institution. Students are urged to acquaint themselves with the requirements of the major department in the institution to which transfer is contemplated and also to consult with the faculty and counseling office of the community college in planning their program and selecting electives. Upon satisfactory completion of the six-quarter program, the graduate will be awarded the Associate in Arts Degree in Music.

MUSIC

Associate in Arts Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 111	English Composition I	3
HIST 101	History of Western Civilization I	3
PHED 100	Fundamentals of Physical Activity	1
MUSC 111	Music Theory I	4
MUSC	Applied Music (Major)	2
MUSC	Applied Music (Minor)	1
MUSC	Chorus/Band/Orchestra/Ensemble	1
GENL 100	Orientation	1
	Total	16
SECOND QUARTER		
ENGL 112	English Composition II	3
HIST 102	History of Western Civilization	3
PHED	Physical Education Elective	1
MUSC 112	Music Theory II	4
MUSC	Applied Music (Major)	2
MUSC	Applied Music (Minor)	1
MUSC	Chorus/Band/Orchestra/Ensemble	1
	Total	15

Course Number	Course Title	Course Credits
THIRD QUARTER		
ENGL 113	English Composition III	3
HIST 103	History of Western Civilization	3
PHED	Physical Education Elective	1
MUSC 113	Music Theory	4
MUSC	Applied Music (Major)	2
MUSC	Applied Music (Minor)	1
MUSC	Chorus/Band/Orchestra/Ensemble	1
	Elective(s)*	3
	Total	18
FOURTH QUARTER		
NASC 100	Natural Science (Laboratory)	4
MUSC 211	Advanced Music Theory I	4
MUSC 221	Music History I	3
MUSC	Applied Music (Major)	2
MUSC	Applied Music (Minor)	1
MUSC	Chorus/Band/Orchestra/Ensemble	1
	Total	15
FIFTH QUARTER		
ENGL 270	Survey of World Literature	5
MUSC 212	Advanced Music Theory II	4
MUSC 222	Music History II	3
MUSC	Applied Music (Major)	2
MUSC	Applied Music (Minor)	1
MUSC	Chorus/Band/Orchestra/Ensemble	1
	Total	16
SIXTH QUARTER		
MUSC 213	Advanced Music Theory III	4
MUSC 223	Music History III	3
MUSC	Applied Music (Major)	2
MUSC	Applied Music (Minor)	1
MUSC	Chorus/Band/Orchestra/Ensemble	1
	Electives*	6
	Total	17
	Total Minimum Credits for the Music Degree	97

* Electives should be chosen with the requirements of the four-year college in mind. Music electives are suggested.

NURSING

(Annandale Campus)

Degree: Associate in Applied Science

Length: Seven quarters (two years)

Purpose: The two-year Associate Degree Nursing Program is designed:

To prepare selected students to qualify as contributing members of the health team, rendering direct patient care as beginning practitioners of nursing in a variety of health service facilities. At the successful completion of the program, students will be eligible to take the Virginia State Board of Nursing examinations leading to licensure as a registered nurse (R.N.).

Occupational Objectives: Employment opportunities for the Registered Nurse include staff positions in hospitals, health departments, extended care facilities, physicians' offices, clinics, day care centers, and civil service.

Admission Requirements:

In addition to requirements for general admission to the College, entry into the Nursing curriculum requires:

1. High School Courses
 - A. 1 unit of Biology earned with a minimum grade of "C".
 - B. 1 unit of Algebra earned with a minimum grade of "C".
 - C. 1 unit of Chemistry earned with a minimum grade of "C".
 - D. Proficiency in communication skills

Students who do not meet these requirements may be permitted to correct their deficiencies in the Developmental Program before entering the Nursing curriculum.

2. Record of achievement must reflect a "C" average.
3. Evidence of good physical and mental health. Applicants must be free from any physical or mental condition which might adversely affect acceptance or performance as a nurse practitioner. The Nursing program reserves the right to determine the student's final acceptance.
4. Students majoring in nursing are admitted annually in September: therefore, early application is desirable.

Transfer Credits: Credits in the natural and social science earned at another institution more than ten years ago may not be considered

for transfer credit without special permission from the nursing program.

Curriculum Requirements: The College (Nursing Program) reserves the right to recommend to the Provost the withdrawal of any student whose adjustment and progress in the area of nursing and/or personal demeanor do not meet the prescribed level as recommended by the Nursing Program faculty.

Satisfactory mental and/or physical health must also be maintained for continuance in the program.

Any student who receives a final grade less than "C" in any of the courses in the Nursing sequence must obtain permission from the Program Head to continue the major in nursing and must then repeat the course and earn a final grade of "C" or higher before taking the next course in the sequence.

Students are totally responsible for transportation to and from the College and the various hospitals and other health agencies which are utilized for clinical laboratory experiences. The purchase of items such as student uniform and accessories, and Nursing Student Liability Insurance are the financial responsibility of the individual student.

The student may elect to take support courses prior to entering the Nursing sequence. However, generally at the time the student enters the Nursing sequence, seven quarters will be required to complete the program.

Special Accreditation Status: The program is fully approved by the Virginia State Board of Nurse Examiners and has been granted accreditation by the National League for Nursing, Department of Associate Degree Programs.

NURSING

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST YEAR		
FIRST QUARTER		
NASC 111	Health Science I	4
ENGL	ENGL 101 or 111	3
PSYC 201	General Psychology	3
NURS 111	Fundamentals of Nursing I	5
HLTH 100	Orientation to Allied Health Careers	1
GENL 100	Orientation	1
Total		17

Course Number	Course Title	Course Credits
SECOND QUARTER		
NASC 112	Health Science II	4
ENGL	ENGL 102 or 112	3
PSYC 202	General Psychology II	3
NURS 112	Fundamentals of Nursing II	6
	Total	16
THIRD QUARTER		
NASC 113	Health Science III	4
ENGL	ENGL 113 or SPDR 136	3
PSYC 203	General Psychology III	3
NURS 113	Fundamentals of Nursing III	8
	Total	18
FOURTH QUARTER		
NURS 221	Nursing in Major Health Problems I	8
	Total	8
SECOND YEAR		
FIFTH QUARTER		
SOSC 101	Contemporary American Civilization I*	3
SOCI 101	Introductory Sociology I	3
NURS 222	Nursing in Major Health Problems II	8
	Total	14
SIXTH QUARTER		
SOSC 102	Contemporary American Civilization II*	3
SOCI 102	Introductory Sociology II	3
NURS 223	Nursing in Major Health Problems III	8
	Total	14
SEVENTH QUARTER		
SOSC 103	Contemporary American Civilization III*	3
SOCI 103	Introductory Sociology III	3
NURS 224	Nursing in Major Health Problems IV	8
NURS 298	Seminar	2
	Total	16
	Total Minimum Credits for a Nursing Major	103

* In lieu of SOSC 101-102-103, students may select the following sequence: ECON 160, GOVT 180, and one 3-credit elective.

OCCUPATIONAL SAFETY AND HEALTH TECHNOLOGY

(Alexandria Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: Increasing national emphasis on occupational safety and health places expanding requirements for professionals and para-professionals in these interrelated functional areas. This program is structured to provide a basic science background together with requisite general education and technical courses to prepare individuals to perform as para-professionals in the broad area of occupational safety and health. The emphasis is on the occupational safety aspects but enough course coverage is devoted to occupational health to enable the graduate to function meaningfully in this area as well.

Occupational Objectives:

- Industrial Safety Specialist
- Safety Engineering Specialist
- Industrial Hygiene/Health Specialist
- Health Inspector Specialist
- Occupational Safety and Health Technician

Admission Requirements: In addition to the admission requirements established for the College, entry into the curriculum in Occupational Safety and Health requires the satisfactory completion of the following high school units or their equivalent: 4 units English, 2 units mathematics (1 algebra, 1 geometry or equivalent), and 1 unit (2 units preferred) of a laboratory science. Students with deficiencies will require Developmental Studies.

Curriculum Requirements: The program is designed to provide approximately one-half of its requirements in general education and basic science courses and the remainder in technical support courses. Students are advised to consult with their faculty advisor and Counseling Services in planning their program and selecting electives. Students who qualify and who plan to transfer to a senior college or university to complete a baccalaureate degree program in Occupational Safety and Health Technology will be advised to substitute several other courses than those described, to conform with the curriculum of the four-year institution to which transfer is contemplated. Upon completion of the six-quarter program, the graduate will be awarded the Associate in Applied Science Degree in Occupational Safety and Health.

OCCUPATIONAL SAFETY AND HEALTH TECHNOLOGY**Associate in Applied Science Degree**

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I	3
GENL 100	Orientation	1
INDT 130	Safety Program Organization and Admin	4
INDT 127	Safety & Health Standards, Reg. & Codes	3
MATH 121	Engineering Technical Math	5
	Total	16
SECOND QUARTER		
ENGL 102	Communication Skills II	3
INDT 136	Industrial Safety Planning	3
INDT 137	Material Handling and Storage	3
MATH 122	Engineering Technical Math	5
HLTH 241	Occupational Health I	3
PHED 100	Fundamentals of Physical Activity	1
	Total	18
THIRD QUARTER		
HLTH 146	Occupational Injury and Disease Control	3
INDT 134	Power Source Hazards Control I	3
SPDR 136	Speech Communications	3
HLTH 242	Occupational Health II	3
PHED	Physical Education Elective	1
	Elective	3
	Total	16
FOURTH QUARTER		
INST 116	Instrumentation for Occ. Safety & Health	4
INDT 236	Operational Workplaces	3
INDT 237	Preventive Maintenance	3
INDT	General Chemistry I or Intro. Physics I	4
	Social Science*	3
PHED	Physical Education Elective	1
	Total	18
FIFTH QUARTER		
FIRE 116	Fundamentals of Fire Prevention	3
INDT 238	Occupational Safety Engineering Tech	5
	Social Science*	3
	General Chemistry II or Intro. Physics II	4
	Total	15

Course Number	Course Title	Course Credits
SIXTH QUARTER		
INDT 246	Manufacturing Process Analysis	3
ARCH 250	Construction Safety and Health	4
	Social Science*	3
	General Chemistry III or Intro. Physics III	4
	Total	14
	Total Minimum Credits for a Degree in Occupational Safety and Health	97

* Social Science Option—SOSC 101-102-103, or GOVT, PSYC, ECON, INDT 190-290, Coordinated Internship, may be offered to students desiring to participate during summer quarter.

PHYSICAL THERAPIST ASSISTANT

(Annandale Campus)

Degree: Associate in Applied Science

Length: Six Quarters (two years)

Purpose: The Physical Therapist Assistant curriculum is designed to prepare students as skilled technical health workers who will possess the knowledge and abilities that are necessary to assist the professional physical therapist in providing specific patient services for the prevention or alleviation of physical impairments.

At the successful completion of the Program, students may be eligible to take the Virginia State Licensing examination leading to licensure as a Physical Therapist Assistant.

Occupational Objectives: Employment opportunities for the Physical Therapist Assistant include staff positions in hospitals, nursing homes, health departments, and clinics.

Admission Requirements: In addition to the general requirements for admission to the College, entry into the Physical Therapist Assistant curriculum requires the following:

1. A background of two units of laboratory science, preferably Biology and Chemistry.
2. Proficiency in communication skills.

Students who do not meet these two requirements may be permitted to correct their deficiencies in the Developmental Program before entering the Physical Therapist Assistant Curriculum.

3. Record of achievement must reflect a "C" average.
4. Evidence of good physical and mental health. Applicants must be free from any physical or mental condition which might adversely affect acceptance or performance as a Physical

Therapist Assistant. The Physical Therapist Assistant faculty reserves the right to determine the student's final acceptance if doubt exists due to a physical or mental health problem.

5. Interviews with two designated Physical Therapists. One of these interviews will be conducted on campus and one in a clinical setting.
6. The Program is open to both male and female applicants. Marital status is not a factor.
7. Students majoring in this Program are admitted annually in September. Therefore, early application is desirable.

Curriculum Requirements: The College (Physical Therapist Assistant Program) reserves the right to recommend to the Provost the withdrawal of any student whose adjustment and progress in the area of his major course sequence and/or personal demeanor do not meet the prescribed level as recommended by the Program faculty.

Satisfactory mental and/or physical health must also be maintained for continuance in the Program.

Any student who receives a final grade less than "C" in any of the courses in the Program must obtain permission from the Program Head to continue the major in Physical Therapist Assistant curriculum and must then repeat the course and earn a final grade of "C" or higher before taking the next course in the sequence.

Students are totally responsible for transportation to and from the College and the various hospitals and other health agencies which are utilized for clinical laboratory experiences. The purchase of items such as student uniform and accessories, and PTA Student Liability Insurance are the financial responsibility of the individual student.

The student may elect to take support courses prior to entering the Program. However, generally at the time the student enters the Physical Therapist Assistant sequence, six quarters will be required to complete the Program.

PHYSICAL THERAPIST ASSISTANT

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I*	3
NASC 111	Health Science I	4
HLTH 100	Orientation to Allied Health Careers	1
GENL 100	Orientation	1
PSYC 110	Principles of Applied Psychology	3
PSTH 101	Fundamentals of Physical Therapy I	5
Total		17

Course Number	Course Title	Course Credits
SECOND QUARTER		
ENGL 102	Communication Skills II*	3
NASC 112	Health Science II	4
PSYC 116	Psychology of Personal Adjustment	3
PSTH 102	Fundamentals of Physical Therapy II	5
HLTH 150	Concepts of Disease	3
	Total	18
THIRD QUARTER		
NASC 113	Health Science III	4
	English or Speech*	3
PSYC	Psychology Elective	3
PSTH 103	Fundamentals of Physical Therapy III	8
	Total	18
FOURTH QUARTER		
SOSC 101	Contemporary American Civilization I	3
PSTH 201	Advanced Physical Therapy Procedures I	8
PHED 100	Fundamentals of Physical Activity	1
	Elective	3
	Total	15
FIFTH QUARTER		
SOSC 102	Contemporary American Civilization II	3
PSTH 202	Advanced Physical Therapy Procedures II	8
PHED	Physical Education Elective	1
	Elective	3
	Total	15
SIXTH QUARTER		
SOSC 103	Contemporary American Civilization III	3
PSTH 203	Advanced Physical Therapy Procedure III	8
PSTH 298	Seminar and Project	3
PHED	Physical Education Elective	1
	Total	15
	Total Minimum Credits for Physical Therapy Degree	98

* English 111, 112, 113 may be substituted for ENGL 101, 102, and third quarter English or Speech.

POLICE SCIENCE

(Alexandria and Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The curriculum in Police Science has been developed and is maintained in cooperation with state and local police officials. The curriculum is not designed to train for any speciality, but rather to provide a broad foundation which will prepare the student to enter any of the varied fields of law enforcement. Adjustments will be made to enable a qualified student to prepare for transfer to a baccalaureate degree in Police Science.

Occupational Objectives:

Commercial and Industrial Security Officer
Local, State, and Federal Enforcement Officer
Police Officer
Private, or Government Investigator
Advancement within the Profession

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Applied Science degree program in Police Science requires the following:

1. A written statement from the law enforcement agency having jurisdiction in the applicant's area of residence as to his record of conduct. (This requirement is waived for employees of governmental criminal justice agencies.)
2. A personal interview with a representative of the Police Science Program.
3. Satisfactory results on any additional tests that may be required by the counseling department.

Special Requirements:

- A. Students who wish to enroll in the Police Science Program with the objective of obtaining employment with uniformed Police departments in Northern Virginia are advised that the usual requirements for such positions include excellent health, minimum of 20/40 vision, 5'8" height, and excellent moral character. The physical requirements for entry into other agencies in the law enforcement field may be less rigorous.

- B. Qualified students who expect to continue on to a senior institution to complete their requirements for a four-year degree in Law Enforcement may have their programs adjusted to do so under the following conditions:
1. Obtain permission from their Police Science faculty advisor.
 2. Maintain a minimum grade point average of 2.5 or better in their Police Science subjects.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in Police Science with the remaining courses in related subjects, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in Police Science. Each student will consult with his faculty advisor and Counseling Services of the Community College in planning his program and selecting his electives. Students who qualify and who plan to transfer to a senior college or university to complete a baccalaureate degree program in Police Science (Law Enforcement) will be advised to substitute several other courses than those described, to conform with the curriculum of the four-year institution to which transfer is contemplated. Upon completion of the six-quarter program described, the student will be awarded the Associate in Applied Science degree with major in Police Science.

SPECIAL NOTE TO PRESENTLY EMPLOYED LAW ENFORCEMENT OFFICERS

Virginia Law Enforcement Officers are reminded that courses in Police Science offered at this College qualify under the Virginia State Education Law, Chapter 177, Acts of the Assembly, 1966, which states in part:

“Any law enforcement officer of the state, or of any county, city or town, thereof, who attends any college which offers a degree or associate degree in Law Enforcement, may, upon application and acceptance in such college in an accredited course toward such degree, apply to the Department of Education for Virginia for reimbursement of the tuition paid for such course.”

Under provisions of the Federal Safe Streets Act of 1968, grants and loans to cover cost of tuition & books may be available to students pursuing a college education in police science or law enforcement.

After completion of the course, for each year spent in law enforcement the government will forgive 25% of the loan. Thus, after 4 years of such employment, the loan is considered to be paid in full without any need for the student to make any financial repayment. Provisions are made for military service, disability, etc.

Under the same program grants of amounts up to \$600 per academic year to defray tuition costs are available to law enforcement officers.

Such grants are forgiven by two years continued service in law enforcement.

Full details are available at either the College Counseling Office, or the Police Science Program.

POLICE SCIENCE

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
LWNF 100	Introduction to Law Enforcement	3
LWNF 110	Patrol Administration	3
ENGL 101	Communication Skills I	3
SOCI 101	Introductory Sociology I	3
SOSC 101	Contemp. Amer. Civiliz.	3
GENL 100	Orientation	1
PHED 100	Fundamentals of Physical Activity	1
Total		17
SECOND QUARTER		
LWNF 117	Special Enforcement Problems	3
LWNF 187	Traffic Administration and Control*	3
ENGL 102	Communication Skills II	3
SOCI 102	Introductory Sociology II	3
NASC 100	Survey of Science	4
Total		16
THIRD QUARTER		
LWNF 126	Prevention & Control of Juvenile Delinquency*	3
LWNF 158	Introduction to Law Enforcement Photography*	3
SPDR 136	Speech Communications	3
SOSC 102	Contemp. Amer. Civiliz.	3
PSYC 116	Psychology of Personal Adjustment	3
PHED	Physical Education Elective	1
Total		16
FOURTH QUARTER		
LWNF 254	Criminal Investigation Techniques I**	4
LWNF 276	Industrial & Commercial Security*	3
LWNF 231	Criminal Law, Evidence & Procedures I	3
LWNF 114	Police Organization & Administration I	3
SOSC 103	Contemp. Amer. Civiliz.	3
PHED	Physical Education Elective	1
Total		17

Course Number	Course Title	Course Credits
FIFTH QUARTER		
LWNF 255	Criminal Investigation Techniques II**	4
LWNF 232	Criminal Law, Evidence & Procedures II	3
LWNF 115	Police Organization & Administration II	3
LWNF 176	Criminology*	3
	Elective	3
	Total	16
SIXTH QUARTER		
LWNF 233	Criminal Law, Evidence & Procedures III	3
LWNF 166	Police Communication & Records*	3
LWNF 298	Seminar and Project in Law Enforcement*	3
	Elective	3
LWNF 228	Law Enforcement and the Community	3
	Total	15
	Total Minimum Credits for a Police Science Major	97

(Note: Selection of other courses for Police Science courses marked * is limited to students requiring this substitution for transfer to a 4-year institution. It is subject to approval by faculty advisor.)

** Students may take, in lieu of LWNF 254 & 255, LWNF 246, 247 & GOVT 298.

POLICE SCIENCE

(Alexandria and Annandale Campus)

Certificate: Certificate in Police Science

Length: Three quarters (one year)

Purpose: The Certificate curriculum in Police Science is designed for practitioners in law enforcement and associated fields who desire to take only those courses which relate directly to the law enforcement field. However, students who fail to demonstrate an ability to meet academic standards may be advised to enroll in appropriate support classes which are designed to provide the background necessary for academic proficiency.

Admission Requirements: In addition to requirements for general admission to the College, a personal interview with a member of the faculty of the Police Science Program is required.

Curriculum Requirements: The Police Science Certificate curriculum is designed to provide an intensive specialization in the law enforcement subject areas for those people who may not wish to obtain a full two year degree immediately. Students will be advised as to which courses are most applicable to their field of interest and will, upon

successful completion of 49 credits in the Police Science curriculum, be awarded a certificate in Police Science.

Upon completion of the certificate program, students may continue on toward the Associate in Applied Science Degree in Police Science and will be awarded this degree upon successful completion of the prescribed courses.

POLICE SCIENCE

Certificate Program

Course Number	Course Title	Course Credits
GENL 100	Orientation	1
ENGL 101	Communication Skills I	3
GOVT	Government Elective*	3
PSYC 110	Principles of Applied Psychology*	3
ECON 160	American Economics*	3
LWNF 100	Introduction to Law Enforcement	3
LWNF 110	Patrol Administration	3
LWNF 117	Special Enforcement Problems	3
LWNF 187	Traffic Administration and Control	3
LWNF 126	Prevention and Control of Juvenile Delinquency	3
LWNF 246	Principles of Criminal Investigation	3
LWNF 276	Industrial and Commercial Security	3
LWNF 114	Police Organization and Administration I	3
LWNF 166	Police Communication and Records	3
LWNF 231	Criminal Law, Evidence, and Procedures I	3
LWNF 232	Criminal Law, Evidence, and Procedures II	3
LWNF 233	Criminal Law, Evidence, and Procedures III	3
	Total	49
	Total Minimum Credits for a Certificate in Police Science	49

* Substitution of appropriate social science courses may be made with approval of the Program Head.

REAL ESTATE MANAGEMENT

(Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: With the rapid development of business and industry in Virginia, there is a great demand for qualified personnel to assist

business management in this economic growth. The Associate in Applied Science Degree in Real Estate Management is designed primarily for persons who seek full-time employment in the special field of real estate immediately upon completion of the curriculum. Both persons who are seeking their first employment in a real estate position or those presently in real estate may benefit from this curriculum.

Occupational Objectives:

Real Estate Salesman	County/Urban Planning
Real Estate Broker	Land Utilization Activity
Apartment House Manager	Real Estate Loan Officer
Real Estate Office Manager	Real Estate Sales Manager

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Applied Science Degree curriculum in Real Estate Management requires proficiency in high school English and mathematics, as well as satisfactory results on any additional test which may be required by the Counseling Department. Students not proficient in English and mathematics will be required to correct their deficiencies in the Developmental Program.

Curriculum Requirements: The first three quarters (first year) of the Associate in Applied Science Degree curriculum in Real Estate Management are similar to other curriculums in business. In the second year each student will pursue his specialty in Real Estate. The curriculum will include technical courses in real estate, courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in real estate. Each student is urged to consult with Counseling Services and his faculty advisor in planning his program and selecting his electives. Courses within this curriculum may be applied to a four-year program at the discretion of the admitting institution. Upon completion of the six-quarter program described, the graduate will be awarded the Associate in Applied Science Degree in Real Estate Management.

Cooperative Education: All students are encouraged to investigate the opportunities in Cooperative Education. In addition to valuable work experience, it is possible to earn up to 15 hours credit towards graduation. Cooperative Education provides planned and supervised learning situations in on-the-job locations which enable the student to become better acquainted with both the theory and practice of his vocational choice. Inquiries should be directed to the Campus Office of Cooperative Education or the student's advisor.

REAL ESTATE MANAGEMENT

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
BUAD 100	Introduction to Business	3
ACCT 111	Accounting I**	4
MATH 151	Business Mathematics I	3
ENGL 101	Communication Skills I	3
ECON 160	American Economics***	3
GENL 100	Orientation	1
	Total	17
SECOND QUARTER		
BUAD 164	Principles of Business Management I	3
ACCT 112	Accounting II**	4
MATH 152	Business Mathematics II	3
ENGL 102	Communication Skills II	3
SECR 111	Typewriting*	3
PHED 100	Fundamentals of Physical Activity	1
	Total	17
THIRD QUARTER		
BUAD 165	Principles of Business Management II	3
ACCT 113	Accounting II**	4
MATH 153	Business Mathematics III	3
SPDR 136	Speech Communications or ENGL 180 Business English	3
MKTG 164	Principles of Real Estate I	3
	Total	16
FOURTH QUARTER		
MKTG 165	Principles of Real Estate II	3
MKTG 267	Real Estate Appraisal	3
BUAD 241	Business Law I	3
PSYC 110	Principles of Applied Psychology***	3
GOVT 180	American Constitutional Government***	3
PHED	Physical Education Elective	1
	Total	16
FIFTH QUARTER		
MKTG 266	Real Estate Sales	3
MKTG 268	Property Management	3
MKTG 269	Real Estate Finance	3
BUAD 242	Business Law II	3
MKTG 278	Real Estate Economics (or Elective)	3
	Total	15

Course Number	Course Title	Course Credits
SIXTH QUARTER		
MKTG 150	Principles of Insurance (or Elective)	3
MKTG 276	Land Planning and Use (or Elective)	3
MKTG 277	Legal Aspects of Real Estate	3
MKTG 298	Seminar and Project	3
ACCT 244	Business Taxes I	3
PHED	Physical Education Elective	1
Total		16
Total Minimum Credits for Real Estate Management Degree		97

* Waiver for this course but not the credit hours may be granted for the student who has satisfactorily completed one year of typing in high school. Students who have had training in typing may also petition for credit by examination.

** ACCT 211-212-213 may be substituted with approval of the Division.

*** SOSC 101-102-103 may be substituted for GOVT, ECON, PSYC. SOSC 101-102-103 need not be taken sequentially.

Note: Credits earned in an approved Cooperative Education Program may be substituted for up to 15 hours of course work. (No more than 5 hours per quarter.) Specific substitutions must be approved by the faculty advisor.

RECREATION AND PARKS

(Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: The Associate in Applied Science Degree curriculum in Recreation and Parks Leadership is designed to prepare students for entry into the field of recreation and parks in both public and private occupations. It also has the objective of providing those already employed in these fields an opportunity to improve and upgrade their skills.

Occupational Objectives:

Assistant Recreation Supervisor

Recreation Leader

Park Ranger

Assistant Park Manager

Park Manager

Admission Requirements: In addition to the admission requirements established for the College, entry into the Associate in Applied Science Degree curriculum in Recreation and Parks requires the satisfactory completion of high school English, mathematics, laboratory science, and social studies. Students who do not meet these course

requirements may be permitted to correct their deficiencies in the developmental program before entering the curriculum.

Curriculum Requirements: Approximately one-half of the curriculum will include courses in Recreation and Parks with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed. Students will be provided every opportunity to receive field experience. Students are advised to consult with their faculty advisor and Counseling Services in planning their program. Upon satisfactory completion of the six-quarter curriculum listed, the graduate will be awarded the Associate in Applied Science Degree in Recreation and Parks.

RECREATION AND PARKS

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I	3
GOVT	Government*	3
BUAD 110	Human Relations & Leadership Training	3
PHED 100	Fundamentals of Physical Activity	1
GENL 100	Orientation	1
RCPK 100	Introduction to the Recreation & Parks Field	3
RCPK	Elective**	3
	Total	17
SECOND QUARTER		
ENGL 102	Communication SkillsII	3
SOCI 101	Introductory Sociology	3
NASC 100	Survey of Science	4
RCPK 101	Recreation & Parks Management I	3
PHED	Physical Education Elective	1
PSYC	Psychology*	3
	Total	17
THIRD QUARTER		
RCPK 137	Org. & Mgt. of Rec. Sports Activities	3
ECON	Economics*	3
MATH 151	Introduction to Business Math I	3
HORT 100	Introduction to Horticulture	4
RCPK 126	Natural Resources & the Urban Environment	2
RCPK 136	Prog. Plan., Org. & Group Leadership	2
	Total	17

Course Number	Course Title	Course Credits
FOURTH QUARTER		
ACCT 111	Accounting I	4
HORT 250	Landscape Planning	2
DAPR 106	Principles of Data Processing	3
BUAD 174	Small Business Management I	3
	Elective**	3
	Total	15
FIFTH QUARTER		
HORT 240	Turf Green Management	4
RCPK 102	Recreation and Parks Management II	3
PHED	Physical Education Elective	1
	Elective**	4
SPDR 136	Speech Communications	3
	Total	15
SIXTH QUARTER		
RCPK 216	Interpretation in the Urban Environment	4
BUAD 241	Business Law I	3
HRIM 156	Club Management	3
RCPK 103	Recreation and Parks Management III	3
	Elective**	3
	Total	16
	Total Minimum Credits for the Recreation & Parks Leadership Degree	97

* Social Science 101-102-103 may be substituted for GOVT, ECON, and PSYCH.

Note: RCPK 190-290, Coordinated internship, is suggested for the 4th, 5th, and 6th quarters, consistent with the availability of such experience through cooperative arrangements.

** Recommended Electives (With Approval by Program Head)

RCPK 146 Comm. and Family Rec.

MUSC 296 Recreation Music

RCPK 116 Social Rec. Leadership

RCPK 138 Fund. of Camp Mgt. and Oper.

FORE 130 Nat. Res. & Wildlife Mgt.

ARTS 196 Art Workshop

RECREATIONAL VEHICLE—MOTORCYCLE MAINTENANCE

(Alexandria Campus)

Pending Approval

Degree: Certificate

Length: Three Quarters (One Year)

Purpose: To satisfy a part of the continuing demand for qualified recreational vehicle mechanics in the local area. Accelerated growth in the numbers of recreational vehicles in the area and the rapid and

complex changes in their engineering and design account for a continued critical shortage of mechanics and service technicians.

The Recreational Vehicle—Motorcycle Maintenance program is designed to provide a thorough knowledge of the mechanics of the modern motorcycle and all its supporting systems, to develop an individual's mechanical skills to the point where he attains journeyman level and to develop his interest in a motorcycle repair and service career. The curriculum is designed primarily for persons who seek full-time employment in the motorcycle maintenance and general repair field immediately upon completion of the one-year program. The course will develop the student's skills in the use of the most modern motorcycle repair tools and equipment. For one to advance successfully in this program of study, a thorough understanding of the motorcycle, its basic operating principles and a mechanical aptitude and manual dexterity are required.

Occupational Objectives:

- Motorcycle Repair Technician
- New Cycle Set-Up Technician
- Repair Service Estimator
- Tune-Up Specialist
- Quality Control Technician
- Repair Service Writer

Admission Requirements: In addition to the admission requirements established for the college (as indicated in the college catalog), a minimum of a one-year comprehensive automotive shop program in high school or its equivalent and a good understanding of mathematics are usually required for entry into the program. Students who do not meet these requirements may correct their deficiencies in the Preparatory (foundation) Program.

Curriculum Requirements: The Recreational Vehicle—Motorcycle Maintenance curriculum will include approximately 65% motorcycle and technical courses, with the remaining courses in related subjects, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in motorcycle mechanics. In addition to the highly technical courses, the curriculum includes courses necessary to prepare the student to meet the obligations of the citizen in our Democratic society.

RECREATIONAL VEHICLE—MOTORCYCLE MAINTENANCE**Certificate Program**

Course Number	Course Title	Course Credits
FIRST QUARTER		
RVEH 120	Introduction to Motorcycle Mechanics	4
RVEH 176	Motorcycle Two-Stroke Engines	3
RVEH 156	Motorcycle Drive Trains	3
ENGL 101	Communications Skills I	3
MATH 011	Elements of Mathematics I	3
GENL 100	Orientation	1
	Total	17
SECOND QUARTER		
RVEH 177	Motorcycle Four-Stroke Engines	3
RVEH 126	Motorcycle Fuel Systems	3
ENGL 102	Communications Skills II	3
MATH 012	Elements of Mathematics II	3
PSYC 110	Fundamentals of Applied Psychology	3
	Total	15
THIRD QUARTER		
RVEH 116	Motorcycle Machine Laboratory	3
RVEH 198	Seminar and Project	2
MATH 013	Elements of Mathematics III	3
ECON 160	American Economics	3
RVEH 127	Motorcycle Electrical Systems	3
ENGL	English or Speech Elective	3
	Total	17
	Total Minimum Credits Required for Certificate	49

RESPIRATORY THERAPY

(Annandale Campus)

Degree: Associate in Applied Science*Length:* Six quarters (2 year) program

Purpose: The two year Associate Degree Respiratory Therapy program is designed to prepare selected students to qualify as contributing members of the specialized health team which is concerned with the treatment, management, control and care of patients with deficiencies and abnormalities associated with the processes of breathing. At the successful completion of the program, graduates will be prepared

to take the examinations given by the American Registry of Inhalation Therapists.

Occupational Objectives: Employment opportunities for the Respiratory Therapist include a variety of staff positions in the Respiratory Therapy Departments of hospitals, clinics and research facilities.

Admission Requirements: In addition to the general requirements for admission to the college, entry into the Respiratory Therapy curriculum requires at least 1 unit of high school laboratory science. Students with deficiencies will be required Developmental Studies.

Curriculum Requirements: Approximately one-half of the curriculum will include courses directly related to Respiratory Therapy, theory and practice. The remaining courses are in related areas, general education, and electives. Instruction will include both theoretical concepts and practical, clinical experience. Selected learning experiences will be provided in health agencies located within the geographical area served by the College.

Upon satisfactory completion of the six quarter program, the graduate will be awarded the Associate in Applied Science Degree in Respiratory Therapy.

RESPIRATORY THERAPY

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
NASC 111	Health Science I	4
ENGL 101	Communication Skills I	3
GENL 100	Orientation	1
HLTH 100	Orientation to Allied Health Careers	1
RPTH 104	Fund. Arts of Respiratory Therapy I	4
NASC 141	Fund. Sciences for Respiratory Therapy I	4
PHED 100	Fund. of Physical Activity	1
	Total	18
SECOND QUARTER		
NASC 112	Health Science II	4
ENGL 102	Communication Skills II	3
PSYC 110	Principles of Applied Psychology	3
RPTH 105	Fund. Arts of Respiratory Therapy II	3
NASC 142	Fund. Sciences for Respiratory Therapy II	4
	Total	17

Course Number	Course Title	Course Credits
THIRD QUARTER		
NASC 113	Health Science III	4
RPTH 221	Respiratory Therapy Theory and Procedures	9
NASC 143	Fund. Sciences for Respiratory Therapy III	4
PHED	Physical Education Elective	1
	Total	18
FOURTH QUARTER		
ECON	Economics Elective	3
RPTH 111	Cardiopulmonary Science I	4
RPTH 222	Respiratory Therapy Theory and Procedures II	5
PHED	Physical Education Elective	1
RPTH 190	Coordinated Practice	3
	Total	16
FIFTH QUARTER		
RPTH 112	Cardiopulmonary Science II	4
RPTH 223	Respiratory Therapy Theory and Procedures III	5
RPTH 290	Coordinated Practice	3
ENGL	English or Speech Elective	3
GOVT	Government Elective	3
	Total	18
SIXTH QUARTER		
RPTH 113	Cardiopulmonary Science III	4
RPTH 224	Respiratory Therapy Theory and Procedures IV	7
RPTH 290	Coordinated Practice	3
RPTH 298	Seminar	2
	Total	16
	Total Minimum Credits for A.A.S. Degree in Respiratory Therapy	103

SCIENCE

(Alexandria and Annandale Campus)

Degree: Associate in Science

Length: Six quarters (two years)

Purpose: With the tremendous emphasis on scientific discoveries and technological developments in today's society, there is a demand for scientists and scientifically oriented persons in business, government, industry, and the professions.

The Associate in Science degree program with a major in Science is designed for persons who are interested in a pre-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
- Dentistry
- Forestry
- Geology
- Home Economics
- Mathematics
- Pre-Medicine
- Nursing
- Physics
- Physical Therapy
- Pharmacy
- Science Education

Admission Requirements: In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Science degree program with a major in science requires the 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 studies

Students who do not meet the requirements may be permitted to correct their deficiencies in the Developmental Program before entering this science curriculum.

Curriculum Requirements: Although the major emphasis in this curriculum is on mathematics, the biological sciences, and the physical sciences, the curriculum also includes courses in the humanities and social sciences. Numerous electives are provided so that the student can select the appropriate courses for his pre-professional or scientific program as required in the first two years of the four-year college or university. *Each student is urged to acquaint himself with*

the requirements of the major department in the college or university to which transfer is contemplated and also to consult with Counseling Services of the Community College in planning his program and selecting his electives. In order to help prepare for upper division (junior class) standing at a four-year college or university, the student usually must complete a program at the community college that is comparable in length and courses to the first two years of the program at the four-year college or university. Upon satisfactory completion of the six-quarter program listed, the student will be awarded the Associate in Science degree with a major in science.

SCIENCE

Associate in Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 111	English Composition I	3
GENL 100	Orientation	1
HIST 101	Hist. of West Civ. (or HIST 111—American History)	3
MATH	Mathematics I (MATH 141 or 161)	3-5
	Science with Laboratory*	4
	Total	14-16
SECOND QUARTER		
ENGL 112	English Composition II	3
HIST 102	Hist. of West. Civ. (or HIST 112—American History)	3
MATH	Mathematics II (MATH 142 or 162)	3-5
	Science with Laboratory*	4
PHED 100	Fundamentals of Physical Activity	1
	Total	14-16
THIRD QUARTER		
ENGL 113	English Composition III	3
HIST 103	Hist. of West. Civ. (or HIST 113—Amer. History)	3
	Science with Laboratory*	4
	Elective	2
MATH	Mathematics III (MATH 143 or 163)	3-5
	Total	15-17
FOURTH QUARTER		
ENGL	American, English or World Literature I	3
	Social Science Elective**	3
	Mathematics 241 or Elective	3-4
	Science with Laboratory**	4
	Physical Education Elective	1
	Elective	3
	Total	17-18

Course Number	Course Title	Course Credits
FIFTH QUARTER		
	American, English, or World Literature II	3
	Social Science Elective**	3
	Mathematics 242 or Elective	3-4
	Science with Laboratory*	4
	Elective	3-4
	Total	16-18
SIXTH QUARTER		
ENGL	Literature	3
	Mathematics 243 or Elective	3-4
	Science with Laboratory*	4
	Social Science Elective**	3
	Elective	3
	Physical Education Elective	1
	Total	17-18
	Total Minimum Credits for the Associate Degree	97

* Laboratory Science may be Chemistry, Physics and/or Biology.

** Students are required to take 9 credits in a social science, in addition to American History or History of Western Civilization, which may be selected from the following fields: Economics, Geography, Government, History, Psychology, Social Science, or Sociology. The Social Science course selected should be the one acceptable to the four-year college or university to which the student plans to transfer.

SCIENCE TECHNICIAN AIDE

(Alexandria Campus)

Degree: Certificate

Length: Three Quarters (one year)

Purpose: The certificate curriculum for Science Technician Aide is designed to provide an opportunity for students to develop a salable skill quickly, either as an entry into permanent employment or as an entry into temporary employment until such time as the student desires to further his education.

Occupational Objectives: The Science Technician Aide can expect to handle the somewhat more routine aspects of environmental technical occupations, animal handling and biomedical clinical technical assistants and chemical technician assistants.

Admission Requirements: In addition to the admission requirements established for the College, a student interested in the curriculum will be scheduled for an interview with a faculty member and will

be asked to complete a background questionnaire on which placement within the program will be based.

Program Requirements: The curriculum is designed to provide theory and practice in the science technologies and related areas of study. A minimum of twenty credit hours will be in the basic and applied techniques courses. The specific course content is modularized and is presented in a laboratory environment. This format allows mastery of the necessary skills and knowledges with an individualized approach.

SCIENCE TECHNICIAN AIDE

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I	3
MATH 11	Elements of Mathematics I*	3
GENL 100	Orientation	1
SCTE 110	Careers in Science Technology	1
SCTE 101	Science Technology Techniques I	3
	Social Science Elective**	3
	Total	14
SECOND QUARTER		
ENGL 102	Communication Skills II	3
MATH 12	Elements of Mathematics II*	3
	Social Science Elective**	3
SCTE 102	Science Technology Techniques II	3
SCTE 124	Applied Science Techniques I	3
	Total	15
THIRD QUARTER		
ENGL 137	Technical Writing	3
MATH 13	Elements of Mathematics III*	3
DAPR 106	Principles of Data Processing	3
SCTE 103	Science Technology Techniques III	3
SCTE 125	Applied Science Techniques II	3
	Total	15
	Total Minimum Credits for the Science Technician Aide Certificate	44

* Students may elect MATH 121-122-123 instead of MATH 11-12-13 if they intend at some later date to acquire an Associate in Applied Science Degree of Science Technician.

** Social Science Elective may be chosen from Psychology, Government, or Economics.

SCIENCE TECHNOLOGY

(Alexandria Campus)

Degree: Associate in Applied Science

Length: Six Quarters (two years)

Purpose: The curriculum is designed to accomplish two purposes: to prepare students to enter employment in a variety of technical careers and to provide those now employed in technical occupations the opportunity to upgrade their skills.

Occupational Objectives:

- Bio-medical clinical technician
- Chemical technician
- Environmental technician (air, water, solid waste control)
- Research technician

Admission Requirements: In addition to the admission requirements established for the College, a student interested in the curriculum will be scheduled for an interview with a faculty member and will be asked to complete a background questionnaire on which placement within the program will be based.

Curriculum Requirements: The curriculum is designed to provide needed general education and related area study as well as theory and practice in the science technologies. The specific course content is modularized and is presented in a laboratory environment, either at the College or within the community in science and research labs. The curriculum is designed to allow for flexibility of direction within the spectrum of the sciences to help meet the needs for technicians within the various areas. The modularized format allows mastery of the necessary skills and knowledges with an individualized approach. Upon successful completion of the curriculum, the graduate will be awarded the Associate in Applied Science Degree in Science Technology.

SCIENCE TECHNOLOGY

Course Number	Course Title	Course Credits
FIRST QUARTER		
ENGL 101	Communication Skills I	3
MATH 121	Technical Math I	5
GENL 100	Orientation	1
SCTE 110	Careers in Science Technology	1
SCTE 101	Science Technology Techniques I	3
PHED 100	Fundamentals of Physical Activity	1
	Social Science Elective*	3
Total		17

Course Number	Course Title	Course Credits
SECOND QUARTER		
ENGL 102	Communication Skills II	3
MATH 122	Technical Math II	5
SCTE 102	Science Technology Techniques II	3
SCTE 124	Applied Science Techniques I	3
	Social Science Elective*	3
PHED	Physical Education Elective	1
	Total	18
THIRD QUARTER		
ENGL 137	Technical Writing	3
MATH 123	Technical Math III	5
SCTE 103	Science Technology Techniques III	3
SCTE 125	Applied Science Techniques II	3
	Social Science Elective*	3
PHED	Physical Education Elective	1
	Total	18
FOURTH QUARTER		
SCTE 204	Science Technology Techniques IV	3
SCTE 221	Science Technology Applications I	3
DAPR 106	Principles of Data Processing	3
	Science Elective	4
	Elective	2
	Social Science Elective	3
	Total	18
FIFTH QUARTER		
SCTE 205	Science Technology Techniques V	3
SCTE 222	Science Technology Applications II	3
	Social Science Elective	3
	Science Elective	4
	Elective	3
	Total	16
SIXTH QUARTER		
SCTE 298	Seminar & Project (Technology of the Future)	3
SCTE 223	Science Technology Applications III	3
	Social Science Elective	3
	Science Elective	4
	Elective	3
	Total	16
Total Minimum Credits for the Science Technician		
A.A.S. Degree		97

* Social Science Electives may be chosen from the following fields: Economics, Government, Psychology, Social Science, History, or Sociology.

SECRETARIAL SCIENCE

(Alexandria and Annandale Campus)

Degree: Associate in Applied Science

Length: Six quarters (two years)

Purpose: There is a steady demand for qualified secretaries and stenographers in Virginia. The Associate in Applied Science degree curriculum in Secretarial Science is designed to prepare persons for full-time employment immediately upon completion of the community college curriculum offerings:

Occupational Objectives:

- Administrative Assistant
- Executive Secretary
- Legal Secretary
- Office Manager
- Related Office Occupations
- Stenographer

Admission Requirements: In addition to the admission requirements established for the college (as listed in the section on admission requirements in Part II of this Catalog), entry into the Associate in Applied Science Degree curriculum in Secretarial Science requires proficiency in high school English and mathematics. Students who are not proficient in these areas will be required to correct their deficiencies in the Developmental Program before entering the curriculum. In addition, students who have completed training in shorthand and advanced typewriting, may petition for advance placement. The credit by examination will be the basis upon which advanced placement with credit may be granted.

Curriculum Requirements: The two-year curriculum in Secretarial Science combines instruction in the many areas required for competence as a secretary in business, government, industry, law offices, and other organizations. The curriculum will include courses in secretarial science, related areas, general education and electives. In shorthand and typewriting courses students must meet speed requirements for each course and receive a grade "C" or higher to be accepted into the next sequential course. Assignments will be given requiring use of the secretarial laboratories. The first year (three quarters) of the Secretarial Science curriculum is similar for all students. In the second year, students may select a specialty in either the General or Legal Secretary curriculums. Students should consult with their faculty advisors and

Counseling Services in planning their programs and selecting their electives. Upon satisfactory completion of the six-quarter curriculum the graduate will be awarded the Associate in Applied Science Degree in Secretarial Science with specialization as either an Executive or Legal Secretary.

Cooperative Education: All students are encouraged to investigate the opportunities in Cooperative Education. In addition to valuable work experience, it is possible to earn up to 15 hours credit towards graduation. Cooperative Education provides planned and supervised learning situations in on-the-job locations which enable the student to become better acquainted with both the theory and practice of the vocational choice. Inquiries should be directed to the Campus Office of Cooperative Education or the student's advisor.

SECRETARIAL SCIENCE (Executive Secretary)

Associate in Applied Science Degree

Course Number	Course Title	Course Credits
FIRST QUARTER		
SECR 111	Typewriting I*	3
SECR 121	Shorthand I*	4
BUAD 100	Introduction to Business	3
ENGL 101	Communication Skills I	3
MATH 151	or BUAD 101 Business Mathematics I	3
GENL 100	Orientation	1
	Total	17
SECOND QUARTER		
SECR 112	Typewriting II	3
SECR 122	Shorthand II	4
ENGL 102	Communication Skills II	3
MATH 152	or BUAD 102 Business Mathematics II	3
PHED 100	Fundamentals of Physical Activity	1
ACCT 111	Accounting I (or SECR 138-Office Record Keeping)	3-4
	Total	17-18
THIRD QUARTER		
SECR 113	Typewriting III	3
SECR 123	Shorthand III	4
SECR 136	Filing & Records Management	3
ENGL 180	Business English	3
DAPR 106	Principles of Data Processing (or MATH 153 or Elective)	3
PHED	Physical Education Elective	1
	Total	17

Course Number	Course Title	Course Credits
FOURTH QUARTER		
ECON 160	American Economics**	3
SECR 216	Executive Typing	3
SECR 241	Secretarial Procedures I	3
SECR 221	Transcription I	3
PHED 241	Physical Education Elective	1
BUAD 241	Business Law I	3
	Total	16
FIFTH QUARTER		
SECR 256	Machine Transcription	3
SECR 222	Transcription II	3
SECR 242	Secretarial Procedures II	3
SECR 219	Magnetic Tape Selectric Typewriter (or Business Related Elective)	3
PSYC 110	Principles of Applied Psychology**	3
BUAD 164	Principles of Business Mgt.	3
	Total	18
SIXTH QUARTER		
SECR 156	Personal Development	3
SECR 217	Typewriting Skill Building	3
SECR 223	(General) Transcription III	3
SECR 243	Secretarial Procedures III	3
GOVT 180	American Constitutional Government**	3
SECR 298	Seminar & Project	2
	Total	17
	Total Minimum Credits for a Secretarial Science (Executive Secretary) Degree	103

** SOSC 101-102-103 may be substituted for GOVT, PSYC, & ECON. SOSC 101-102-103 need not be taken sequentially.

SECRETARIAL SCIENCE (Legal Secretary)

Associate in Applied Science Degree

FIRST QUARTER		
SECR 111	Typewriting I*	3
SECR 121	Shorthand I*	4
BUAD 100	Introduction to Business	3
ENGL 101	Communication Skills I	3
MATH 151	or BUAD 101 Business Mathematics I	3
GENL 100	Orientation	1
	Total	17

Course Number	Course Title	Course Credits
SECOND QUARTER		
SECR 112	Typewriting II	3
SECR 122	Shorthand II	4
ENGL 102	Communication Skills II	3
MATH 152	or BUAD 102 Business Mathematics II	3
PHED 100	Fundamentals of Physical Activity	1
ACCT 111	Accounting I or SECR 138	4
Total		18
THIRD QUARTER		
SECR 113	Typewriting III	3
SECR 123	Shorthand III	4
SECR 136	Filing & Records Management	3
ENGL 180	Business English	3
PHED	Physical Education Elective	1
DAPR 106	Principles of Data Processing (or Elective)	3
Total		17
FOURTH QUARTER		
PSYC 110	Principles of Applied Psychology**	3
SECR 216	Executive Typing	3
SECR 241	Secretarial Procedures I	3
SECR 221	Transcription I	3
BUAD 241	Business Law I	3
SECR 219	Mag; Tape Sel. Typewriter	3
Total		18
FIFTH QUARTER		
SECR 256	Machine Transcription	3
SECR 224	Legal Transcription I	3
SECR 264	Legal Secretarial Procedures I	3
BUAD 242	Business Law II	3
ECON 160	American Economics**	3
PHED	Physical Education Elective	1
Total		16
SIXTH QUARTER		
SECR 156	Personal Development	3
SECR 225	Legal Transcription II	3
SECR 265	Legal Secretarial Procedures II	3
GOVT 180	American Constitutional Government**	3
SECR 298	Seminar and Project	2
SECR 217	Typewriting Skill Building	3
Total		17
Total Minimum Credits for a Secretarial Science (Legal Secretary) Degree		103

* Students who have completed training in shorthand or advanced typing may petition for advanced placement with credit by examination.

** SOSC 101-102-103 may be substituted for PSYC, GOVT, ECON. SOSC 101-102-103 need not be taken sequentially.

TECHNICAL ILLUSTRATION

(Alexandria Campus)

Pending Approval

Certificate: Certificate in Technical Illustration

Length: Three Quarters (One Year)

Purpose: The certificate program is intended:

- (1) To meet the ever-increasing demand for people trained in the area of technical illustration and patent drafting;
- (2) To provide the minimum specialized training necessary to enter the engineering technical support field;
- (3) To improve the general education level to meet the demands of our society.

Upon successful completion of the program, the student is able to take full employment immediately or continue in one of the related A.A.S. programs. In the case of continued instruction, the student will receive advance credit for parallel courses.

Occupational Objectives:

Technical Illustrator

Patent Draftsman

IPB (Illustrated Parts Breakdown) Draftsman

Admission Requirements:

In addition to the admission requirements established for the college, a minimum of the following high school subjects are required:

- a) three units of English
- b) one unit of mathematics
- c) one unit of lab science

Curriculum Requirements:

Approximately one-half of the curriculum will include courses in Engineering Drafting and Technical Illustration, with the remaining courses in related subjects and general education.

TECHNICAL ILLUSTRATION

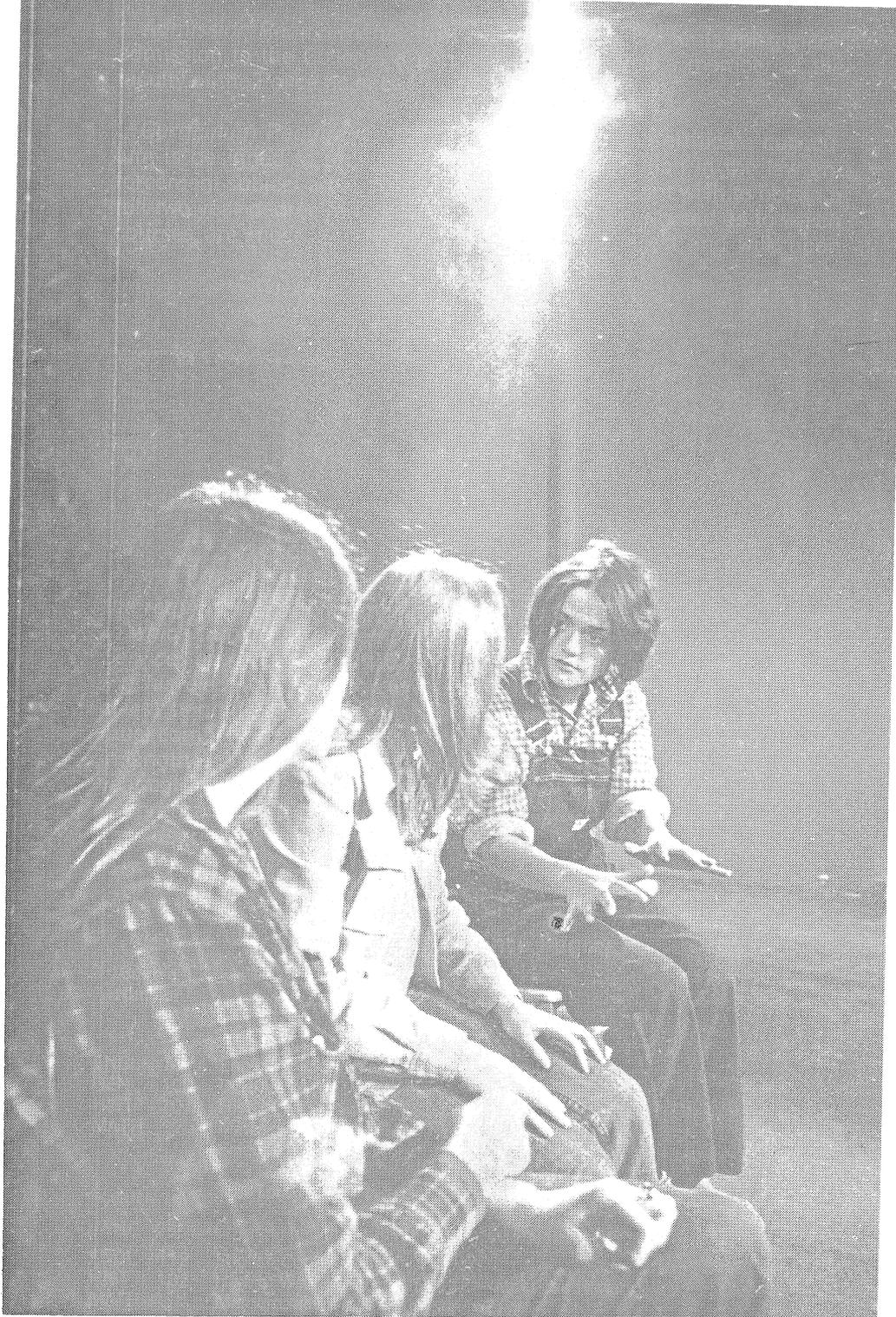
Certificate Program

Course Number	Course Title	Course Credits
FIRST QUARTER		
GENL 100	Orientation	1
ENGL 101	Communication Skills I	3
MATH 011	Elements of Mathematics I	3
DRFT 111	Technical Drafting I	2
DRFT 112	Technical Drafting II	2
	Non-Technical Elective*	3
ENGR 010	Introduction to Technical Engineering	2
	Total	16
SECOND QUARTER		
ENGL 102	Communications Skills II	3
MATH 012	Elements of Mathematics II	3
DRFT 113	Technical Drafting III	2
DRFT 251	Technical Illustration I	3
	Non-Technical Elective*	3
	Drafting Elective**	2-3
	Total	16-17
THIRD QUARTER		
MATH 013	Elements of Mathematics III	3
DRFT 252	Technical Illustration II	3
DRFT 198	Seminar and Project	2
	English or Speech	3
	Drafting Elective**	2-3
	Drafting Elective**	2-3
	Total	15-17
Total Minimum Credits for a Technical Illustration Certificate .		47

* Non-Technical electives may be chosen from the following fields: government, economics, psychology, social science, natural science, or humanities
 ** Drafting electives may be chosen from the following: DRFT 114, 211, 256; CIVL 227, 228



Non-Credit Community Service Course in Motorcycle Repair



Drama Class, Alexandria Campus

DESCRIPTION OF COURSES

Course Numbers

Courses numbered 00-99 are freshmen level courses for the developmental program and for the diploma and certificate programs. The credits earned in these courses are not applicable toward an Associate Degree.

Courses numbered 100-199 are freshmen level courses applicable toward an Associate Degree. They may also be used in certificate and diploma courses.

Courses numbered 200-299 are sophomore courses applicable toward an Associate Degree. They may also be used in certificate and diploma 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 quarter-hour credit or two-thirds of a 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

If any prerequisites are required before enrolling in a course, they will be identified in the course description. Courses in special sequences (usually identified by the numerals I-II-III) require that prior courses or their equivalent be completed before enrolling in the advanced courses, usually the 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 Provost, and the instructor of the course.

ACCOUNTING

ACCT 111-112-113 ACCOUNTING I-II-III (4 cr.) (4 cr.) (4 cr.)—Fundamentals of accounting. The accounting cycle, journals, ledgers, working papers, and the preparation of financial statements under the various forms of business ownership. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

ACCT 126 HOTEL/RESTAURANT ACCOUNTING (3 cr.)—The application of accounting principles and practices to the hospitality industry. Analysis of financial statements as the basis for managerial decisions. Lecture 3 hours per week.

ACCT 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ACCT 211-212-213 PRINCIPLES OF ACCOUNTING I-II-III (3 cr.) (3 cr.) (3 cr.)—Accounting principles and their application to various forms of business inventory valuation, internal control systems, manufacturing processes, budgeting, and analysis of financial statements. Lecture 3 hours per week.

ACCT 221-222-223 INTERMEDIATE ACCOUNTING I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite ACCT 111-112-113 or ACCT 211-212-213. Extensive analysis of the principle elements of accounting systems and statements. Lecture 4 hours per week.

ACCT 229 AUDITING (3 cr.)—Prerequisite ACCT 111-112-113 or ACCT 211-212-213. Purposes of audit, relationships of auditor and client, kinds of audits, working papers, internal controls and examination of accounting systems, audit reports. Lecture 3 hours per week.

ACCT 234-235 COST ACCOUNTING I-II (3 cr.) (3 cr.)—Prerequisite ACCT 111-112-113 or ACCT 211-212-213. Studies in accounting systems, methods and statements involved in process and job cost accounting; use of standards and cost controls. Lecture 3 hours per week.

ACCT 244 BUSINESS TAXES I (3 cr.)—Principles of federal taxation relating to individual income taxes with emphasis on minimization of personal tax burden and preparation of personal tax returns; single preparation form and tax problems. Lecture 3 hours per week.

ACCT 245 BUSINESS TAXES II (3 cr.)—Prerequisite ACCT 244. Federal taxation principles and theories concerning partnership and corporation income tax concepts and problems. Emphasis on evaluation of business transactions from a tax point of view, partnership and corporate tax minimization and tax return preparation. Lecture 3 hours per week.

ACCT 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ACCT 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. Variable hours.

ACCT 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 hours.

ARCHITECTURE

ARCH 100 INTRODUCTION TO ARCHITECTURAL TECHNOLOGY (2 cr.)—An intensive course outlining the history and impact of architecture. Emphasis on the dynamics and social aspects of architecture and society. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ARCH 111 ARCHITECTURAL DRAFTING I (3 cr.)—Designed to provide the fundamental knowledge of the principles of drafting. Skills and techniques of drafting including use of drafting equipment, lettering, freehand orthographic and pictorial sketching, geometric construction, and orthographic instrument drawing of principle views. The principles of isometric, oblique and perspective drawings. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 112 ARCHITECTURAL DRAFTING II (3 cr.)—Prerequisite ARCH 111 or equivalent. Development of techniques in architectural lettering, symbols, and interpretation; dimensioning, freehand and instrument drafting. Drawing of construction details, using appropriate material symbols and connections. Sections, scale details and full-size details prepared from preliminary sketches. Applications of descriptive geometry in visualization and analytic solutions of drafting problems involving auxiliary views, intersections and developments. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 113 ARCHITECTURAL DRAFTING III (3 cr.)—Prerequisite ARCH 112. An approach in depth to the study of architectural drafting. Development of techniques in architectural lettering, dimensioning, freehand sketching and instrument drawing. Drawings of construction details, using appropriate material symbols and conventions. Working drawings, including plans, elevations, sections, scale details and full-size details will be prepared from preliminary sketches. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 141 MATERIALS AND METHODS OF CONSTRUCTION I (3 cr.)—Prerequisite ARCH 100 or ENGR 100. Designed to introduce the materials used in erection of structures, the physical properties and structural characteristics of steel, concrete, timber, glass, related materials and the methods used in testing materials. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ARCH 142 MATERIALS AND METHODS OF CONSTRUCTION II (3 cr.)—Prerequisite ARCH 141. Designed to introduce the practical use of materials and methods of structures. The architectural and structural relationship of concrete, steel, and timber structures are analyzed with an introduction to cost analysis and the economic aspect involved in construction. Lecture 3 hours per week.

ARCH 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ARCH 198 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. Variable hours.

ARCH 204-205 HISTORY OF ARCHITECTURE I-II (3 cr.) (3 cr.)—The history of architecture from ancient times to the present but with emphasis on the designs and forms of twentieth century developments. Lecture 3 hours per week.

ARCH 210 SITE PLANNING (3 cr.)—The fundamentals of surveying required for site evaluation and planning. Principles of horizontal measurements, leveling, profiles, direction, coordinate systems, topographic maps, contours, horizontal and vertical curves,

boundaries. Surveying methods and instruments demonstrated. Lecture 3 hours per week.

ARCH 211 ARCHITECTURAL DRAFTING IV (3 cr.)—Prerequisite ARCH 113. Drawing of structural plans and details as prepared for building construction including steel, concrete, and timber structural components. Appropriate details and drawings necessary for construction and fabrication of structural members. Reference materials provide skills and knowledge in locating data and in using handbooks. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 212 ARCHITECTURAL DRAFTING V (3 cr.)—Prerequisite ARCH 211. Drawing of plans and details as prepared for mechanical equipment such as air conditioning, plumbing and electrical systems using appropriate symbols and conventions. Coordination of mechanical and electrical features with structural and architectural components. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 213 ARCHITECTURAL DRAFTING VI (3 cr.)—Prerequisite ARCH 212. Preparation of a complete set of working drawings for the architectural structure. Preparation of mill work drawings, cabinets and built-in-equipment detail. Final assembly of the complete document for construction purposes. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 236 BUILDING ELECTRIC EQUIPMENT (3 cr.)—Study of equipment, materials, and symbols. Building code requirements pertaining to residential and commercial construction; reading and interpretation of working drawings by electrical engineers; coordination of electrical features with architectural and structural design. Lecture 3 hours per week.

ARCH 237 BUILDING MECHANICAL EQUIPMENT (3 cr.)—General study of heating, air conditioning, plumbing and electrical equipment, materials and symbols. Building code requirements pertaining to residential and commercial structures; reading and interpretation of working drawings by mechanical engineers; coordination of mechanical and electrical features with structural and architectural designs. Lecture 3 hours per week.

ARCH 240 FIELD INSPECTIONS (3 cr.)—Provide working knowledge of methods and procedures of building construction inspection and technical reporting on the project site. Lecture 3 hours per week.

ARCH 256 ARCHITECTURAL OFFICE PRACTICES (2 cr.)—A study of the professional relationship of the architectural firm in relation to clients, contractors, suppliers, consultants and other architects. Ethics of the profession as applicable to the draftsman's role in the architectural firm will be stressed. Lecture 2 hours per week.

ARCH 276 CONSTRUCTION ESTIMATING (3 cr.)—Interpretation of working drawings for a project; preparation of material and labor quantity surveys from plans and specifications; approximate and detailed estimates of cost. The student will study materials take-off, subcontractors' estimates of cost, and bid and contract procedures. Detailed inspection of the construction by comparing the finished work to the specifications. Lectures 3 hours per week.

ARCH 277 BUILDING CODES AND CONTRACT DOCUMENTS (3 cr.)—A study of building codes and their effect in relation to specifications and drawings. The purpose and writing of specifications will be studied along with their legal and practical application to working drawings. Contract documents will be analyzed and studied for the purpose of client-architect-contractor responsibilities, duties and mutual protection. Lectures 3 hours per week.

ARCH 279 CRITICAL PATH METHOD PROGRAM (3 cr.)—Working knowledge of C.P.M. programming and its implication for the building industry as a vehicle for control of project construction. Lecture 3 hours per week.

ARCH 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ARCH 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 of career opportunities in the field. Variable hours.

ARTS

ARTS 90 ART WORKSHOP (1 cr.)—A workshop for individual special projects in basic art. Laboratory 3 hours per week.

ARTS 91 WORKSHOP IN WATERCOLOR (2 cr.)—A workshop for individual special projects in watercolor. Laboratory 6 hours per week.

ARTS 111-112-113 HISTORY AND APPRECIATION OF ART I-II-III (3 cr.) (3 cr.) (3 cr.)—The history and interpretation of architecture, sculpture and painting. The course begins with prehistoric art and follows the mainstream of western civilization to the present. Lectures 3 hours per week.

ARTS 124-125-126 DRAWING I-II-III (4 cr.) (4 cr.) (4 cr.)—Introduction to drawing skills, concepts, and media including pencil, ink, charcoal, pastel, and watercolor. Related gallery assignments and field trips. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 151-152-153 FUNDAMENTALS OF DESIGN I-II-III (3 cr.) (3 cr.) (3 cr.)—Experimentation and practice on design problems relating to visual communications with emphasis on techniques and solution. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 154-155-156 DESIGN I-II-III (3 cr.) (3 cr.) (3 cr.)—Introduction to the concepts of two and three dimensional design and the theory and use of color. Field trips related to design concepts. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 171-172-173 TYPOGRAPHY I-II-III (3 cr.) (3 cr.) (3 cr.)—The visual design of type in relation to photography, printmaking, and other printing processes, includes identification and specification of type, copy casting, and proofing in the print shop. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ARTS 180 INTRODUCTION TO PHOTOGRAPHY (2 cr.)—An introduction to the basic principles of photography with laboratory work related to the student's major field of interest. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ARTS 184-185 HISTORY OF PHOTOGRAPHY I-II (3 cr.) (3 cr.)—Survey of the artistic achievements and innovations in photography and analysis of outstanding photographers and their works. Lecture 3 hours per week.

ARTS 194-195 FILM MAKING I-II (3 cr.) (3 cr.)—Study of the techniques of shooting and editing film, preparing documentaries, producing animated movies. Opportunity for students to create their own films. Lecture 1 hour, Laboratory 4 hours per week, Total 5 hours per week.

ARTS 196 ART WORKSHOP (2 cr.)—A workshop for individual special projects in arts and crafts. Laboratory 6 hours per week.

ARTS 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ARTS 200 INTRODUCTION TO PRIMITIVE ART (3 cr.)—Survey of the visual arts of primitive cultures, including those of pre-history; of North and South American Indians, of Tribal Africa and Australia, of the Eskimos, etc. Lecture 3 hours per week.

ARTS 201-202-203 SCULPTURE I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite ARTS 155 or divisional permission. Introduction to sculptural concepts and methods of production both traditional and contemporary, including work in plastics and metals. Field trips and other related assignments. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 206 THE GROWTH OF AMERICAN ART (3 cr.)—A survey of the development of the fine arts in the United States from their colonial beginnings to the present. Special emphasis will be given to the relationship between American crafts and fine arts, and the influence of historical events and economic ideals on the quality of the art produced. Lecture 3 hours per week.

ARTS 211-212-213 PAINTING I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite ARTS 126 and ARTS 155 or divisional permission. Introduction to painting styles, materials, and techniques, both traditional and contemporary. Gallery Trips and other related assignments. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 227-228-229 DRAWING IV-V-VI (3 cr.) (3 cr.) (3 cr.)—Prerequisite ARTS 126 or divisional permission. Advanced study of concepts with emphasis on the drawing as a work of art, and on creative independence. Related gallery assignments. Laboratory 6 hours per week.

ARTS 251-252-253 ADVANCED DESIGN I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite ARTS 155 or divisional permission. Concerned with the ordering and interpretive application of design elements (line, shape, form, texture, color, space, etc.) in two and three dimensions. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 261-262-263 ADVERTISING DESIGN I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisites ARTS 171 and 151. A study of the principles of optical communications as applied to advertising design in newspaper, magazines, direct mail advertising, house organs, etc. Analysis is made of the influence on layout by contemporary art. Lectures 2 hours, Laboratory 3 hours, Total 5 hours per week.

ARTS 266-267-268 ILLUSTRATION I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite ARTS 126 or divisional permission. Introductory course of methods and materials used in the following fields of illustration: spot, product, story (book and magazine), fashion, furniture, news reporting and cartooning. Lecture 1 hour. Laboratory 5 hours. Total 6 hours per week.

ARTS 271-272-273 GRAPHIC TECHNIQUES I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisites ARTS 151 and 124. The use of drawing instruments and materials; introduction to engraving processes; and the mechanics of reproduction for printing. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 278 PRINTMAKING: SILK SCREEN (4 cr.)—Prerequisites ARTS 126 and ARTS 155 or divisional permission. Introduction to silk screen stencil techniques, styles, and

materials. Field trips related to screen printing. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 279 PRINTMAKING: RELIEF PRINTING (4 cr.)—Prerequisites ARTS 126 & 155 or Divisional permission. Introduction to relief printing processes and techniques including woodblock, linocut, and collograph. Field trips related to relief printing. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 280 PRINTMAKING: INTAGLIO PRINTING (4 cr.)—Prerequisites ARTS 126 & 155 or Divisional permission. Introduction to intaglio printmaking processes including etching, engraving, dry point, and related techniques. Related Field trips. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARTS 281-282-283 PHOTOGRAPHY WORKSHOP I-II-III (1 cr.) (1 cr.) (1 cr.)—Prerequisite ARTS 180. Advanced practical study in the photography laboratory. Work with black and white photography and color slides. Laboratory 3 hours per week.

ARTS 284-285 PHOTOJOURNALISM I-II (3 cr.) (3 cr.)—Techniques of communicating through the photo essay and analysis of newspaper and magazine standards of selection. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ARTS 291-292-293 ADVANCED PHOTOGRAPHY I-II-III (3 cr.) (3 cr.) (3 cr.)—Advanced creative techniques in all areas of photography, stressing skill in lighting, portraiture, and commercial applications of photography. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ARTS 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. Variable hours.

ARTS 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 hours.

AUTOMOTIVE

AUTO 17 AUTO MECHANICS (4 cr.)—The automobile, its systems, operating principles, problems and repair techniques. Introduction to shop layout and safety, tools and equipment, application and diagnosis, disassembly, inspection, repair, reassembly and adjustments of automobile components. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

AUTO 98 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. Variable hours.

AUTO 99 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 hours.

AUTO 100 AUTOMOTIVE SHOP PRACTICES (3 cr.)—Shop practices for the automotive laboratory and shop safety, identification and use of hand tools, general power equip-

ment and maintenance of an automotive shop. Basic operating procedures of installed shop equipment. Occupational Safety and Health act standards.

AUTO 101-102-103 AUTOMOTIVE SYSTEMS TECHNOLOGY I-II-III (4 cr.) (4 cr.) (4 cr.)—Fundamental systems of the automobile; the engine, fuel, exhaust, electric, lubrication, cooling, transmission, steering, brake, and suspension systems; theory and function of each system is explained and operation demonstrated. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 107 AUTOMOTIVE DISASSEMBLY AND INSPECTION TECHNIQUES (3 cr.)—A study of disassembly procedures, cleaning methods and inspection techniques, including the proper use of measuring devices. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 109 AUTOMOTIVE SHOP FABRICATION TECHNIQUES (3 cr.)—A study and experience in the methods of fabricating equipment and fixtures for the Automotive Repair of Machine Shop. The course includes project planning, layout work, gas welding, arc welding, fasteners, and tool and fixture making. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 111-112-113 AUTOMOTIVE ENGINES I-II-III (4 cr.) (4 cr.) (4 cr.)—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.

AUTO 114 CYLINDER BLOCK SERVICE (4 cr.)—Basic cylinder block reconditioning to include boring, resleeving, line-boring and deck surfacing. Repair techniques for damaged block and cylinder head castings to include cold welding, brazing, welding and epoxy. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 115 CYLINDER HEAD SERVICE (4 cr.)—A study of cylinder head reconditioning to include valve seat grinding, refacing valves, servicing valve guides, valve seat inserts, cutting for seals and springs, thread repair and resurfacing mating surfaces. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 116 AUTOMOTIVE MACHINE LABORATORY (3 cr.)—The practice and use of automobile machining equipment in reconditioning engine, brake, and drive line components. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 118 AUTOMOTIVE TURNING OPERATIONS (4 cr.)—Principles and methods of lathe operations for fabrication, modification and tool making. Brake drums and disc lathes are included. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 119 CRANKSHAFT, CAMSHAFT AND CONNECTING ROD SERVICE (4 cr.)—A study of the techniques of crankshaft and camshaft reconditioning to include grinding, polishing, straightening, welding and balancing. Connecting rod service to include installing and reaming bushings in addition to straightening, aligning and balancing the rods. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 120 INTRODUCTION TO AUTOMOTIVE MACHINE SHOP (4 cr.)—An introductory course in automotive machining operations emphasizing shop safety and the safe use of machine shop hand tools. The course also surveys the basic machine operations of turning, grinding, milling and boring. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 121-122-123 AUTOMOTIVE FUEL SYSTEMS I-II-III (4 cr.) (4 cr.) (4 cr.)—Analysis of automotive fuel systems to include carburetors, fuel injection, superchargers, fuel pumps, filters, instruments, tanks and connecting lines. Complete overhaul, repairs and

adjustment of fuel system components. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 126 ANTI-POLLUTION SYSTEMS (4 cr.)—A study of various anti-pollution systems used on modern automobiles, installation, inspection, repair, and service. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 134 AUTOMOTIVE INSIDE SALESMAN (3 cr.)—A study of the duties and qualifications, including catalog and telephone use, invoicing, parts classification, salesmanship and customer relations. 3 lecture hours per week.

AUTO 135 AUTOMOTIVE OUTSIDE SALESMAN (3 cr.)—A study of the duties and qualifications, including collections and collection practices, fleet and other accounts, techniques of product demonstration, salesmanship and customer relations. 3 lecture hours per week.

AUTO 136 AUTOMOTIVE LUBRICATION AND COOLING SYSTEMS (3 cr.)—Testing and analysis of lubrication systems to include lubricants, pumps, lines, filter, and vents. Analysis of cooling systems, coolants, pumps, fans, lines and connections. Estimating repairs, adjustments needed and their costs. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 151-152-153 AUTO POWER TRAINS I-II-III (4 cr.) (4 cr.) (4 cr.)—The operation, design, construction and repair of power train components, standard and automatic transmissions; clutches, propeller shaft, universal joints, rear axle assemblies, fluid couplings, torque converters; 2, 3 and 4 speed standard, overdrive and automatic transmissions. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

AUTO 176 SMALL GASOLINE ENGINES (3 cr.)—A study of small gasoline engine operating principles, construction, design, variety and their many purposes. Instruction on the two-cycle and four-cycle small gas engines, their construction, design, fuel system, ignition system, and lubricating systems. The disassembly, reconditioning, overhaul and reassembly is demonstrated in the lab. Thorough study and practice in trouble-shooting and tune-up. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 181-182-183 AUTOMOTIVE DIAGNOSTIC TECHNOLOGY I-II-III (3 cr.) (3 cr.) (3 cr.)—Introduction to the principles of automotive maintenance using modern diagnostic methods. Theory and laboratory experiments designed to explain and illustrate the scientific basis of modern electronic and mechanical diagnostic procedures. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

AUTO 198 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. Variable hours.

AUTO 201-202-203 AUTOMOTIVE SYSTEMS TECHNOLOGY IV-V-VI (4 cr.) (4 cr.) (4 cr.)—Theory and detailed study of automobile suspension, braking, steering, and power train system provide the student with actual practice in trouble-shooting and repair. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 238 AUTOMOTIVE AIR CONDITIONING (3 cr.)—Principles of refrigeration, air conditioning controls, and the adjustment and general servicing of automotive air conditioning systems. Lecture 3 hours per week.

AUTO 241-242-243 AUTOMOTIVE ELECTRICITY I-II-III (4 cr.) (4 cr.) (4 cr.)—Electricity and magnetism, symbols and circuitry as applies to the automotive electrical system. Includes the storage battery, generators, alternators, regulators, starters, lighting systems, instruments and gauges. Trouble-shooting through use of modern test equipment. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 267 AUTOMOTIVE SUSPENSION & BRAKING SYSTEMS (4 cr.)—Analysis of front end suspensions and adjustment. Rear springs, braking system, and tire inflation check. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 268 AUTOMOTIVE ALIGNMENT (2 cr.)—Use of alignment equipment in diagnosing, adjusting, and repairing suspension problems: Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

AUTO 281-282-283 AUTOMOTIVE DIAGNOSTIC TECHNOLOGY IV-V-VI (3 cr.) (3 cr.) (3 cr.)—Application of modern electronic and mechanical diagnostic procedures in the evaluation of the operational condition of automobiles. Safety and economy of operation are stressed. The student acquires actual diagnostic experience in the laboratory. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 284-285 AUTOMOTIVE SERVICE PROCEDURES & TUNE-UP I-II (3 cr.) (3 cr.)—Diagnostic and service procedures for automatic electrical and mechanical systems; use of tools and test equipment, evaluation of test results, estimation of repair cost, and performance of required service. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

AUTO 287-288 SHOP MANAGEMENT AND CUSTOMER RELATIONS I-II (3 cr.) (3 cr.)—A study of shop layout, personnel and management, cost analysis, record keeping and quality control. The shop manager, service salesman, and service writer's role in customer relations. Lecture 3 hours per week.

AUTO 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

AUTO 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. Variable hours.

AVIATION

AERO 110 HISTORY OF AIR TRANSPORTATION (3 cr.)—An informative, historical survey of the effort of manned flight. The development of aircraft, milestones in aviation, noted pioneers, and the socio-economic impact of flight upon modern civilization. Lecture 3 hours per week.

AERO 126 AVIATION IN THE UNITED STATES (3 cr.)—The development and present status of air transportation, Federal legislation, characteristics and classifications of air carriers; the organization and functions of the Federal Aviation Administration and Civil Aeronautics Board. The state of aviation in the U. S. and other advanced countries. Potentials and problems. Survey of equipment and techniques in present day technology. Lecture 3 hours per week.

AERO 127 FUNDAMENTALS OF FLIGHT (3 cr.)—Introduction to the basic principles of flight including applications of aerophysics, theory of flight, aircraft standards and

specifications, basic airplane construction, weight and balance fundamentals. Lecture 3 hours per week.

AERO 136 THE NATIONAL AIRSPACE SYSTEM (3 cr.)—A survey of the common system of facilities, equipment, regulations, procedures, and personnel providing services and standard procedures for the safe and efficient movement of aircraft. Lecture 3 hours per week.

AERO 137 AVIATION SAFETY (3 cr.)—A study of the fundamentals essential to safe flight; instruments used and the evaluation and interpretation of their indications. Weight and balance problems. Federal Aviation Regulations pertaining to safe flight. Use of the Airmen's Information Manual. Lecture 3 hours per week.

AERO 176 PRIMARY FLIGHT (1 cr.)—A specific introduction to flight through actual flying experience in modern, safe, fully equipped aircraft. Sixteen hours of instruction are provided of which 10 hours are spent in dual flight and 6 hours in oral instruction and briefing. The program is sufficient to qualify a student pilot for solo flight. Optional for all Aviation Technology Programs. Estimated cost: \$250.00. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

AERO 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

AERO 246 METEOROLOGY (4 cr.)—The interpretation of meteorological phenomena affecting aircraft flight. A study of the basic concepts of aviation meteorology: temperature, pressure, moisture, stability, clouds, air masses, fronts, thunderstorms, icing, fog. Analysis and use of weather data for flight planning and safe flying; interpretation of U. S. Weather Bureau maps, reports, and forecasts. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

AERO 247 AVIATION LAWS AND REGULATIONS (3 cr.)—A study of local, Federal, and International laws forming the present structure of aviation law. A study of safety and economic regulations; the Federal Aviation Act and the Department of Transportation Act. Lecture 3 hours per week.

AERO 248 AIRCRAFT SUPPORT OPERATIONS (4 cr.)—Logistics and services necessary to insure and support safe, efficient flight operations. Aviation supply and maintenance; loading and unloading; pre-flight checks and services. Logistical support enroute. Scheduled maintenance and operations. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AERO 256 AIR NAVIGATION (3 cr.)—The basic elements of air navigation; the fundamentals and practical application of pilotage and dead reckoning, including the use of plotter, computer, aerial charts and Federal Aviation Administration publications pertinent to flying. Lecture 3 hours per week.

AERO 257 RADAR, RADIO AIDS, AND COMMUNICATIONS (4 cr.)—Radar theory and use. Basic radio fundamentals as used by the pilot. Description and practical use of various radio aids to safe aerial navigation, including Very High Frequency Omni Direction Range (VOR), Instrument Landing System (ILS), Direction Finding (DF), and others, Charts and approach plates as adopted to radio navigation and the application of the Airmen's Information Manual. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AERO 258 AIRLINE MARKETING (3 cr.)—The function of marketing in airline operations; market research; demand analysis; advertising and promotion; sales, traffic, and the theory of price determination. Lecture 3 hours per week.

AERO 266 AIRPORT OPERATIONS AND MANAGEMENT (3 cr.)—A presentation of the major functions of airport management; organization, zoning, adequacy, financing, revenues, expenses, evaluation and safety. A study of the airport and its social-economic effect on the community. Lecture 3 hours per week.

AERO 267 AIRLINE OPERATIONS AND MANAGEMENT (3 cr.)—The functions of management in airline operation; air carrier familiarization; effect of Federal regulations; organization, uniform system of accounts and reports, rules of practice in economic proceedings; industrial, financial and economic implications relative to decision making. Lecture 3 hours per week.

AERO 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial, service firms, or government agencies coordinated by the College. Credit/Work Ratio 1:5. May be repeated for credit.

AERO 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

AERO 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project or research report related to the students' occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

AERO 299 SUPERVISED STUDY (1-5 cr.)—Assignment of aviation oriented problems for independent study incorporating previous instruction and supervised by the instructor. Variable hours to be arranged.

BIOLOGY

BIOL 01 BIOLOGY (1-5 cr.)—A developmental course in general biology designed to develop a basic understanding of plant and animal life. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

BIOL 101-102-103 GENERAL BIOLOGY I-II-III (4 cr.) (4 cr.) (4 cr.)—Fundamental characteristics of living matter from the molecular level to the ecological community with emphasis on general biological principles. Diversity of living organisms; their structure, physiology and evolution. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 104-105 GENERAL BIOLOGY I-II (6 cr.) (6 cr.)—Fundamental characteristics of living matter from the molecular level and the ecological community with emphasis on general biological principles. Diversity of living organisms; their structure, physiology and evolution. Lecture 4 hours, Laboratory 6 hours. Total 10 hours per week.

BIOL 154-155 HUMAN ANATOMY AND PHYSIOLOGY I-II (4 cr.) (4 cr.)—Structure and functioning of the normal human body as a basis for understanding nursing theory and practice. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 176 MICROBIOLOGY (4 cr.)—The characteristics and activities of microorganisms, showing their essential relation to diagnosis, treatment, and prevention of disease. Fundamentals of bacteriology, mycology, and parasitology, emphasizing their relationships to individual community health. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 198 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. Variable hours.

BIOL 199 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 hours.

BIOL 206 BIOLOGICAL PROBLEMS IN CONTEMPORARY SOCIETY (3 cr.)—Prerequisites: BIOL 103 or permission of instructor. A course designed for understanding some of the major problems of today's living. Contemporary readings will include topics on population problems, pollution, drug abuse, famine, ecology, conservation, disease, genetics, and evolution. Lecture 3 hours per week.

BIOL 214 INTRODUCTION TO NON-VASCULAR PLANTS (4 cr.)—Prerequisites BIOL 103 or equivalent. Designed to cover the lower plants including the algae, fungi, and bryophytes. Studies of major taxonomic groups—their morphology, life cycles, ecology, physiology, economic importance. Sight recognition and collections may be required. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 215 INTRODUCTION TO VASCULAR PLANTS (4 cr.)—Prerequisites BIOL 103 or equivalent. Designed to cover the higher plants beginning with those that have vascular tissue, and including flowering and non-flowering plants. Studies of major taxonomic groups—their morphology, life cycles, ecology, physiology, economic importance, Sight recognition and collections may be included. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 221-222-223 INTRODUCTORY INVERTEBRATE AND VERTEBRATE ZOOLOGY (4 cr.) (4 cr.) (4 cr.)—Fundamentals of invertebrate and vertebrate anatomy, physiology, embryology, classification and evolution. Lecture 3 hours, Laboratory 3 hours, Total of 6 hours per week.

BIOL 224-225 INTRODUCTORY VERTEBRATE ZOOLOGY I-II (3 cr.) (3 cr.)—Prerequisite BIOL 103 or equivalent or approval of division. Fundamentals of vertebrate anatomy, physiology, embryology, classification and evolution. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

BIOL 226 INTRODUCTORY INVERTEBRATE ZOOLOGY (4 cr.)—Prerequisite BIOL 103 or the equivalent (not open to students having had BIOL 124-125). The biology of invertebrate animals with special reference to structure, embryology, function, ecology, classification, and evolution. Lecture 3 hours, Lab 3 hours, total 6 hours per week.

BIOL 254-255 GENERAL GENETICS I-II (3 cr.) (3 cr.)—Prerequisite BIOL 103 or equivalent or approval of division. An introductory course in the science of genetics ranging from classical Mendelian inheritance to the most recent advances in the biochemical nature and function of the gene. Also included will be student experience in experimental design and statistical analysis of data. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BIOL 267 GENERAL ECOLOGY (5 cr.)—Prerequisite BIOL 103 or divisional permission. This course is a study of the interrelationships between organisms and the natural and cultural environments with emphasis on human influences on ecological structures, survey of populations, communities and ecosystems. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

BIOL 268 MICROBIOLOGY (6 cr.)—Prerequisite BIOL 103 and one year of college chemistry or divisional approval. Introduction to microbiology, morphology and activities of micro-organisms; control of micro-organisms; infection, immunity and other antibody reactions; study of infections and infectious diseases. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

BIOL 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. Variable hours.

BIOL 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 hours.

BROADCAST ENGINEERING

BCST 116 BROADCAST EQUIPMENT OPERATION (5 cr.)—Prerequisite ELEC 125 Operation of cameras, studio lighting, audio control, video production switcher and transmitter, video control, operation of videotape recorders, routing switcher and telecine, full system operation. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

BCST 126 BROADCAST INSTRUMENTS AND MEASUREMENTS (4 cr.)—Prerequisite ELEC 116 and ELEC 126 Operation of meters, scopes, signal generators, digital counters and picture monitors. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BCST 146 FEDERAL BROADCAST REGULATIONS (1 cr.)—Students will read systematically through the applicable portions of the FCC Rules and Regulations and will be tested on each reading assignment, taking a final examination similar to the actual FCC Examination. Lecture 1 hour per week.

BCST 197 COOPERATIVE EDUCATION (1-5 cr.)—Prerequisite division approval Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

BCST 198 SEMINAR AND PROJECT (1-5 cr.)—prereq. div. approval 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. Variable hours.

BCST 211 THEORY OF BROADCAST EQUIPMENT I (4 cr.)—prereq. ELEC 227 & ELEC 241 Theory of cameras, projection equipment, videotape recorders and NTSC encoders and decoders. Lecture 4 hours per week.

BCST 212 THEORY OF BROADCAST EQUIPMENT II (4 cr.)prereq. BCST 211—Continuation of BCST 211. Theory of production switchers, audio equipment, master control equipment and transmitters. Lecture 4 hours per week.

BCST 224 BROADCAST EQUIPMENT MAINTENANCE I (3 cr.)—Corequisite BCST 211. Basic maintenance procedures, maintenance of cameras, projection equipment, videotape recorders and NTSC encoders and decoders. Laboratory 9 hours per week.

BCST 225 BROADCAST EQUIPMENT MAINTENANCE II (3 cr.)—Prereq. BCST 224, coreq. BCST 212. Continuation of BCST 224. Maintenance of production switchers, audio equipment, master control equipment and transmitters. Laboratory 9 hours per week.

BCST 297 COOPERATIVE EDUCATION (1-5 cr.)—Prerequisite division approval. Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

BCST 298 SEMINAR AND PROJECT (1-5 cr.)—Prereq. div. approval. 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. Variable hours.

BUSINESS MANAGEMENT AND ADMINISTRATION

BUAD 100 INTRODUCTION TO BUSINESS (3 cr.)—The role and function of business enterprise within our economic framework. Includes organization, finance, marketing, personnel administration, production and economics. Designed primarily to help students select their field of business specialization. Lecture 3 hours per week.

BUAD 101-102-103 BUSINESS MACHINES AND MATHEMATICS I-II-III (3cr.) (3cr.)—A sequence of three courses covering office machines and business mathematics. Office machines include a variety of adding machines and calculators designed for use in determining solutions to problems arising from normal business activities. The theories of mathematics are applied to business activities emphasizing the use of concepts and procedures concerning payroll computations, ratios, discounts, interest, sales and property tax, pricing mark-up and mark-down, etc. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BUAD 108 BUSINESS MACHINES (2 cr.)—A course to develop proficiency in the use of office machines such as calculators and adding machines. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

BUAD 109 APPLIED BUSINESS MACHINES (1 cr.)—A self-instructional laboratory course designed to develop a stated proficiency in the operation of standard business machines. Credit will not be granted to anyone having completed MATH 151-152-153 or BUAD 101-102-103. Laboratory 2 hours per week.

BUAD 110 HUMAN RELATIONS & LEADERSHIP TRAINING (3 cr.)—The task of management involved in getting things done through people; understanding of human motivation and behavior patterns, performance, and analysis of manpower growth in an organization. Lecture 3 hours per week.

BUAD 116 PERSONAL FINANCE (3 cr.)—A course designed to build a framework of money management concepts. Content includes establishing values and goals, earning income, managing income, developing consumer buying ability, using credit, understanding savings, insurance, and responsibilities as a consumer. Lecture 3 hours per week.

BUAD 177 PRINCIPLES OF SECURITIES INVESTMENT (3 cr.)—Designed to aid the student in developing a broad perspective in the area of stocks and bonds. Mechanics of stock exchanges, types of securities, types of orders, and specific investment objectives. Lecture 3 hours per week.

BUAD 164 PRINCIPLES OF BUSINESS MANAGEMENT I (3 cr.)—Prerequisite BUAD 100.—Management and management functions; planning, organizing, staffing, directing, and controlling. Management examined as both a science and art with emphasis on both the body of knowledge and the personal abilities required to be successful as a manager. Lecture 3 hours per week.

BUAD 165 PRINCIPLES OF BUSINESS MANAGEMENT II (3 cr.)—Prerequisite BUAD 164. The application of management principles to realistic management situations. The case method of study in analyzing management problems with emphasis on application to various types of business enterprises. Lecture 3 hours per week.

BUAD 174-175 SMALL BUSINESS MANAGEMENT I-II (3 cr.) (3 cr.)—A study of management problems that relate to the small-scale entrepreneur. Includes problems in initiating the business, financial and administrative control, marketing programs and policies, management of business operations, legal and governmental relationship. Also includes case studies involving actual business situations. Lectures 3 hours per week.

BUAD 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

BUAD 241 BUSINESS LAW I (3 cr.)—An introduction to the field of law, how it developed and how it operates as a method of control; study of the purpose of law in our present-day complex society, the law of contracts, and the law of the agency. Lecture 3 hours per week.

BUAD 242 BUSINESS LAW II (3 cr.)—Prerequisite BUAD 241. A continuation of BUSINESS LAW I (BUAD 241). The main topic to be studied is the Uniform Commercial Code as adopted in the various states. Lecture 3 hours per week.

BUAD 243 BUSINESS LAW III (3 cr.)—Prerequisite BUAD 241-242. Continuation of BUSINESS LAW I & II (BUAD 241-242). Employment, bailment, partnerships, corporations, property. Lecture 3 hours per week.

BUAD 246 BUSINESS FINANCE (3 cr.)—Problems involved in the acquisition and use of funds necessary to the conduct of business. Sources and instruments of capital and finance, financial organization, and financing of operations and adjustments. Lecture 3 hours per week.

BUAD 251 BUSINESS STATISTICS I (3 cr.)—Prerequisite MATH 181-182-183 or MATH 161-162-163. Aspects of statistical methodology such as the collection, organization, presentation and analysis of data; specific concentration with measures of central tendency, dispersion, probability concepts, the normal distribution, sampling distribution, and basic hypothesis testing such as T-test, Z-test, and Chi-Square. Lecture 3 hours per week.

BUAD 252 BUSINESS STATISTICS II (3 cr.)—Prerequisite BUAD 251. Estimation of parametric values, advanced methods and techniques of hypothesis testing and experiment design. Statistical quality control, analysis of variance, linear regression and correlation analysis both simple and multiple measurement of business and economics activity through index numbers, seasonal and secular variation; computer application where practical. Lecture 3 hours per week.

BUAD 253 BUSINESS STATISTICS III (3 cr.)—Prerequisite BUAD 252. The applications of statistical techniques and methodology in business. Includes expedited payoff, game theory, linear programming, transportation models, queuing theory, and demand estimations. Lecture 3 hours per week.

BUAD 254 APPLIED BUSINESS STATISTICS I (3 cr.)—An introductory course in statistics. Collection, presentation, and analysis of data through ratios, percentages, and averages. Emphasis on the practical application of statistical measures to business situations. Lecture 3 hours per week.

BUAD 255 APPLIED BUSINESS STATISTICS II (3 cr.)—Prerequisite BUAD 254. A continuation of the application of principles taught in BUAD 254 with emphasis on the graphic presentation of data concerning business activity and some advanced statistical concepts such as probability and sampling. Lecture 3 hours per week.

BUAD 269 PURCHASING AND MATERIALS MANAGEMENT (3 cr.)—Principles of purchasing and management of inventories including determination of requirements, pricing, source selection, and inventory policy and control. Lecture 3 hours per week.

BUAD 276 PERSONNEL MANAGEMENT (3 cr.)—The problems and issues in the administration of personnel actions. Includes organization and tasks of personnel development, significant personnel considerations and an appraisal of the position of labor in business today. Lecture 3 hours per week.

BUAD 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

BUAD 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. Variable hours.

BUAD 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 hours.

CHEMISTRY

CHEM 06 CHEMISTRY (1-5 cr.)—A developmental course in general chemistry designed to develop a basic understanding of inorganic and organic chemistry. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

CHEM 099 SUPERVISED STUDY (1-5 cr.)—Assignment of problems for independent study incorporated previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

CHEM 101-102-103 GENERAL CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.)—This is a beginning course for the non-science major, intended for students who will take no further chemistry courses. The experimental and theoretical aspects of the various branches of chemistry are discussed and emphasis is placed on the concepts and ideas of the science. Particular attention is given to introductory organic and biochemistry and the role of chemistry in human affairs is treated. (Chem 103 may be taken separately or out of sequence.) Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 111-112-113 COLLEGE CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite high school chemistry or division approval and pre-test. This is a beginning course primarily for science and engineering majors, and the course covers the fundamental laws & theories of chemistry. The student is expected to have a strong background in mathematics. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 198 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. Variable hours.

CHEM 199 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 hours.

CHEM 246-247-248 ORGANIC CHEMISTRY I-II-III (5 cr.)(5 cr.)(5 cr.)—Prerequisite high school and freshman college chemistry or equivalent. The fundamentals of organic

chemistry: chemical properties, bonding, synthesis, typical reactions, mechanisms and geometry of molecules. The laboratory includes basic techniques, organic synthesis, qualitative analysis and instrumentation. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

CHEM 260 INSTRUMENTAL CHEMICAL ANALYSIS (2 cr.)—Prerequisite approval of division. Introduction to the use of special apparatus in chemical analysis. Includes study and use of pH meter, visible and infrared spectrophotometers, gas chromatograph, refractometer, polarimeter, special balances, etc. Lecture 1 hour, Laboratory 3 hours, total of 4 hours per week.

CHEM 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 hours.

CIVIL ENGINEERING

CIVL 140 CONSTRUCTION PLANNING (3 cr.)—Introduction to the equipment used in civil engineering construction and the principles of construction planning. Lecture 3 hours per week.

CIVL 180 PRINCIPLES OF SURVEYING (4 cr.)—Prerequisite Basic Trigonometry. Introduction to the elements of surveying. Use and care of modern survey equipment and the application of surveying in engineering construction. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 181-182 SURVEYING I-II (4 cr.) (4 cr.)—Prerequisites Algebra, Plane Geometry, Basic Trigonometry or Math III. Introduction to surveying, chaining and pacing, direct and profile leveling, measurements of angle, transittape traversing, calculation of areas, adjustment of instruments. Basic complex circular curves, stadia surveying, topographic surveying analysis and preparation of topographic maps. Field work parallels classroom instruction. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. **CIVL 198 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. Variable hours.

CIVL 201 SUBURBAN DEVELOPMENT I (2 cr.)—Corequisite CIVL 182. Preparation of preliminary plans and records plate for residential areas. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

CIVL 202 SUBURBAN DEVELOPMENT II (2 cr.)—Corequisite CIVL 281. Calculating flow quantities, design of sanitary sewer laterals, street grades and storm sewers as are pertinent to Virginia "3-B" Land Surveyor Registration laws. Preparation of plans and profiles. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

CIVL 203 SUBURBAN DEVELOPMENT III (2 cr.)—Prerequisite CIVL 202. Preparation of residential development plans and commercial site plans. Flood plain studies. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

CIVL 217 STRUCTURAL STEEL DESIGN (4 cr.)—Design, investigation, and detailing of basic structural steel members. Lectures 4 hours.

CIVL 218 REINFORCED CONCRETE DESIGN (4 cr.)—Design, investigation and detailing of basic reinforced concrete structural members. Lectures 4 hours.

CIVL 227-228 STRUCTURAL DRAFTING I-II (2 cr.) (2 cr.)—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.

CIVL 256 SOIL MECHANICS (4 cr.)—Soil in its relationship to engineering construction. Includes soil density, sampling soil frost action, stabilization, stress, consolidation, settlement, shearing strength, stability, embankments, dams, retaining walls, piles and underground conduits. Laboratory includes ASTM and AASHTO specifications used in classifying and predicting the behavior of soils. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 258 CONCRETE TECHNOLOGY (4 cr.)—Prerequisite or corequisite CIVL 256. Introduction to the basic properties of portland cement concrete. Various methods of designing concrete mixtures and the mixing, testing and quality control during construction are considered. Lectures 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 259 BITUMINOUS TECHNOLOGY (4 cr.)—Prerequisite or corequisite CIVL 256. Introduction to the basic properties of bituminous materials (primarily asphalt cement as used in highway construction). The testing of asphalt materials and the quality control of asphalt concrete mixtures are considered. Lectures 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 276-277 TRAFFIC AND TRANSPORTATION TECHNOLOGY I-II (4 cr.)—Introduction to the techniques of traffic and transportation surveys. The application of survey data to the planning, design and operation of modern transportation systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 281 ADVANCED SURVEYING I (4 cr.)—Layout of curves under complex field conditions, route surveying vertical curves, slope stakes, land surveying, establishment and re-establishment of land boundaries, legal aspects of surveying, original surveys and re-surveys, public land surveys. Field work parallels classroom instruction, drills in use of theodolites and transversing equipment, begins project in boundary and topographic survey. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 282 ADVANCED SURVEYING II (4 cr.)—This course includes topics in surveying astronomy and celestial observations, precise leveling and triangulation, photogrammetry, electronic surveying, and use of surveying equipment. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

CIVL 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of project or research report related to the students occupational objective, and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

DATA PROCESSING TECHNOLOGY

DAPR 106 PRINCIPLES OF DATA PROCESSING (3 cr.)—An introduction to principles, methods, and techniques of data processing, with emphasis on electronic data process-

ing capabilities and limitations of automatic data processing equipment; computer languages and applications; organization of data processing systems. Lecture 3 hours per week.

DAPR 120 COMPUTERS AND THEIR APPLICATION (1 cr.)—An introduction to computational systems, analysis techniques, programming languages. The BASIC language will be used in problem solving. Not for Data Processing majors. Lecture 1 hour per week.

DPAR 138 COMPUTER SYSTEM ARCHITECTURE (3 cr.)—The study of computer system configuration and its operation under a control program. A detailed study of the components and operation of the CPU and of the interaction between I/O channels and the CPU to achieve overlap between processing and input/output. Lecture 3 hours per week.

DAPR 144 COMPUTER PROGRAMMING (COMPUTER CONCEPTS 1) (3 cr.)—Prerequisite DAPR 106 or equivalent. Programming techniques and the various characteristics of computers. Practical experience in programming a series of problems in machine, assembler, or manufacturer's higher level language. Course objective is to provide a proper foundation for materials in subsequent courses rather than providing specific skills in any computer language. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 147 COMPUTER PROGRAMMING (COBOL) (3 cr.)—Prerequisite DAPR 144 or equivalent. Experience in using programming techniques with a high level language. Students will be required to program, debug, and test specified business oriented problems using Cobol. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

DAPR 236 DATA PROCESSING MANAGEMENT (3 cr.)—Prerequisite DAPR 106 or equivalent. Survey of ADP management, covering staff and operating functions; ADPE planning, analysis of requirements, system selection, contractual consideration, lease/purchase studies, costing of tangible and intangible benefits. Lecture 3 hours per week.

DAPR 256 COMPUTER PROGRAMMING (ADVANCED COBOL) (4 cr.)—Prerequisite DAPR 147. Experience in programming in an operating system environment. The characteristics of OS, use of job control language, files, utility programs, and analysis of error messages. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 266 COMPUTER PROGRAMMING (FORTRAN) (4 cr.)—Prerequisite DAPR 144 or equivalent. The business applications of FORTRAN including input/output, floating point arithmetic, loop control, and functions. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 267 COMPUTER PROGRAMMING (RPG) (4 cr.)—Prerequisite DAPR 144 or equivalent. The study and development of programming capabilities in the business computer language Report Program Generator (RPG). Includes program logic, block diagramming, coding techniques, documentation, advantages and disadvantages of RPG as a high-level language in small and medium scale installations. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 268 COMPUTER PROGRAMMING (P/L 1) (4 cr.)—Prerequisite DAPR 144 or equivalent. The study and development of programming capability in the IBM System 360 computer language P/L 1. Provides student capability to program in this language.

Includes relative advantages and disadvantages of this higher level language in installations using medium scale and large scale computer systems and continuation of the study of magnetic tape and random access programming. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 269 COMPUTER PROGRAMMING (ASSEMBLER) (4 cr.)—Prerequisite DAPR 144 or equivalent. The study and development of a manufacturer's assembly language. The student will write and debug programs in an assembler language, and also be capable of employing this language in a total programming system. The principles of de-bugging and core-dump reading will be given major emphasis. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 271 COMPUTER PROGRAMMING (ADVANCED ASSEMBLER) (4 cr.)—Prerequisite DAPR 269. A study of the development of programming capabilities utilizing peripheral devices in addition to the card reader/punch and the printer. Among the peripherals will be direct-access devices and magnetic tape devices. The study of typical applications essential for a business programmer to have a knowledge of the uses, the instructions, and programming techniques required to utilize these devices. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 272 COMPUTER PROGRAMMING (PL/I APPLICATIONS) (4 cr.)—Prerequisite DAPR 268 and 269. The study and development of programming applications of PL/I. Since PL/I is a multi-purpose language designed to allow both business and scientific/engineering applications, the student will be acquainted with both facets, with emphasis placed on business applications. Includes a continuation of the study of magnetic tape and direct access devices. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 276 COMPUTER PROGRAMMING (ADVANCED FORTRAN) (4 cr.)—Prerequisite DAPR 266 and 269. Experience in programming in a disk and/or tape environment. Modularization and overlay structure. Computational error propagation and debugging techniques. Data management techniques. Extensive practical problem solution using control software and command language, assembly language sub-routines, and utility packages. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 281 SYSTEMS ANALYSIS I (3 cr.)—Prerequisite DAPR 106. A study of the overall computer based systems analysis and design process; information problems of business organization and the inter-relationships of functions; nature of business problem isolation and definition; initial phase of systems analysis and evaluation. Lecture 3 hours per week.

DAPR 286 COMPUTER PROGRAM APPLICATIONS (4 cr.)—Prerequisite DAPR 281. The characteristics and requirements of basic business applications. Design of a computer solution to an application as a case study. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 287 COMPUTER SOFTWARE SYSTEMS (3 cr.)—A study of components, functions and relationships of computer operating systems and their interactions with user programs. Lecture 3 hours per week.

DAPR 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

DAPR 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. Variable hours.

DAPR 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 hours.

DECORATING

DECO 11 INTERIOR DECORATING I (3 cr.)—The fundamental principles involved in good interior decorating. Lecture 3 hours per week.

DECO 12 INTERIOR DECORATING II (3 cr.)—Application of fundamental decorating principles to house furnishings and interior design. Lecture 3 hours per week.

DENTAL

DENT 100 INTRODUCTION TO DENTAL AUXILIARIES (3 cr.)—Introduction to dentistry and dental auxiliaries; history and development of dentistry and its related fields; the roles of the dental auxiliaries in practice and in relation to other members of the dental health team; dental ethics and jurisprudence; professional and education opportunities. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DENT 101-102-103 DENTAL SCIENCE I-II-III (4 cr.) (4 cr.) (4 cr.)—Bacteriology, anatomy and physiology, gross and oral dental anatomy, oral pathology, pharmacology, diet and nutrition, first aid and dental emergencies and dental health education as related to dental science and the role of the dental assistant. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

DENT 110 INTRODUCTION TO DENTAL MATERIALS (4 cr.)—Introduction to the physical and chemical characteristics, uses and manipulation of materials used in dental procedures, clinical and laboratory. Emphasis on the general principles of physical properties and the specifications program of the American Dental Association. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

DENT 111-112 CLINICAL PROCEDURES I-II (4 cr.) (4 cr.)—Prerequisites DENT 101-102 or corequisite. Principles and procedures related to radiology, dental instruments and equipment; role of the dental assistant in general and speciality practice. Lectures 2 hours, Laboratory 4 hours, Total 6 hours per week.

DENT 121-122 CHAIRSIDE ASSISTING I-II (4 cr.) (4 cr.)—Prerequisites DENT 101-102 or corequisite. The proper procedures of reception and preparation of the patient; care of all dental equipment and instruments, charting of teeth, seating of patient, adjustment of dental chair, preparation of trays and instrument stands, layout and exchange of instruments and materials. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 123 CHAIRSIDE ASSISTING III (6 cr.)—A continuation of DENT 122. The student will be involved in the actual experience of clinical procedures and chairside assisting. Lecture 1 hour, Laboratory 15 hours, Total 16 hours per week.

DENT 137 DENTAL ANATOMY AND PHYSIOLOGY (4 cr.)—Introduction to human anatomy and physiology. Emphasis on regions of the head and neck and the primary and permanent teeth. Laboratory exercises include: accurate scale drawings of all teeth except the permanent third molars; tooth carvings, coronal and root portions; and the four permanent teeth: maxillary central incisor, maxillary cuspid, maxillary first bicuspid, and maxillary first molar. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 141 DENTAL LABORATORY TECHNOLOGY I (7 cr.)—Designed to assist students in acquiring the knowledge, understanding, appreciations and attitudes basic to effective construction of complete dentures. Beginning skills in dental laboratory technology

methods are developed through planned laboratory exercises and other supervised activities. Lecture 3 hours, laboratory 12 hours, total 15 hours per week.

DENT 142 DENTAL LABORATORY TECHNOLOGY II (7 cr.)—An introduction to the procedures and methods used in the construction of cast removable partial dentures. Emphasis is on making of refractory models, waxing, spruing, burnout casting and the finishing and polishing of the partials. Lecture 3 hours, Laboratory 12 hours, Total 15 hours per week.

DENT 143 DENTAL LABORATORY TECHNOLOGY III (7 cr.)—The purpose of this course is to develop an understanding of, and some abilities in, the techniques of crown and bridge construction employed by the commercial laboratories in and around the area. Emphasis will also be placed on the construction of inlays and ceramic restorations. Lecture 3 hours, Laboratory 12 hours, Total 15 hours per week.

DENT 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio not to exceed 1:5 hours. May be repeated for credit.

DENT 198 SEMINAR (1-5 cr.)—A study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

DENT 210 DENTAL LABORATORY MATERIALS (4 cr.)—The aim of this course is to acquaint the student with the physical properties of the materials used in the lab and how to best make use of this knowledge in the fabrication of a Dental prosthesis. The student will be instructed in the proper handling of these materials and also the inherent limitations of same. Lecture 3 hours, Laboratory 3 hours, Total of 6 hours per week.

DENT 244 DENTAL LABORATORY TECHNOLOGY IV (7 cr.)—A practical laboratory course designed to introduce the student to the study of articulation and occlusion and to the basic principles of surveying and designing cast removable partial dentures. Efforts will be made to produce, under the instructor's direction, a variety of restorations, in the specialty chose by the student, which most closely parallel those cases found in the average dental practice. Lecture 3 hours, Laboratory 12 hours, Total 15 hours per week.

DENT 245 DENTAL LABORATORY TECHNOLOGY V (8 cr.)—An advanced and intensified study of the specialties covering areas diverging from the normal. The case and problem method is stressed. Lecture 3 hours, Laboratory 15 hours, Total 18 hours per week.

DENT 246 DENTAL LABORATORY TECHNOLOGY VI (8 cr.)—A continuation of DENT 245 in which the student is placed in an environment closely paralleling conditions found in the field. Emphasis will be placed on the construction of dental restorations requiring the efforts of 2 or more of the specialties. Lecture 1 hour, Laboratory 21 hours, Total 22 hours per week.

DENT 290 COORDINATED PRACTICE (1-5 cr.)—Supervised practice in selected health facilities coordinated by the College. Credit/Practice Ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

DENT 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. Variable hours.

DENT 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 hours.

DRAFTING

DRFT 71-72-73 BLUEPRINT READING I-II-III (2 cr.) (2 cr.) (2 cr.)—Reading and interpreting various kinds of blueprints and working drawings. Some topics covered are scaling, dimensions, holes, fillets, radii, and title block specifications. Freehand sketching as a means of passing on ideas, information and processes. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 111 TECHNICAL DRAFTING I (2 cr.)—Introduction to the techniques and instruments required for success as a draftsman in industry. Use of instruments, lettering, simple descriptive and analytic geometry principles as applied to drafting and freehand sketching, basic principles of orthographic projection in the preparation of simple drawings. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 112 TECHNICAL DRAFTING II (2 cr.)—Prerequisite DRFT 111 or equivalent. Sections and conventions, threads and fasteners, pictorial drawings, auxiliaries and revolutions. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 113 TECHNICAL DRAFTING III (2 cr.)—Prerequisite DRFT 112 or equivalent. Assembly and detail drawings, working from the simple to the complex. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 114 TECHNICAL DRAFTING IV (2 cr.)—Continuation of DRFT 113 with emphasis on production standards. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 120 INTRODUCTION TO GRAPHIC REPRESENTATION (3 cr.)—The use of instruments, lettering, sketching, and drawing conventions; neat, legible drawings and the value of visual presentations in technology. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DRFT 144-145 AUTOMOTIVE DRAWING INTERPRETATION I-II (2 cr.) (2 cr.)—Reading and interpretation of automotive shop drawings, including assembly and exploded drawings of automotive assemblies. Lecture 2 hours per week.

DRFT 171 BLUEPRINT READING I (2 cr.)—The purpose of blueprints, designing of the product and its production; review and application of basic principles, visualization, orthographic projection, detail of drafting shop process and terminology, assembly drawings and exploded views. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 172 BLUEPRINT READING II (2 cr.)—Prerequisite DRFT 171. Dimensioning, review and application techniques, changes and corrections, classes of fits, tolerances and allowances, sections and convention in blueprint reading, auxiliary views, pictorial drawings, and simplified drafting procedures. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 173 BLUEPRINT READING III (2 cr.)—Prerequisite DRFT 172. Industrial prints, production drawings, operation sheets, tool drawing, assembly drawings, and detail prints. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

DRFT 198 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. Variable hours.

DRFT 211 ADVANCED TECHNICAL DRAFTING V (3 cr.)—Prerequisite DRFT 113. Use of drafting machines with emphasis on the knowledge and skill required for typical industrial drawing. Electrical and electronic symbols and drawings, piping, complicated gearing drawings, sections, and layout; skill in lettering of all types. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

DRFT 212 ADVANCED TECHNICAL DRAFTING VI (3 cr.)—Prerequisite DRFT 211. Electronic and electromechanical drawings, sheet metal fabrication, radii, fillets, and tolerances; use of ink in lettering and ruling. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

DRFT 213 ADVANCED TECHNICAL DRAFTING VII (3 cr.)—Prerequisite DRFT 212. Design drafting in all aspects as a means of communication. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

DRFT 251 ADVANCED TECHNICAL ILLUSTRATION I (3 cr.)—A course in the development of: Axonometric (pictorial) projections, perspectives, exploded illustrations, industrial shading, inking techniques and instrument lettering. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

DRFT 252 ADVANCED TECHNICAL ILLUSTRATION II (3 cr.)—Patent illustration, photo high-lighting retouching, schematic and diagrams presentation drafting, inking techniques and instrument lettering, pressure tape drafting. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

DRFT 256 ELECTRONICS DRAFTING (2 cr.)—Fundamental principles, practices and methods of presenting electromechanical information through the graphic language. Principles of projection, fastening, materials and finishes, chassis design and fabrication, electronic symbology, diagrammatic drawings, printed circuit drawings and checking of electronic drawings. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

DRFT 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Credit/Work Ratio 1:5 hours. May be repeated for credit.

DRFT 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. Variable hours.

ECONOMICS

ECON 104 INTRODUCTION TO ECONOMICS I (3 cr.)—Survey of economic principles and the American economic system; some current domestic economic problems. Lecture 3 hours per week. (Not intended for Business Administration or Economics majors.)

ECON 105 INTRODUCTION TO ECONOMICS II (3 cr.)—Prerequisite ECON 104 or equivalent. American economic policies; international economics; alternative economic systems; current economic problems. Lecture 3 hours per week.

ECON 160 AMERICAN ECONOMICS (3 cr.)—A survey of the history, principles, and policies of the American economic system. Some comparison with alternative economic systems. Lectures 3 hours per week.

ECON 198 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite division permission. 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. Variable hours.

ECON 199 SUPERVISED STUDY (1-5 cr.)—Prerequisite division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

ECON 211-212-213 PRINCIPLES OF ECONOMICS I-II-III (3 cr.) (3 cr.) (3 cr.)—The principles of economics and the bearing of these principles on present American conditions, structural and functional aspects of the economy. Analysis, problems and issues relating to organization of business, labor and government institutions and economic stability and growth. Measurements of economic activity. Private enterprise, economic growth and stabilization policies, monetary and fiscal policy. International economic relationships, alternative economic systems. Lecture 3 hours per week.

ECON 214-215 PRINCIPLES OF ECONOMICS I-II (5 cr.) (4 cr.)—An introductory course covering the structure, organization, and operation of the United States economy. Analysis, problems, and issues relating to the organization of business, labor, and government institutions and their economic stability and growth. Measurements of economic activity. Private enterprise, economic growth and stabilization policies, monetary and fiscal policy. International economic relationships, alternative economic systems. Lecture 5 hours per week in ECON 214 and Lecture 4 hours per week in ECON 215.

ECON 241-242-243 MONEY AND BANKING I-II-III (3 cr.) (3 cr.) (3 cr.)—Monetary standards; the role of money in the performance of an economic system; operation and evolution of the commercial and central banking systems; developments in the theory of money and income; application of theory to analysis of policy questions including government finance and debt management. Lecture 3 hours per week.

ECON 298 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite division permission. Completion of a project of 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. Variable hours.

ECON 299 SUPERVISED STUDY (1-5 cr.)—Prerequisite division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

EDUCATION

EDUC 116 LIBRARY UTILIZATION FOR INSTRUCTIONAL AIDES (3 cr.)—Familiarization and utilization of library materials for preparation of instructional materials by instructional aides. Current literature and its application to the classroom. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 117 INTRODUCTION TO READING METHODS (3 cr.)—Introduction to the current practices of teaching reading in the elementary school. Familiarization with materials currently in use, observation of various reading techniques and trends in the classroom. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 121-122-123 CHILDHOOD EDUCATION I-II-III (3 cr.)(3 cr.)(3 cr.)—Theory and concepts of early childhood education (121), elementary age education (122), and adolescent education (123). Characteristics for each age group covering the following categories: general relations with adults; intellectual skills; physical growth; and relations with children in their own peer group. Lecture 3 hours per week.

EDUC 130 INSTRUCTIONAL EQUIPMENT LABORATORY (1 cr.)—The operation and use of standard instructional equipment with emphasis upon audiovisual equipment such as movie projectors, tape recorders, slide projectors, and tutorial machines; general procedures for obtaining films and other special learning materials. Laboratory 3 hours per week.

EDUC 136 MATERIALS AND EQUIPMENT FOR INSTRUCTIONAL AIDES (3 cr.)—The preparation of view graphs the construction of graphic charts, and other aides; how to select slides and develop material for classroom presentation. The operation, care, and use of instructional equipment, including audio-visual equipment most used in the classroom. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 137 CREATIVE ACTIVITIES FOR CHILDREN (3 cr.)—This course is designed to prepare individuals for working with young children in art and other creative activities. Emphasizes coverage of suitable materials and the laboratory application. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 140 MODERN MATHEMATICS CONCEPTS (3 cr.)—The techniques and materials used to develop mathematical patterns and concepts in pre-school and primary modern mathematics programs. Instructional aides will learn to prepare, collect, and work with materials used to develop mathematical concepts in children. Lecture 3 hours per week.

EDUC 150 MODERN SCIENCE CONCEPTS (3 cr.)—The content and methods of teaching science in the elementary school, beginning with the everyday environment of the child and leading to basic generalizations in science. Lecture 3 hours per week.

EDUC 161-162-163-164 EDUCATIONAL TECHNIQUES I-II-III-IV (3 cr.)(3 cr.)(3 cr.)(3 cr.)—Provides instructional assistants who are not already employed in a school situation with the supervised practical experience necessary for effective assistance to the classroom teacher. Supervised experience with children at selected schools, child care centers, and other institutions of learning to give prospective instructional assistants opportunities to observe, participate in & evaluate the interaction of teachers, instructional assistants and children. Lectures will include preparation for practicum experiences, and the review and evaluation of those experiences. Lecture 2 hrs., Lab 2 hours., Total 5 hours per week.

EDUC 181 INSTRUCTIONAL AIDE SEMINAR AND PRACTICUM I (6 cr.)—Supervised experiences with children in early childhood at selected schools, child care centers and other institutions of learning to give prospective aides opportunities to observe, participate in and evaluate the interaction of teachers, aides and children. Weekly seminars will include preparation for ensuring practicums and reviews and evaluations of the earlier practicum experience. In addition, special seminars with visiting leaders and group meetings with teachers will be offered periodically. Lecture 3 hours, Laboratory 9 hours, Total 12 hours per week.

EDUC 182 INSTRUCTIONAL AIDE SEMINAR AND PRACTICUM II (5 cr.)—Prerequisite EDUC 181. Continuation of EDUC 181. Lecture 2 hours, Laboratory 9 hours, Total 11 hours per week.

EDUC 183 INSTRUCTIONAL AIDE SEMINAR AND PRACTICUM III (5 cr.)—Prerequisite EDUC 182. Continuation of EDUC 182. Lecture 2 hours, Laboratory 9 hours, Total 11 hours per week.

EDUC 184 INSTRUCTIONAL AIDE SEMINAR AND PRACTICUM IV (5 cr.)—Prerequisite EDUC 183. Continuation of EDUC 183. Lecture 2 hours, Laboratory 9 hours, Total 11 hours per week.

EDUC 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

EDUC 191-192-193 SEMINAR IN TECHNIQUES FOR HEAD START PERSONNEL I-II-III (3 cr.) (3 cr.)(3 cr.)—Discussion topics: production of instructional materials, audio-

visual instruction, appropriate educational objectives. Lectures: music, art, science, mathematics, first aid, health, physical education. Lecture 3 hours per week.

EDUC 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

EDUC 198 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. Variable hours.

EDUC 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

EDUC 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. Variable hours.

ELECTRONIC TECHNOLOGY

ELEC 114 FUNDAMENTALS OF DIRECT CURRENT (4 cr.)—MATH 121 must have been taken previously or must be taken concurrently. A study of current flow and direct current circuits. The course presents work with magnetic circuits. This course utilizes mathematical tools as they are developed in the mathematics course. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 115 FUNDAMENTALS OF ALTERNATING CURRENT (4 cr.)—Prerequisite ELEC 114, MATH 122 must have been taken previously or must be taken concurrently. The study of time varying currents: The student will use complex numbers and vector concepts in dealing with A.C. impedances. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 116 INTRODUCTION TO CIRCUIT ANALYSIS (4 cr.)—Prerequisite ELEC 115. A course emphasizing A.C. circuit theory and both A. and D.C. network theorem and provides a continuation of the background information needed to analyze networks with both active and passive elements present. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 120 INTRODUCTION TO TUBES AND TRANSISTORS (4 cr.)—ELEC 114 and MATH 121 must have been taken previously or must be taken concurrently. A course concerned with how electronic devices work and the characteristics of these devices. Both tube and solid state device characteristics are covered. This course utilizes the mathematical tools as they become available and the ideas of electronic flow and circuit analysis as they are developed in the fundamentals of electricity course. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 125 INTRODUCTION TO ELECTRONICS (5 cr.)—Prerequisite ELEC 115 and ELEC 120. The theory, properties, and application of vacuum tube and solid state devices, including power supplies. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

ELEC 126 AMPLIFIERS (4 cr.)—Prerequisite ELEC 125. Pre or co-requisite ELEC 116. Amplifiers both transistor and tube types with emphasis on methods of analysis and design procedures. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 197 COOPERATIVE EDUCATION (1-5 cr.)—Prerequisite Divisional approval. Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ELEC 217-218 CIRCUITS I-II (2 cr.)(3 cr.)—Corequisite MATH 242. Fundamentals of circuit theory. Elements of network topology, mesh currents and node voltages. Methods used for solving one-port and two-port networks. Lecture 2-3 hours per week.

ELEC 227 PULSE AND SWITCHING CIRCUITS (3 cr.)—Prerequisite ELEC 116 and ELEC 126. Linear and non-linear wave shaping providing base for further study in the areas of computers and automatic controls. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ELEC 241 COMMUNICATIONS I (4 cr.)—Prerequisite ELEC 126. A study of modulation and power in modulated waves; sinusoidal oscillations and oscillators, RF amplifiers and detectors, and AM receivers. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 242 COMMUNICATIONS II (4 cr.)—Prerequisite ELEC 241. A study of transmitters and receivers. Topics included are FM receivers, RF power amplification, AM SSB and FM transmitters, and an introduction to transmission lines and antennas. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 243 COMMUNICATIONS III (4 cr.)—Prerequisite ELEC 242. A study of microwave systems. Topics included are microwave tubes, waveguides, antennas and measurements at microwave frequencies. Also, an introduction to radar and television systems is presented. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 249 TELEVISION ELECTRONICS (3 cr.)—Prerequisites ELEC 242 and ELEC 227. A lecture-demonstration course dealing with the special devices and techniques associated with monochrome and color, broadcast and industrial television transmission and reception. Specifically included are the standards of American television electronics as set down by the National Association of Broadcasters (NAB). Cameras and television receivers are given special emphasis. Lecture 3 hours per week.

ELEC 250 INTRODUCTION TO COMPUTERS (4 cr.)—Prerequisite ELEC 227. A general introduction to concepts and basic features of electronic computers. Topics include: fundamentals of internal operations, number systems, digital circuits, Boolean algebra, basic logical design techniques, analysis of input-output devices, control and arithmetic units, memory units and limited programming. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 260 CONTROL CIRCUITS (4 cr.)—Prerequisite ELEC 227. The principles and applications of electrical controllers are covered in this course, which serves as an introduction to automation. Devices for differentiation, integration and proportioning are studied in detail. Hardware and circuitry for AC and DC industrial control devices, including contactors, starters, speed controllers, time delays, limit switches and pilot devices. Application in the control of industrial equipment—motors, servo units and motor-driven actuators. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 276 INSTRUMENTS AND MEASUREMENTS (4 cr.)—Co or prerequisite ELEC 241. A study of basic circuits in electronic measurements and application of these circuits in test instruments such as oscilloscopes, vacuum tube voltmeters and bridges. Further study concerned with the accuracy of measurements, how instruments work, proper use of instruments and calibration technique. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 287 ADVANCED CIRCUITS AND NEW DEVICES (2 cr.)—Prerequisite division approval. This is a unique course, since it depends so heavily on the judgment of the teaching staff. It is composed of lectures and demonstrations concerned with the latest developments in electronics. Lecture 2 hours per week.

ELEC 297 COOPERATIVE EDUCATION (1-5 cr.)—Prerequisite Divisional approval. Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ELEC 298 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite division approval. 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. Variable hours.

ENGINEERING

ENGR 10 INTRODUCTION TO TECHNICAL ENGINEERING (2 cr.)—An introductory course to the work of the Engineering Technician. Simple engineering problems; slide rule instruction and applications. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ENGR 53 ELEMENTS OF STATICS AND STRENGTH OF MATERIALS (3 cr.)—An introductory course for technicians of the basic principles of Statics (forces, equilibrium, moments, etc.) and Strength of materials (centroids, moments of inertia, stress and deformation, shear and moment diagrams, etc.)—Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ENGR 100 INTRODUCTION TO ENGINEERING (2 cr.)—Professional fields of engineering; the work of the engineer, requirements of training and character, professional ethics, the division of industrial practice and competition. Pure and simple problems from the various schools of engineering are used with slide-rule applications. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

ENGR 101 INTRODUCTION TO ENGINEERING (2 cr.)—Professional fields of engineering; the work of the engineer, requirements and character, professional problems from the various schools of engineering are used with slide-rule applications. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

ENGR 102 INTRODUCTION TO ENGINEERING METHODS (2 cr.)—Prerequisite ENGR 101. Slide-rule practice, an introduction to analog and digital computers, programming of digital computer, vector geometry, graphical representation of data; field trips to nearby computer center. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

ENGR 103 CONCEPTUAL DESIGN AND ANALYSIS (2 cr.)—Prerequisite ENGR 102. Engineering fundamentals and concepts in designing for production, prototype and laboratory models, automation, tape programming and verification; design problems, class reports, and departmental visits at nearby four year college. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

ENGR 121 ENGINEERING GRAPHICS I (2 cr.)—Drawing and theories of projection. Multiview drawings, pictorial drawings and sketching, geometrical construction, sectioning, lettering, dimensioning, auxiliary views, revolutions, assembly drawings. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ENGR 122 ENGINEERING GRAPHICS II (2 cr.)—Prerequisite ENGR 121. Graphical methods used in engineering design, layout and calculation. Properties and types of graphs for engineering and scientific purposes. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ENGR 123 ENGINEERING GRAPHICS III (2 cr.)—Prerequisite ENGR 121 or equivalent. A study of the analysis and graphic presentation of the space relationship of fundamental geometric elements: point, line, plane, curved surfaces, development and vectors. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

ENGR 151 MECHANIC I (STATICS) (4 cr.)—Corequisite MATH 122 or MATH 112. Principles and applications of free body diagrams for force systems, shear and moment diagrams, deflection of beams by numerical integration, and determination of section properties. Lecture 4 hours per week.

ENGR 152 MECHANICS II (Strength of MATERIALS) (3 cr.)—Prerequisite ENGR 151. Strength of material concepts. Stress and strain analysis, both elastic and plastic, with emphasis on elastic analysis of axially loaded members, connectors, beams, and columns. Lecture 3 hours per week.

ENGR 153 MECHANICS III (3 cr.)—Prerequisite ENGR 151 or equivalent. The study of rigid body mechanics, including kinetics, kinematics, and advanced strength of materials. Lecture 3 hours per week.

ENGR 154 MECHANICS LABORATORY (1 cr.)—Prerequisite or corequisite ENGR 152. Tension, compression, torsion, bending, fatigue, and hardness of materials. Static and dynamic stresses and strains, stress concentration factors, and statistical evaluation of data. Experiments and/or demonstrations. Laboratory 3 hours per week.

ENGR 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial, and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ENGR 198 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. Variable hours.

ENGR 206 ENGINEERING ECONOMY (3 cr.)—Economic decision process in the engineering design environment. Investment, financing, depreciation, manufacturing costs, economic selection replacement. Lecture 3 hours per week.

ENGR 251 ENGINEERING MECHANICS I (STATICS) (4 cr.)—Corequisite MATH 241 & PHYS 221. Vector treatment of concepts of force, mass, space, & time, gravitational systems of measurements, forces, moments & vector quantities; analysis of discrete & distributed force systems & their application to bodies in external equilibrium including cranes, trusses; principles of dry friction, centroids & fluid statics. Lecture 4 hours per week.

ENGR 252 ENGINEERING MECHANICS II (MECHANICS OF SOLIDS) (4 cr.)—Prerequisite ENGR 251. Introductory mechanics of continuous media; concepts of stress & deformation due to longitudinal loads, torsion and bending, plane stress. Lecture 4 hours per week.

ENGR 253 ENGINEERING MECHANICS III (DYNAMICS) (4 cr.)—Prerequisite ENGR 251. Vector treatment of coplanar and three-dimensional kinematics and kinetics of particles and rigid bodies including relative motion, mass moments of inertia, Newton's

Laws, work and energy, impulse and momentum, vibration, and balancing. Lecture 4 hours per week.

ENGR 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

ENGR 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. Variable hours.

ENGR 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 hours.

ENGLISH

ENGL 01 VERBAL STUDIES LABORATORY (1-5 cr.)—A developmental course in composition designed for students who need help in all areas of writing to bring their proficiency to the level necessary for entrance into their respective curriculums. Emphasis on individualized instruction. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 05 ENGLISH AS A SECOND LANGUAGE (1-5 cr.)—A developmental course in the English language for persons whose native language is not standard English. Emphasis on production of English phonemes, intonation patterns, structural patterns, grammar, vocabulary, and idioms. Students are expected to spend a minimum of 3 hours weekly in the language laboratory. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 08 READING IMPROVEMENT (1-5 cr.)—A developmental course using modern techniques, equipment, and materials to increase the student's comprehension, skill, and speed in reading. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 101-102-103 COMMUNICATION SKILLS I-II-III (3 cr.)(3 cr.)(3 cr.)—Prerequisite satisfactory score on appropriate English proficiency examination. Designed to teach the student to use the English language correctly and effectively and to develop skill in the preparation of reports, articles, essays, and correspondence related to technical fields. Attention to sentence structure and paragraph development to express thoughts in lucid, coherent, well-developed form. Reading selections provide material for discussion and supply topics for frequent writing assignments. Lecture 3 hours per week.

NOTE: The student in a program that requires ENGL 101-102 and a third quarter of English or Speech should consult with his major advisor to determine which English or Speech course would be the most appropriate for his particular program. Please note that the course SPDR 136 is the equivalent of the course previously known as ENGL 136 and that it has no prerequisite; thus it can be taken at any time: 101-102-136, 101-136-102, or 136-101-102.

ENGL 111-112-113 ENGLISH COMPOSITION I-II-III (3 cr.)(3 cr.)(3 cr.)—Prerequisite satisfactory score on appropriate English proficiency examinations and 4 units of high school English or equivalent. Expository and argumentative writing, ranging from single paragraphs to essays of some length and complexity. Study of logical, rhetorical, and linguistic structures; the methods and conventions of preparing research papers; and the practical criticism of literary types. These courses must be taken in sequence. Lecture 3 hours per week.

ENGL 118 READING AND STUDY DEVELOPMENT (3 cr.)—A multi-level reading course with emphasis on structural analysis, critical reading, and study techniques for the development of individual skill; laboratory provides enrichment and application of techniques. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ENGL 126 INTRODUCTION TO JOURNALISM (3 cr.)—Prerequisite freshman English or divisional approval. This course is designed to acquaint the student with the functions of the news media and the forces which shape them. It provides beginning instruction and practice in gathering, writing, and evaluating the news. It offers practice in copy preparation and production. Lecture 3 hours per week.

ENGL 127 HISTORY OF JOURNALISM (3 cr.)—Prerequisite freshman English or divisional approval. This course is a survey of American Journalism from the colonial period to the present with emphasis on freedom of the press, propaganda and censorship. Lecture 3 hours per week.

ENGL 128 SURVEY OF MASS MEDIA (3 cr.)—Prerequisite freshman English or divisional approval. This is a survey of radio, television, newspapers, magazines, books and motion pictures. Emphasis is placed on the nature of change in, and the social implications of communications media today. Lecture 3 hours per week.

ENGL 137 TECHNICAL WRITING (3 cr.)—Prerequisite ENGL 102 or departmental approval. Designed to develop writing proficiency in technical fields. Emphasis on collecting, organizing, and presenting materials applicable to various specialized areas. Lecture 3 hours per week.

ENGL 180 FUNDAMENTALS OF BUSINESS ENGLISH (3 cr.)—Prerequisite ENGL 102. An intensive study of the qualities and techniques required in the preparation of business correspondence, reports, articles, and memoranda. A practical course in the reading and writing of business-related materials with emphasis on comprehension, analysis, and organization of ideas in a logical pattern. Class 3 hours per week.

ENGL 198 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. Variable hours.

ENGL 199 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 hours.

ENGL 221 JOURNALISM-NEWS WRITING (3 cr.)—Prerequisite ENGL 126 or divisional approval. Intensive practice in reporting and news writing for local newspapers or the college newspaper under supervision of the journalism faculty and other professional journalists. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ENGL 222 JOURNALISM-FEATURE WRITING (3 cr.)—Prerequisite ENGL 126 or divisional approval. Intensive practice in writing feature articles for newspapers and magazines under the supervision of professional journalists and the journalism faculty. Articles will be submitted for publication. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ENGL 223 JOURNALISM-EDITING (3 cr.)—Prerequisite 9 hours of journalism and divisional approval. Qualified students will receive practical experience working with professional journalists in the preparation and production of copy. Emphasis on selective judgment, editing as a creative process, managerial functions of the editor. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ENGL 228 CREATIVE WRITING (3 cr.)—Prerequisites ENGL 111, 112, 113 or divisional permission. Designed to introduce the student to the fundamentals of writing creatively, involving primarily the use of the imagination. Samples of creative writings will be studied to observe the methods employed in writing poetry, essays, and short stories. Lecture 3 hours per week.

ENGL 246 THE MODERN NOVEL (3 cr.)—Prerequisite freshman English or divisional approval. A study of the modern novel. Emphasis on appreciation and interpretation of selected novels. Lecture 3 hours per week.

ENGL 247 THE MODERN DRAMA (3 cr.)—Prerequisite freshman English or divisional approval. A study of the modern drama. Emphasis on the understanding and enjoyment of dramatic literature. Lecture 3 hours per week.

ENGL 248 THE MODERN SHORT STORY (3 cr.)—Prerequisite freshman English or divisional approval. A study of the short story as a literary form. Emphasis on appreciation and interpretation of selected stories. Lecture 3 hours per week.

ENGL 249 MODERN POETRY (3 cr.)—Prerequisite freshman English or divisional approval. A study of modern poetry. Emphasis on appreciation and interpretation of selected poems. Lecture 3 hours per week.

ENGL 250 MAJOR AMERICAN WRITERS (5 cr.)—Prerequisite ENGL 113 or divisional approval. A study of selected American writers representative of various periods. Students may receive credit for either the Survey of American Literature (ENGL 251, 252, 253) or ENGL 250. Lecture 5 hours per week.

ENGL 251-252-253 SURVEY OF AMERICAN LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite ENGL 113 or divisional approval. American Literature from Colonial times to the present. Emphasis on the ideas, themes, and characteristics of our national literature. Lecture 3 hours per week.

ENGL 260 MAJOR ENGLISH WRITERS (5 cr.)—Prerequisite ENGL 113 or divisional approval. A study of selected English writers representative of various periods. Students may receive credit for either the Survey of English Literature (ENGL 261, 262, 263) or ENGL 260. Lecture 5 hours per week.

ENGL 261-262-263 SURVEY OF ENGLISH LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite ENGL 113 or divisional approval. A survey of major English writings from early times to the modern period. Emphasis on the ideas, themes, and characteristics of English literature. Lecture 3 hours per week.

ENGL 270 MAJOR WRITERS IN WORLD LITERATURE (5 cr.)—Prerequisite ENGL 113 or divisional approval. A study in depth of writers of various cultures. Students may receive credit for either the Survey of World Literature (271, 272, 273) or ENGL 270. Lecture 5 hours per week.

ENGL 271-272-273 SURVEY OF WORLD LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite ENGL 113 or equivalent. A course designed to familiarize the student with master works of world literature. Analytical reading and critical writing toward understanding of the periods, the writers, the literary works. Lecture 3 hours per week.

ENGL 298 SEMINAR AND PROJECT (1-5 cr.)—Completion of a project of 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. Variable hours.

ENGL 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 hours.

FIRE SCIENCE

FIRE 100 FUNDAMENTALS OF FIRE SERVICE ADMINISTRATION (3 cr.)—A study of department and company organization and management, administrative procedures and methods, budgeting and reporting, control of resources, and maintenance of records. Lecture 3 hours per week.

FIRE 106 FIRE PROTECTION ORGANIZATION (3 cr.)—History and philosophy of fire service at the local, state, and national level with emphasis on the organization of the individual fire department; analysis of the overall fire problem, communications, maintenance, training, company fire fighting capabilities, apparatus and equipment. Lecture 3 hours per week.

FIRE 108 FUNDAMENTALS OF FIRE SUPPRESSION (3 cr.)—Basic concepts involved in fire suppression including fire behavior, principles of fire fighting as applied to small and large scale fires, problems involving the use of tactics, size-up, strategy and employment of equipment and manpower at various echelons. Lecture 3 hours per week.

FIRE 109 FIRE SUPPRESSION OPERATIONS (3 cr.)—The distribution and use of equipment, organization for major fires, pre-planning, command post operations, communications, equipment design and maintenance, and tactics. Lecture 3 hours per week.

FIRE 111 HAZARDOUS MATERIALS I (3 cr.)—Identification and characteristics of materials contributing to fire hazards including chemical gases, flammable liquids, and radiological materials, and an examination of their storage, handling and transportation, and related fire science problems. Lecture 3 hours per week.

FIRE 112 HAZARDOUS MATERIALS II (3 cr.)—Prerequisite FIRE 106 and FIRE 111. Hazardous materials covering storage, handling, laws, standards, and fire fighting techniques associated with chemicals, gases, flammable liquids, and radio-active materials. Lecture 3 hours per week.

FIRE 116 FUNDAMENTALS OF FIRE PREVENTION (3 cr.)—An introduction to fire safety through study of fire causes, inspection and investigation procedures. Lecture 3 hours per week.

FIRE 120 FIRE PROTECTION EQUIPMENT AND SYSTEMS (3 cr.)—Topics covered are the examination and utilizing of portable extinguisher equipment, sprinkler systems, protection systems for special hazards, and fire alarm and protection systems. Opportunities for visits to local facilities having equipment and systems affording a critical appraisal. Lecture 3 hours per week.

FIRE 137 FIRE FIGHTING TACTICS AND STRATEGY (3 cr.)—Prerequisite FIRE 106 and FIRE 108. Review of combustion and extinguishment. The problems during size-up; developing and implementing tactics and strategy during fires; and the leadership required on the fire round. Lecture 3 hours per week.

FIRE 141 FIRE ADMINISTRATION (3 cr.)—Prerequisite FIRE 106. A study of the personnel responsibility of managers. Centers on line-staff relationships, social change, managerial attitudes and decisions, general organizational planning, and career development for managers. Lecture 3 hours per week.

FIRE 146 FIRE ADMINISTRATION AND LAW (3 cr.)—Application of guideposts relative to firemen and law. Includes introduction to law, the judicial system, city's liability for acts of the fire department, fire prevention bureaus, and general liabilities of firemen. Lecture 3 hours per week.

FIRE 147 METHODS OF FIRE INSTRUCTION (3 cr.)—3 lecture hours per week. This course is designed to prepare Fire Management Personnel who conduct the in-service

training of fire fighters at local Fire Departments. Emphasis will be on development of training methods and aids, such as role-playing, small group discussion & development of individualized learning materials & methods. Each student will be required to develop and present a segment of the fire fighting curriculum of his local fire department. Lecture 3 hours per week.

FIRE 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

FIRE 206 FIRE RESCUE PRACTICES (3 cr.)—Rescue practices; the human body, emergency care of victims, childbirths, artificial respiration, toxic gases, chemicals and diseases, radio-active hazards, rescue problems and techniques. Lecture 3 hours per week.

FIRE 207 RADIATION CONTROL SYSTEMS (3 cr.)—Radiation control procedures applied by the fire departments and other affected agencies. Includes familiarization with radiological instruments, human exposure to radiation, decontamination procedures, common uses of radioactive materials, and operational procedures. Demonstrations will illustrate established principles. Lecture 3 hours per week.

FIRE 208 WATER DISTRIBUTION SYSTEMS (3 cr.)—Principles, techniques, and application of water distribution systems in fire fighting. Emphasis on the use of underground mains, private water supplies, public water systems, hydrants, hose and standpipes. Laboratory equipment and materials will supplement lectures. Lecture 3 hours per week.

FIRE 216 FIRE HYDRAULICS AND EQUIPMENT (4 cr.)—Prerequisite FIRE 106. Review of basic mathematics; laws and formulas applied to fire service hydraulics, development of mental ability to solve fire flow requirements, water supply needs, and consideration of equipment standards. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

FIRE 227 BUILDING CONSTRUCTION AND CODES (4 cr.)—The various types of construction materials and their properties with emphasis on the effect of heat, water, and internal pressures generated under fire conditions. Familiarization with national, state and local ordinances and codes which influence the fire protection field. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

FIRE 228 FIRE CODES AND ORDINANCES (3 cr.)—Prerequisite division permission. Familiarization with national, state and local laws; ordinances and codes which influence the field of fire prevention and protection; legal aspects of fire prevention and related problems. Lecture 3 hours per week.

FIRE 237 ARSON DETECTION AND INVESTIGATION (3 cr.)—Prerequisite FIRE 106. Introduction to arson laws and types of incendiary fires. Determining fire causes, recognizing and preserving evidence; interrogation of adults and juveniles; court procedures. Lecture 3 hours per week.

FIRE 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 1:5 hours. May be repeated for credit. Variable hours.

FIRE 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

FIRE 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. Variable hours.

FIRE 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 hours.

FORESTRY

FORE 130 FOREST AND WILDLIFE RECREATION MANAGEMENT (3 cr.)—An introduction to the organization and management of public and private recreation areas including hunting and fishing preserves, campsite area standards, and nature trail development. Lecture 3 hours per week.

FORE 131 WILDLIFE AND FISHERIES MANAGEMENT (4 cr.)—An introduction to the principles of wildlife and fisheries management. Emphasis on practices in the southeastern United States. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

FORE 132 FOREST RECREATION (4 cr.)—A study of recreational use of forest resources including an understanding of the psychology of recreation, planning, and design of forest recreation areas. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

FRENCH

FREN 101-102-103 ELEMENTARY FRENCH I-II-III (4 cr.) (4 cr.) (4 cr.)—Introductory training in the speaking, understanding, reading, and writing of French with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week. *Not recommended for students who have, within the past two years, received two years high school or one year college credit for this language.*

FREN 106 REVIEW OF INTRODUCTORY FRENCH (5 cr.)—An intensive review of French structure and phonology; designed for students who have had some previous training in French, but whose proficiency does not qualify them for French 201. *Permission of the department required.*

FREN 199 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 hours.

FREN 201-202-203 INTERMEDIATE FRENCH I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite FREN 103 or successful completion of two years of high school French and departmental permission. Advanced study in the speaking, understanding, reading and writing of French. French is used in the classroom. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week.

FREN 231-232-233 INTRODUCTION TO FRENCH CIVILIZATION AND LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite FREN 203 or equivalent. An introduction to the background of French life and culture and to the outstanding contributions of France to world civilization from medieval times to the present. Reading is in the original French and French is used in the classroom. Lecture 3 hours per week.

GENERAL

GENL 98 SEMINAR AND PROJECT (1-5)—Emphasis is placed on experiences designed to improve study habits and skills and to allow exploration of multiple career opportunities. Variable hours.

GENL 100 ORIENTATION (1 cr.)—This course, required of all beginning college students, is designed essentially as an instrument of group guidance and deals with such problems as adjustment to college, purposes and functions of the college, planning for

the future and making the most of the college years and what the college has to offer. Particular emphasis is placed on experiences designed to improve study habits and skills such as reading, listening, and library activities. Lecture 1 hour, Laboratory or seminar 1 hour, Total of 2 hours per week.

GEOGRAPHY

GEOG 240 INTRODUCTION TO PHYSICAL GEOGRAPHY (3 cr.)—A study of the major elements of the natural environment such as land forms, weather and climate, natural vegetation, and soils. Lecture 3 hours per week.

GEOG 250 INTRODUCTION TO CULTURAL GEOGRAPHY (3 cr.)—A survey of landscape modification through human agencies and the relationships of culture and geography. Lecture 3 hours per week.

GEOG 260 INTRODUCTION TO ECONOMIC GEOGRAPHY (3 cr.)—A geographic survey of primary production, manufacturing, mining, and trade, covering agriculture, forestry, and fishing. Lecture 3 hours per week.

GEOG 298 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite Division permission. 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. Variable hours.

GEOG 299 SUPERVISED STUDY (1-5 cr.)—Prerequisite Division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

GEOLOGY

GEOL 101-102-103 GENERAL GEOLOGY I-II-III (4 cr.) (4 cr.) (4 cr.)—Physical geology, the various modifying agencies at work upon the earth, and their effects. The composition and structure of the earth as a whole. Historical geology, the history of the earth and its plants and animals from the beginning to the present, with emphasis on the principles involved in interpreting geologic evidence. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

GEOL 199 SUPERVISED STUDY IN GEOLOGY (1-5 cr.)—Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

GERMAN

GERM 101-102-103 ELEMENTARY GERMAN I-II-III (4 cr.) (4 cr.) (4 cr.)—Introductory training in the understanding, speaking, reading, and writing of German with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week. *Not recommended for students who have, within the past two years, received two years high school or one year college credit for this language.*

GERM 106 REVIEW OF INTRODUCTORY GERMAN (5 cr.)—An intensive review of German structure and phonology; designed for students who have had some previous training in German, but whose proficiency does not qualify them for German 201. *Permission of the department required.*

GERM 199 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 hours.

GERM 201-202-203 INTERMEDIATE GERMAN I-II-III (4 cr.) (4 cr.) (4 cr.)—Prerequisite GERM 103 or successful completion of two years of high school German and departmental permission. Advanced study in the understanding, speaking, reading and writing of German. German is used in the classroom. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

GERM 231-232-233 INTRODUCTION TO GERMAN LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite GERM 203 or equivalent. Readings in selected works of German literature. German is used in the classroom. Lecture 3 hours per week.

GOVERNMENT

GOVT 110 SURVEY OF AMERICAN POLITICAL PARTIES (3 cr.)—A survey of the development of American political parties. Emphasis on local, state, and federal organization of political parties, conventions, and elections. Lecture 3 hours per week.

GOVT 180 AMERICAN CONSTITUTIONAL GOVERNMENT (3 cr.)—An introductory course in American government, including fundamental concepts and principles of our constitutional system at the national, state and local levels. Lecture 3 hours per week.

GOVT 185 INTRODUCTION TO LOCAL GOVERNMENT (3 cr.)—An introduction to the theory, structure, and function of local government in the United States, with particular emphasis on municipal government in Virginia. Lecture 3 hours per week.

GOVT 187 AMERICAN NATIONAL GOVERNMENT (5 cr.)—The organization, structure and functions of the national government in the United States. If credit was given for either GOVT 180, GOVT 186, or GOVT 281-282, 283, credit cannot be obtained for this course. Lecture 5 hours per week.

GOVT 188 STATE AND LOCAL GOVERNMENT (5 cr.)—A study of the theory, structure and functioning of, and interrelationships among, state and local governments in the United States, with illustrations from Virginia jurisdictions. Lecture 5 hours per week.

GOVT 199 SUPERVISED STUDY (1-5 cr.)—Prerequisite division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

GOVT 211 INTERNATIONAL RELATIONS I (3 cr.)—An analysis of the international political system. Includes an introduction to theoretical and analytical approaches to the understanding of the international system and an analysis of the economic, geographic, demographic, and ideological factors and problems affecting the behavior of states toward one another.

GOVT 212 INTERNATIONAL RELATIONS II (3 cr.)—A study of international law and international organizations. The study examines both the origin and the functions of law and organization within the international state system.

GOVT 213 INTERNATIONAL RELATIONS III (3 cr.)—An examination of the contemporary international political system, concentrating on the policies of the major powers, the motivations and goals of those policies, and the major problems of conflict and adjustment in the contemporary system. May be taken non-sequentially. Lecture 3 hours per week.

GOVT 281-282-283 UNITED STATES GOVERNMENT I-II-III (3 cr.) (3 cr.) (3 cr.)—Elements of political science, powers, organization and functions of the legislative, executive and judicial branches of the national, state and local governments in the United States; democracy, federalism, the Constitution and civil liberties. If credit was given for

either GOVT 186 or GOVT 187, credit cannot be obtained for this course. These courses need not be taken sequentially. 3 lecture hours per week.

GOVT 298 SEMINAR IN PUBLIC AFFAIRS (1-5 cr.)—Prerequisite division permission. Seminar in current public affairs concerning domestic and foreign policy of the United States to develop the ability to analyze and critically evaluate present problems as they relate to the functioning of the United States. Variable hours.

GOVT 299 SUPERVISED STUDY (1-5 cr.)—Prerequisite division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

HEALTH

HLTH 100 ORIENTATION TO ALLIED CAREERS (1 cr.)—An orientation to the interrelated roles and functions of various members of the health team. Lecture 1 hour per week.

HLTH 104 FIRST AID I (2 cr.)—The principles and techniques of safety and first aid according to the accepted content of a standard first aid course. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

HLTH 106 FIRST AID AND SAFETY (3 cr.)—The principles and techniques of safety and first aid according to accepted content of a standard first aid course. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HLTH 110 CONCEPTS OF PERSONAL AND COMMUNITY HEALTH (3 cr.)—A course designed to study the concepts related to the maintenance of health, principles of safety, and the prevention of illness at the personal and community level. Lecture 3 hours per week.

HLTH 120 MEDICAL TERMINOLOGY (5 cr.)—Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, stem words, and technical terms with emphasis on proper spelling and usage. Lecture 5 hours per week.

HLTH 124 MEDICAL TERMINOLOGY I (3 cr.)—Provides an understanding of medical abbreviations and terms. Includes the study of prefixes, suffixes, stem words, and technical terms with emphasis on proper spelling and usage. Lecture 3 hours per week.

HLTH 125 MEDICAL TERMINOLOGY II (2 cr.)—A continuation of HLTH 124 for those students in health-related curriculums requiring additional understanding of medical terms. Lecture 2 hours per week.

HLTH 146 OCCUPATIONAL INJURY AND DISEASE CONTROL (3 cr.)—A study of environmental energy and chemical hazards, including gases, vapors, fumes, dusts, and mists; the importance of protective clothing and equipment; concepts of chemistry and physics fundamental to the control of chemical and energy hazards. Lecture 3 hours per week.

HLTH 150 CONCEPTS OF DISEASE (3 cr.)—A survey course designed specifically for students enrolled in health technology programs. General principles, classification, causes and treatment of selected disease processes are presented. Lecture 3 hours per week.

HLTH 241 OCCUPATIONAL HEALTH I—AIR POLLUTION AND NOISE ABATEMENT (3 cr.)—Air pollution control and noise abatement in relation to occupational health; study of the scientific, engineering, and legal aspects; sources and classification of pollutants;

sampling and measuring techniques; remedies and controls currently available. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

HLTH 242 OCCUPATIONAL HEALTH II—BIOLOGICAL AND CHEMICAL CONTROL (3 cr.)—A study of the uses and control of chemical and biological processes in relation to occupational health; study of the scientific aspects; analysis and measuring techniques; treatments and controls currently available. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

HISTORY

HIST 101-102-103 HISTORY OF WESTERN CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.)—The development of civilization from ancient times to the present. The last two quarters deal with a survey of the period since the close of the Reformation. Preferable but not mandatory that courses be taken sequentially. Lecture 3 hours per week.

HIST 104-105 HISTORY OF WESTERN CIVILIZATION I-II (5 cr.) (4 cr.)—The development of western civilization from ancient times to the present. Lecture 5-4 hours per week.

HIST 111-112-113 AMERICAN HISTORY I-II-III (3 cr.) (3 cr.) (3 cr.)—A survey of United States history from its beginning in early colonial times to the present. Preferable but not mandatory that courses be taken sequentially. Lecture 3 hours per week.

HIST 187-188-189 HISTORY OF THE AFRO-AMERICAN I-II-III (3 cr.) (3 cr.) (3 cr.)—A survey of Negro history, his relationships and contributions to the American society; the period of slavery; the period of caste subordination; the period of new mobility and growing Black protest. Lecture 3 hours per week.

HIST 198 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite division permission. 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. Variable hours.

HIST 199 SUPERVISED STUDY (1-5 cr.)—Prerequisite division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

HIST 221-222-223 AMERICAN ECONOMIC HISTORY I-II-III (3 cr.) (3 cr.) (3 cr.)—First quarter deals with economic history of the 19th century and early 20th century in the United States. The second quarter places emphasis on the 1920's and 1930's. The third quarter covers the period since 1930. Lecture 3 hours per week.

HIST 224-225 AMERICAN ECONOMIC HISTORY I-II (5 cr.) (4 cr.)—First quarter deals with economic history of the 19th and early 20th centuries in the United States. The second quarter deals with the remainder of the 20th century emphasizing the 1920's and 1930's. Lecture 5-4 hours per week.

HIST 231-232-233 SURVEY OF ASIAN CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.)—A survey of the civilizations of Asia, from their origins to the present day, with emphasis on their cultural aspects. The first quarter considers the Indian subcontinent; the second quarter, China, Japan, and Korea; and the third quarter, the countries of Southeast Asia. Preferable but not mandatory that courses be taken sequentially. Lecture 3 hours per week.

HIST 251-252-253 HISTORY OF MODERN EUROPE I-II-III (3 cr.) (3 cr.) (3 cr.)—the political, social, and economic developments from 1500 to the present. Preferable but not mandatory that courses be taken sequentially. Lectures 3 hours per week.

HIST 281-282-283 A SURVEY OF LATIN AMERICAN CIVILIZATION I-II-III (3 cr.) (3 cr. (3 cr.))—A survey of Latin American civilization—in its political, economic, and social aspects—from Iberian and Pre-Columbian origins down to the present day. Preferable but not mandatory that courses be taken sequentially. Lecture 3 hours per week.

HIST 298 SEMINAR AND PROJECT (1.5 cr.)—Prerequisite division permission. 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. Variable hours.

HIST 299 SUPERVISED STUDY (1.5 cr.)—Prerequisite division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

HORTICULTURE

HORT 100 INTRODUCTION TO HORTICULTURE (4 cr.)—An introduction to the commercial horticulture industry and an overview of horticultural technology including occupational opportunities. Survey of basic structures, equipment, facilities, and physical arrangements of nurseries, green houses and floral establishments. An introduction to growing, facility maintenance, transplanting and planting will form the laboratory experience. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HORT 240 TURF GREEN MANAGEMENT (4 cr.)—The study of turf grasses in use in this geographical area including propagation and production, planting, maintenance, weed control, insect and disease control, trouble shooting problems, studies regarding the relationships between turf grasses, soils, fertilizers, irrigation and drainage requirements. Practical experience in turf grass management in park areas and golf courses. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

HORT 250 LANDSCAPE PLANNING (2 cr.)—Prerequisite HORT 100. The basic symbols used in landscape plans. Drafting and blueprints reading, the preparation of simple landscape plans, and the interpretation of plans designed by a landscape architect includes the fundamentals of landscape design, planning areas, walks, drives, and the effective use of trees, lawn, shrubs, ground cover, and foundation plantings. Laboratory 6 hours per week.

HOTEL, RESTAURANT, AND INSTITUTIONAL MANAGEMENT

HRIM 111-112-113 FOOD SCIENCE I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite high school chemistry or biology. Interrelationship of the physical, biological and chemical principles of food, food preparation, food equipment, and food manufacturing processes. Lecture 3 hours per week.

HRIM 124-125 PRINCIPLES OF FOOD PREPARATION I-II (4 cr.) (4 cr.)—Applications of scientific principles and techniques to food preparation. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HRIM 134-135 NUTRITION I-II (3 cr.) (3 cr.)—The study of food composition and the nutrients essential to the health of human life, its function and metabolism. Lecture 3 hours per week.

HRIM 140 PRINCIPLES OF BAKING (4 cr.)—Application of scientific principles and techniques of baking. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HRIM 146 HOTEL/MOTEL ORGANIZATION AND MANAGEMENT (3 cr.)—A study of the past, present and future of the hospitality industry; organization as a modern tool of management; and the organization of hotel operations. Lecture 3 hours per week.

HRIM 147 RESTAURANT/INSTITUTION ORGANIZATION AND MANAGEMENT (3 cr.)—A thorough analysis of the nature and scope of departmental functions in the food service industry. Emphasis placed on operational practices and problems. Lecture 3 hours per week.

HRIM 156 CLUB MANAGEMENT (3 cr.)—Problems peculiar to the organization and management of private clubs such as boards of directors, committee organization, legal aspects, and financial considerations. Lecture 3 hours per week.

HRIM 168 EXECUTIVE HOUSEKEEPING (3 cr.)—A detailed study of the housekeeping department with emphasis on organization, staffing and scheduling, staff development, work methods improvements, equipment, cleaning materials and cleaning procedures; maintenance and refurbishing, room design and safety engineering. Lecture 3 hours per week.

HRIM 186 EQUIPMENT LAYOUT-DESIGN (3 cr.)—Design, layout and specification requirements of food service equipment. Work measurement studies applied to quantity food production and its interrelationship to manpower and equipment requirements. Lecture 3 hours per week.

HRIM 187 FOOD SERVICE FACILITIES, DESIGN AND LAYOUT (3 cr.)—A basic course designed to translate a Food Service Facility Study Report into a completed functional arrangement plan of a food service facility. It covers an introduction to blueprint reading and basically the techniques and tools used in drafting including the use of templates. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HRIM 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. May be repeated for credit. Variable hours.

HRIM 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

HRIM 221-222-223 QUANTITY FOOD PREPARATION I-II-III (5 cr.) (5 cr.) (5 cr.)—Principles, standards and practices of cooking and baking applied in large quantity food production. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

HRIM 234-235 DIET THERAPY I-II (4 cr.) (3 cr.)—Application of nutrition principles in the dietary treatment of hospital patients. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week; Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

HRIM 236 SANITATION (3 cr.)—Prerequisite high school general science, biology, or chemistry. The moral and legal responsibilities involved in assuring sanitary conditions in the food service establishment. Emphasis on the causes and prevention of food poisoning. Lecture 3 hours per week.

HRIM 264-265 FOOD AND BEVERAGE COST CONTROLS I-II (3 cr.) (3 cr.)—Pre cost, pre-control methods relative to the menu, production control, purchasing, receiving, inventory control, and profit of food service system. Lecture 3 hours per week.

HRIM 266 FOOD PURCHASING (3 cr.)—Methods and procedures for purchasing food for hotels, restaurants and institutions; markets, federal and trade grades, governmental regulations, packaging, comparative versus price buying, yields and quality controls. Lecture 3 hours per week.

HRIM 277 PERSONNEL TRAINING FOR HRI. (3 cr.)—Principles of human relations at the managerial and supervisory level with emphasis on its application to training the hospitality industry. Lecture 3 hours per week.

HRIM 286 CATERING (3 cr.)—The systematic study of special functions in the hospitality industry. Lecture and demonstrations in banquet layout, menus, services, sales and supervision. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

HRIM 287 HOTEL/MOTEL FRONT OFFICE PROCEDURES (3 cr.)—An analysis of the jobs in the hotel-motel front office and procedures involved in registering, account for, and checking out guests. Lecture 3 hours per week.

HRIM 289 HOTEL AND MOTEL LAW (3 cr.)—A study of the laws applicable to the ownership and operation of hotels and motels. The duties to guests, ejection of undesirables, liabilities for personal injuries, damage, arrest and detention of offenders. Lectures 3 hours per week.

HRIM 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 1:5 hours. May be repeated for credit, Variable hours.

HRIM 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

HRIM 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. Variable hours.

HUMANITIES

HUMN 201-202-203 SURVEY OF WESTERN CULTURE I-II-III (3 cr.) (3 cr.) (3 cr.)—A survey of the Western world which correlates the art, music and literature of the following periods: Greek and Roman, Middle Ages, Renaissance, Elizabethan, Neo-classical, Victorian and Modern. Lectures 3 hours per week.

INDUSTRIAL ENGINEERING

INDT 111-112 MATERIALS AND PROCESSES OF INDUSTRY I-II (3 cr.) (3 cr.)—The objective of this course is to familiarize the student with the materials and processes of modern industry from the drafting and design point of view. The physical properties of industrial materials such as ferrous, non-ferrous metals, woods, plastics and clay products will be studied in terms of design application, processing and fabricating methods. Students will be introduced to cutting, cold forming, hot working, welding, foundry and chipless manufacturing processes which are widely employed in contemporary industry. In addition, the science of precision measurement as applied to inspection practices will be studied. Lecture 3 hours per week.

INDT 127 SAFETY AND HEALTH STANDARDS, REGULATIONS AND CODES (3 cr.)—The development of safety standards and sources of standards, including an examination of government regulatory codes and an appraisal of consensus, advisory, and proprietary standards. Lecture 3 hours per week.

INDT 130 SAFETY PROGRAM ORGANIZATION AND ADMINISTRATION (4 cr.)—An introduction to safety and information pertaining to the techniques of organizing and administering practical safety programs. Includes the computation of accident costs and their effects upon productivity. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

INDT 134 POWER SOURCE HAZARDS CONTROL I (3 cr.)—Machine guarding principles and techniques pertaining particularly to mechanical, electrical, and hydraulic equipment applications and methods for grounding electrical equipment. Lecture 3 hours per week.

INDT 136 INDUSTRIAL SAFETY PLANNING (3 cr.)—Practical work in planning a safety program, including plant layout and process arrangement; the importance of good plant housekeeping, illumination standards and the functional use of color dynamics. Lecture 3 hours per week.

INDT 137 MATERIAL HANDLING AND STORAGE (3 cr.)—Comprehensive coverage of mechanical handling equipment, methods for preventing handling injuries, and damage to equipment and materials. Lecture 3 hours per week.

INDT 170 INDUSTRIAL MANAGEMENT (3 cr.)—A study of organizational structure; operational, financial, accounting and marketing activities, management responsibilities, planning, control, personnel, safety, labor relationships, and factors essential to effective management. Lecture 3 hours per week.

INDT 176 INDUSTRIAL SAFETY (2 cr.)—Principles and practices of accident prevention, analysis of accident causes, mechanical safeguards, fire prevention, housekeeping, occupational diseases, first aid, safety organization, protection equipment and general safety principles and promotion of same. Lecture 2 hours per week.

INDT 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

INDT 198 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. Variable hours.

INDT 226 PLANT LAYOUT (3 cr.)—Arrangement and layout of physical facilities for maximum efficiency of production including stock arrangement, machines, layout of aisles, use of space and techniques for model construction. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

INDT 237 PREVENTIVE MAINTENANCE (3 cr.)—Various types of maintenance programs, including maintenance management, schedules and controls, and the relationship of these operational matters to the prevention of accidents, injuries, and exposure to health hazards. Lecture 3 hours per week.

INDT 238 OCCUPATIONAL SAFETY ENGINEERING TECHNIQUES (5 cr.)—A practical safety approach to the methods used for the recognition of potentially hazardous situations in the work environment and measures used to correct such situations. Techniques of systems measures used to correct such situations. Techniques of systems safety concepts and concepts of industrial engineering applicable to an analysis of safe work procedures. Lecture 5 hours per week.

INDT 246 MANUFACTURING PROCESS ANALYSIS (3 cr.)—Discussion and analysis of occupational safety and health based upon visits to commercial enterprises and surveying safety activities. Visits and discussions related to special industries. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

INDT 286 QUALITY CONTROL (3 cr.)—Principles of inspection and quality control, with special emphasis on setting up, maintaining and interpreting control charts. Course content includes dimensional control, basic sizes, and applications of tolerances, allow-

ances, limits, precision measurements, comparison measurements, industrial applications, optical, electrical and air limit gauges, comparatore; inspection techniques, control charts, and statistics are introduced as quality control instruments. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

INDT 288 PRODUCTION PLANNING AND CONTROL (3 cr.)—The preparation and analysis of production, planning based on sales forecasts, operation sheets, routing, scheduling, dispatching, follow-up, inventory control, receiving stores and shipping, control forms and reports. Lecture 3 hours per week.

INSTRUMENTATION

INST 116 INSTRUMENTATION FOR OCCUPATIONAL SAFETY AND HEALTH (4 cr.)—A practical course in instrumentation applicable to both occupational safety and industrial hygiene. Interdisciplinary treatment of the identification, working principles, calibration, and practical usage of common instruments and sampling devices. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week

LAW ENFORCEMENT

LWNF 100 INTRODUCTION TO LAW ENFORCEMENT (3 cr.)—The philosophy and history of law enforcement, overview of crime and police problems; organization and jurisdiction of local, state, and Federal law enforcement agencies; survey of professional career opportunities and qualifications required. Lecture 3 hours per week.

LWNF 110 PATROL ADMINISTRATION (3 cr.)—Examines the various types of patrol and their importance to the overall police function. Emphasis is upon the responsibilities and problems of the administrators and supervisors of a field level law enforcement office. Focus is on the most efficient methods of the assignment of men in order to prevent crime, provide needed police services, and protect the community. Lecture 3 hours per week.

LWNF 114 POLICE ORGANIZATION AND ADMINISTRATION I (3 cr.)—Prerequisite LWNF 100 & 110. A consideration of police problems at the administrative level. The organization and management of line operations as well as staff and auxiliary services are examined, including investigative, juvenile, and vice units. Lecture 3 hours per week.

LWNF 115 POLICE ORGANIZATION AND ADMINISTRATION II (3 cr.)—Prerequisite LWNF 114 or divisional approval. A continuation of the analysis of the administrative function begun in LWNF 114. Among the topics included are the organization and management of the personnel, internal control, planning and research, and housing and materiel functions. Lecture 3 hours per week.

LWNF 117 SPECIAL ENFORCEMENT PROBLEMS (3 cr.)—Crowd control during civil demonstrations, picketing, rioting and other emergency situations; the police role in civil defense; police problems caused by narcotics addiction; the handling of mentally or emotionally abnormal persons. Lecture 3 hours per week.

LWNF 120 INTRODUCTION TO CORRECTIONS (3 cr.)—(Corrections) The philosophy and overview of Corrections and related problems as an important dimension in the administration of justice; history of corrections, career opportunities, purposes of correctional jurisdictions. Lecture 3 hours per week.

LWNF 124 JAIL OPERATIONS AND MANAGEMENT I (BASIC) (3 cr.)—(Corrections) Correctional history as a frame of reference; security procedures in jail operation; the effect of the jail climate on inmates and personnel; criteria for effective supervision of

prisoners; correctional aspects of inmate discipline; handling special prisoners. Lecture 3 hours per week.

LWNF 125 JAIL OPERATIONS AND MANAGEMENT II (ADVANCED) (3 cr.)—(Corrections) The functions of jail management as it relates to jail and community programs, planning of jail operation, legal problems in jail administration, community relations, personnel supervision. Lecture 3 hours per week.

LWNF 126 PREVENTION AND CONTROL OF JUVENILE DELINQUENCY (3 cr.)—Survey of youth crime stressing the police role in community programs of prevention and control. The philosophy and functioning of the juvenile courts are studied and related to the juvenile program. Lecture 3 hours per week.

LWNF 127 CRIMINAL OFFENSES (3 cr.)—(Corrections) The study of particular types of crime with emphasis on the pathology of criminals. Lecture 3 hours per week.

LWNF 128 CRIMINAL BEHAVIOR (3 cr.)—(Corrections) Analysis of relationship of society, socialization, and deviancy. Social responses to deviancy and criminal offenders. Lecture 3 hours per week.

LWNF 129 TREATMENT OF THE OFFENDER (3 cr.)—(Corrections) The theory, practice and problems in the fields of probation and parole as well as in institutional and community treatment of juvenile and adult offenders. Lecture 3 hours per week.

LWNF 155 ASSESSMENT OF THE CORRECTIONAL PROCESS—(Corrections) The effectiveness of the courts, penal institutions, probation and parole agencies, and community based correctional facilities in improving and rehabilitating the offender will be assessed. Emphasis will be placed on evaluating standards for effective correctional institutions and programs.

LWNF 156 CORRECTIONS AND THE COMMUNITY (3 cr.)—(Corrections) The relationship of social norms to both conforming and deviant behavior. Emphasis on the rehabilitation aspects of criminals and their return to the community. Lecture 3 hours per week.

LWNF 157 ASSESSMENT OF CRIMINOLOGY (3 cr.)—(Corrections) The nature and theories of criminal assessment including the techniques and tests used in assessing the behavioral and rehabilitative aspects of the criminal. Lecture 3 hours per week.

LWNF 158 INTRODUCTION TO LAW ENFORCEMENT PHOTOGRAPHY—Techniques of photography and their application to law enforcement situations. Dark room operations, theory and practice; field and laboratory exercises; fundamentals of court room presentation of photographic evidence.

LWNF 159 LEGAL CHALLENGE TO CORRECTIONS (3 cr.)—(Corrections) Examines legal changes occurring within and without the criminal process which have implications for corrections; analyses of legal problems related to sentencing, probation, parole, prisoners' rights, loss and restoration of civil rights. Lecture 3 hours per week.

LWNF 166 POLICE COMMUNICATION AND RECORDS (3 cr.)—Principles of organization and administration as applied to records and communications, custody, central services and police logistics; police applications of electronic data processing and the collection of performance data. Lecture 3 hours per week.

LWNF 176 CRIMINOLOGY (3 cr.)—Volume and scope of crime, the background of criminal behavior in the American setting; organized crime and its affiliated problems; subjective theories and explanation of crime; the control, treatment and rehabilitation of the criminal offender. Lecture 3 hours per week.

LWNF 187 TRAFFIC ADMINISTRATION AND CONTROL (3 cr.)—Emphasis is upon the traffic problems confronting the field law enforcement administrator. Modern methods of traffic facilitation and control, techniques of selective enforcement and police responsibilities in special situations are also studied. Lecture 3 hours per week.

LWNF 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio 1:5 hours. May be repeated for credit. Variable hours.

LWNF 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

LWNF 228 LAW ENFORCEMENT AND THE COMMUNITY (3 cr.)—An examination of the current efforts undertaken by the police to achieve an effective working relationship with the community. Among the topics studied in depth are the police image, crisis areas, public and police attitudes, and community relations activities. Lecture 3 hours per week.

LWNF 231-232-233 CRIMINAL LAW, EVIDENCE, AND PROCEDURES I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisite 2nd year standing or permission of program. Major crimes; their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasis on the common law and Virginia adaptations. Kinds, degrees, and admissibility of evidence; methods and techniques of its acquisition, use in criminal proceedings, moot court activities. Review of court systems with emphasis on procedures from incident to final disposition of the accused and on applicable principles of criminal and civil law. Intended to satisfy transfer requirements for one year of Criminal Law. Lecture 3 hours per week.

LWNF 246 PRINCIPLES OF CRIMINAL INVESTIGATION (3 cr.)—Conduct at the crime scene; collection and handling of evidence; interviewing and interrogations; obtaining statements, admissions and confessions; testifying in court. Practical exercises are included. Lecture 3 hours per week.

LWNF 247 ADVANCED CRIMINAL INVESTIGATION (3 cr.)—Prerequisite LWNF 246. Continued study of the investigative process; introduction to scientific aids and examinations; application of investigative techniques to specific offenses. Practical exercises are included. Lecture 3 hours per week.

LWNF 254 CRIMINAL INVESTIGATION TECHNIQUES I (4 cr.)—Prerequisite 2nd year standing or permission of program. Crime scene searches; collection and preservation of evidence; interrogations and interviews; obtaining statements, admissions and confessions; testifying in court. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

LWNF 255 CRIMINAL INVESTIGATION TECHNIQUES II (4 cr.)—Prerequisite LWNF 254. A continuation of the study begun in LWNF 254. Advanced laboratory work relating to investigations; introduction and use of scientific aids and examinations; application of investigative techniques to specific offenses. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

LWNF 276 INDUSTRIAL AND COMMERCIAL SECURITY (3 cr.)—Organization, methods, techniques and equipment for physical protection of industrial and commercial facilities and prevention of theft of merchandise and valuables by persons within and without those facilities. Practical exercises are included. Lecture 3 hours per week.

LWNF 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: 1:5 hours. May be repeated for credit. Variable Hours.

LWNF 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

LWNF 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. Variable hours.

LEGAL

LEGL 126 LEGAL RESEARCH (3 cr.)—Provides an understanding of the function of the law library and will assist in developing research skills through the use of digests, encyclopedias, reporter systems and practice manuals. Lecture 3 hours per week.

LEGL 256 LEGAL ASPECTS OF REAL ESTATE (4 cr.)—The law of real property and an in-depth survey of the more common types of real estate transactions and conveyances, such as deeds, contracts, leases, and deeds of trust; drafting problems involving these various instruments; special research projects; a study of the system of recording and search of public documents. Lecture 4 hours per week.

LEGL 246 LAW OF INCOME TAXATION (4 cr.)—A study of the law of income taxation—state federal, and local—including preparation of income tax returns and related materials. A survey of the various administrative and judicial tribunals, and their jurisdiction, involved in the determination of income tax controversies. Lecture 4 hours per week.

MARKETING

MKTG 100 PRINCIPLES OF MARKETING (3 cr.)—The principles, methods, and problems involved in the distribution and marketing of goods and services. The various marketing agents; wholesaler, broker, agent, cooperative, and trade associations. Discussions of present day problems and policies connected with the distribution and sale of commodities, pricing, advertising and promotion, and buyer motivation. Lecture 3 hours per week.

MKTG 109 PRINCIPLES OF SALESMANSHIP (3 cr.)—The development of selling standards, methods and buying motives. The organization and training processes necessary for a well coordinated sales plan through united efforts of the sales force. The training of sales personnel for maximum efficiency in selling. Lecture 3 hours per week.

MKTG 110 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 effect the modern merchandising world. Emphasis on changing consumer characteristics which influence demand for fashion products and effect that fashion marketing activities have on the economy. Lecture 3 hours per week.

MKTG 131 TRAFFIC AND TRANSPORTATION I (3 cr.)—The requirements for traffic managers in such fields as railroading, trucking, and air travel. Each quarter is based on the Chicago College of Traffic materials which are required for licensing examination. The course outlines the development of transportation, transportation regulations, and the regulations and applications of traffic management. Lecture 3 hours per week.

MKTG 136 RETAIL ORGANIZATION & MANAGEMENT (3 cr.)—The organization of businesses to accomplish their goals in the most effective and efficient manner. Location, layout, internal management, policy development, methods of operation, merchandise control and protection, property maintenance, and analysis of results. Lecture 3 hours per week.

MKTG 150 PRINCIPLES OF INSURANCE (3 cr.)—A course in insurance principles and practices. Includes an examination of risks and applications in the principal fields of insurance including life, accident and health, fire, liability, surety, and property. Lecture 3 hours per week.

MKTG 164 PRINCIPLES OF REAL ESTATE I (3 cr.)—Practical applications of real estate management principles. Includes a study of contracts, deeds, mortgages, bonds, leases, search, real property leasing and appraisal. Lecture 3 hours per week.

MKTG 165 PRINCIPLES OF REAL ESTATE II (3 cr.)—Prerequisite MKTG 164. Continued examination of marketing fundamentals. Emphasis on the techniques required for proper selection analysis and listing of real estate properties. How to determine needed data, how to analyze forms and records for recording and presenting data. Lecture 3 hours per week.

MKTG 180 INTRODUCTION TO FOOD MARKETING (3 cr.)—Study of food marketing organization, practices, and problems with emphasis on the supermarket. Topics included are: economic importance of food marketing; history and development of food retailing, role of trade groups, systems of food distribution, food industry surveys, supermarket organization and management, food industry issues, and the future of the food industry. Lecture 3 hours per week.

MKTG 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

MKTG 209 SALES MANAGEMENT (3 cr.)—From the viewpoint of management, study of the organization and operation of the sales division within the business enterprise. Planning, organizing, and controlling the total sales effort, use of the case method of learning. Lecture 3 hours per week.

MKTG 216 MERCHANDISE INFORMATION (3 cr.)—A study of merchandise including durables as well as non-durables. Includes detailed analysis of construction, uses, care and related government regulations. Value and quality standards for consumer use are stressed. Emphasis placed on usefulness of product information as a merchandising tool. Lecture 3 hours per week.

MKTG 217 COLOR, LINE AND DESIGN IN RETAILING (3 cr.)—The vital role played by color and design in almost every aspect of the marketing of consumer goods. Emphasis on styling, packaging, advertising, and professional layouts; basic sketching for art forms, balance and color harmony with recognition of basic period architecture as applied to consumer goods. Lecture 3 hours per week.

MKTG 218 FASHION MERCHANDISING (BUYING AND CONTROL) (3 cr.)—Develops an understanding of the major considerations involved with the buying and merchandising of fashion products. Emphasis is placed on the dynamics of fashion and consumer buying patterns and courses of buying information are analyzed and studied. Discusses fashion buying and inventory control in the merchandising cycle; techniques used in developing fashion buying plans; model stock, unit control and inventory systems. Merchandising selection policy and pricing for profit. Lecture 3 hours per week.

MKTG 219 FASHION SALES PROMOTION (3 cr.)—Designed to develop an understanding of the principles and procedures of selling fashion and simulates a creative approach to the promotion of fashion merchandising. Student studies sales promotion activities and selling appeals and approaches. Includes study of fashion advertisements, displays, publicity, and other sales promotion techniques involved in the merchandising of fashion items. Lecture 3 hours per week.

MKTG 226 MERCHANDISE BUYING AND CONTROL (3 cr.)—The place of buying and inventory control in the merchandising cycle; the techniques used in developing merchandise plans, model stock, unit control, and inventory systems, merchandise selection policy and pricing for profits. Lecture 3 hours per week.

MKTG 227 ADVERTISING AND DISPLAY (4 cr.)—A survey of the forms of advertising and the principles of display as they apply to retail and other distributive businesses. Emphasis on the principles of layout and copy, media selection, analysis of cost and results, and the coordination of advertising and display activities within the store. Lecture 3 hours per week, Laboratory 2 hours per week. Total 5 hours per week.

MKTG 228 SALES PROMOTION AND CUSTOMER RELATIONS (3 cr.)—The scope and total activities of a sales promotion program designed to coordinate advertising, display and publicity. Effective use of the sales forces and store policies to develop favorable customer relationships. Institutional practices which develop goodwill for the store. Lecture 3 hours per week.

MKTG 266 REAL ESTATE SALES (3 cr.)—The fundamentals of sales principles as they apply to real estate. The prospect, his motives, his needs, and his abilities to buy real estate. Relations of broker and salesman, salesman and client and community responsibilities. Writing contracts, closing and settlement, and follow-up relations. Lecture 3 hours per week.

MKTG 267 REAL ESTATE APPRAISAL (3 cr.)—Fundamentals of real estate evaluation; methods used in determining value; application of procedures and techniques by utilizing actual appraisals. Includes the opportunities available in the appraisal field of real estate activity. Lecture 3 hours per week.

MKTG 268 PROPERTY MANAGEMENT (3 cr.)—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.

MKTG 269 REAL ESTATE FINANCE (3 cr.)—Principles and practices of financing real estate sales and properties, analysis of various types of mortgage payments and contracts, financing homes and industrial properties and buildings; loan application, relations between correspondent and investor, construction loans. Lecture 3 hours per week.

MKTG 276 LAND PLANNING AND USE (3 cr.)—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.

MKTG 277 LEGAL ASPECTS OF REAL ESTATE (3 cr.)—A study of Virginia real estate law including rights incident to property ownership and management, agency contract and application to real estate transfer, conveyancing, probate proceedings, trust transactions. Lecture 3 hours per week.

MKTG 278 REAL ESTATE ECONOMICS (3 cr.)—Nature and classification of land economics, the development of property, construction and subdivision, economic values and real estate evaluations, real estate cycles and business fluctuations, residential market trends, rural property and special purpose property trends. Lecture 3 hours per week.

MKTG 286 SUPERMARKET MERCHANDISING (3 cr.)—Prerequisite MKTG 180. Designed to acquaint the student with merchandising techniques as applied to the supermarket. Receiving, emphasis; the store manager's merchandising responsibilities; and analysis of profit centers, customer motivation; consumer dynamics; product information; space management; in store sales promotion and displays; inventory control; pricing, advertising, brand management; creative merchandising in specific departments; increasing departmental as well as store sales and profits. Lecture 3 hours per week.

MKTG 287 SUPERMARKET OPERATIONS (3 cr.)—Prerequisite MKTG 180. A study of operational aspects of the supermarket. Receiving attention; planning, organizing, and controlling the use of capital, personnel, equipment, and facilities; work methods; departmental operations; store security; housekeeping, supply control; sanitation; safety; scheduling; front-end management; cash control; and customer service. Lecture 3 hours per week.

MKTG 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

MKTG 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. Variable hours.

MKTG 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 hours.

MATHEMATICS

MATH 01 DEVELOPMENTAL MATHEMATICS (1-5 cr.)—A developmental course which bridges the gap between mathematical foundation and the knowledge necessary for the study of mathematical courses in technical and professional programs. Arithmetic, algebra, geometry and trigonometry will be covered. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

MATH 06 BASIC ARITHMETIC (1-5 cr.)—A developmental course in review of arithmetical principles and computations, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

MATH 11-12-13 ELEMENTS OF MATHEMATICS I-II-III (3 cr.)(3 cr.)(3 cr.)—Designed for the occupational student. Practical applications of elementary mathematics including algebra, geometry, and trigonometry to everyday problems in the manufacturing and trade world. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MATH 31-32-33 ALGEBRA I-II-III (5 cr.)(5 cr.)(5 cr.)—Fundamental algebraic calculations for students who need a survey of the basic principles of algebra. Includes the essential topics of the first two years of high school algebra. A developmental course. Lecture 5 hours per week.

MATH 36 PLANE GEOMETRY (5 cr.)—Prerequisite one unit of high school algebra or equivalent. Fundamentals of plane geometry and an introduction to coordinate geometry. A developmental course. Lecture 5 hours per week.

MATH 38 TRIGONOMETRY (5 cr.)—Prerequisite two units of high school algebra and one half unit of high school geometry or equivalent. Fundamentals of trigonometry for students who need a survey or review of the basic principles of trigonometry. A developmental course. Lecture 5 hours per week.

MATH 99 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 hours.

MATH 101-102-103 FUNDAMENTALS OF MATHEMATICS I-II-III (3 cr.)(3 cr.)(3 cr.)—A study of concepts of numbers; fundamental operations with numbers, formulas and equations, graphical analysis, binary numbers, Boolean and Matrix algebra, linear programming, elementary concepts of statistics. Lecture 3 hours per week.

MATH 121-122-123 ENGINEERING TECHNICAL MATHEMATICS I-II-III (5 cr.)(5 cr.)(5 cr.)—Prerequisite three units of high school mathematics other than general mathematics, and satisfactory score on appropriate mathematics proficiency examinations. Algebra, trigonometry, introduction to calculus, and some emphasis on graphical methods. The course sequence includes solutions of linear and quadratic equations, trigonometric functions, trigonometric curve sketching, logarithms, ratio, proportion and variation, vectors, complex numbers and the binomial theorem. Credit cannot be obtained for both this course and MATH 161-162-163 (College Mathematics). Lecture 5 hours per week.

MATH 141-142-143 INTRODUCTORY MATHEMATICAL ANALYSIS I-II-III (Calculus with Analytic Geometry) (5 cr.)(5 cr.)(5 cr.)—Prerequisites are a satisfactory score on appropriate mathematics proficiency examinations and four units of high school mathematics including two units of algebra, one of geometry, and one half of trigonometry or equivalent. A modern unified course in analytic geometry and calculus including functions, limits, derivatives, differentials, indefinite integrals, definite integrals, and applications. Lecture 5 hours per week.

MATH 151-152-153 BUSINESS MATHEMATICS I-II-III (3 cr.)(3 cr.)(3 cr.)—Prerequisite a strong background in basic arithmetic operations. Instruction, review and drill in percentage, cash and trade discounts, mark-up, payroll, sales, property and other taxes, simple and compound interest, bank discounts, interest, investments and annuities. Lecture 3 hours per week.

MATH 161-162-163 COLLEGE MATHEMATICS I-II-III (3 cr.)(3 cr.)(3 cr.)—Prerequisite a satisfactory score on appropriate mathematics proficiency examination and three units of high school mathematics including two units of algebra and one unit of geometry or equivalent. A modern unified course in algebra, trigonometry, analytic geometry, and calculus for students other than those in engineering. Lecture 3 hours per week.

MATH 181-182-183 GENERAL COLLEGE MATHEMATICS I-II-III (3 cr.)(3 cr.)(3 cr.)—Intended for students with majors other than mathematics, science or engineering. Prerequisite Algebra I and either Algebra II or Geometry and a satisfactory score on appropriate mathematics proficiency examinations. The first two quarters will include sets, the logic of algebra, the real numbers system, algebraic and transcendental functions, relations and graphs. The third quarter will include permutations, combination, probability and elementary statistics. Lecture 3 hours per week.

MATH 191-192-193 FINITE MATHEMATICS I-II-III (3 cr.)(3 cr.)(3 cr.)—This course is intended for students with majors other than mathematics, science or engineering. Prerequisites are a satisfactory score on appropriate mathematics proficiency examinations and three units of high school mathematics including two units of algebra and one unit of geometry or equivalent. Set theory, the real number system, probability theory, vectors, matrices, linear programming, systems of linear equations, introduction to theory of games. Lecture 3 hours per week.

MATH 198 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. Variable hours.

MATH 199 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 hours.

MATH 202 INTRODUCTION TO MATRIX ALGEBRA (4 cr.)—Prerequisite MATH 163 or MATH 143 or equivalent. Operations with matrices, determinants, systems of linear equations, vector spaces and linear transformations, bilinear and quadratic forms. Lecture 4 hours per week.

MATH 241-242-243 ADVANCED MATHEMATICAL ANALYSIS I-II-III (Calculus with Analytic Geometry. Differential Equations)(4 cr.)(4 cr.)—(For students in Engineering and Science Curricula.) Prerequisite MATH 143. A modern course including vectors, matrices, partial differentiation, multiple integrals, infinite series, and differential equations. Lecture 4 hours per week.

MATH 261-262-263 ADVANCED COLLEGE MATHEMATICS I-II-III (3 cr.)(3 cr.)(3 cr.)—Prerequisite MATH 163 or equivalent. A continuation of the unified course in algebra, trigonometry, analytic geometry, and calculus for students other than those in engineering. Topics included are differentiation and integration of exponential, logarithmic, and trigonometric functions; sequences and series; solid analytic geometry; multiple integrals; an introduction to differential equations. Lecture 3 hours per week.

MATH 274 APPLIED MATHEMATICS (4 cr.)—Prerequisite MATH 243 or equivalent. This course includes power series, Laplace Transform, partial differential equations. Legendre Polynomials, and Fourier Series. Lecture 4 hours per week.

MATH 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. Variable hours.

MATH 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 hours.

MECHANICAL ENGINEERING

MECH 116-117 NUMERICAL CONTROL PROGRAMMING I-II (4 cr.)(4 cr.)—A study dealing with the newer concepts of work handling and automatic machining processes.

New techniques in metal forming and machine processes: analysis of electrosonic machining, electrolytic metal removal, numerical controls and simplified building block numerical control system. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH118 TOOL DESIGN (3 cr.)—A basic course in design and layout of cutting tools, stamping tools, punches, gages, dies, blanking and forming tools, notching tools, progressive dies, embossing dies, instruction in use and application of these tools. Lecture 1 hour, Laboratory 5 hours, Total 6 hours per week.

MECH 119 JIG AND FIXTURE DESIGN (3 cr.)—Fundamentals of the construction and design of various types of jigs and fixtures including milling, reaming, tapping, and drilling fixtures. Preparation of complete working drawings from layouts, for interchangeable manufacture: computation of fits, limit dimensions, tolerances, tool drawing principles and methods, fundamentals of cutting tools and gages. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MECH 131 MACHINE LABORATORY I (2 cr.)—Fundamental machine operations of drilling, reaming, turning between centers, chuck work, thread chasing shaper, layout, finishing, cutting speeds, tool care, tool grinding, surface grinder, milling machine operations and tools. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 132 MACHINE LABORATORY II (2 cr.)—A continuation of Machine Lab I with greater emphasis on practical and industrial applications and set-up will be included: inspection tools, gauges, tapers, gear cutting, square threads and fits will also be included. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 133 MACHINE LABORATORY III (2 cr.)—Continued study in which the student will combine the knowledge and skills of the machining, tool, jig and machine design courses to build a simple machine and make the necessary tools for fabrication. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 141 MATERIALS LABORATORY I (3 cr.)—Metallurgy, heat treating, tempering, hardening, statics and welding. Testing materials and analysis of effects of industrial processes on materials with emphasis on machine parts. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MECH 142 MATERIALS LABORATORY II (3 cr.)—Prerequisite MECH 141. Dynamics including treatment of force, moments, and vectors with emphasis on machine parts. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MECH 187 INTRODUCTION TO INSTRUMENTATION (4 cr.)—Broad introduction to use of industrial electro-mechanical equipment. Provides an understanding of the methods, techniques, and skills required for installation, services and operation of a variety of industrial control systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

MECH 198 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. Variable hours.

MECH 215 ADVANCE JIG & FIXTURE DESIGN I (3 cr.)—Corequisite ENGR 152 or MECH 144. Application of the principles, practices, tools and commercial standards of jig and fixture design. Individual project and design work with emphasis on problem-solving and independent design. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MECH 237-238 MACHINE DESIGN I-II (4 cr.)(4 cr.)—The analytical design of bearings, clutches, coupling, brakes, springs, gearing systems, and power shafting. Emphasis on methods of constructing machine parts and specifications of materials and manufacturing processes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 246 METALLURGY I (4 cr.)—Prerequisite INDT 112. Fundamentals of metallurgy, grain size, effect on carbon content, and harness testing devices. Different alloys will be tested to determine the effect of heat treatment. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 247 METALLURGY II (4 cr.)—Prerequisite MECH 246. The fundamentals of physical metallurgy, of ferrous and nonferrous alloys, including crystal structure, phase diagrams, cooling curves, solid solutions, eutectic diagrams, grain characteristics, and the application of these to heat treating alloy metals. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 264 THERMODYNAMICS I (4 cr.)—Prerequisite MATH 122 or equivalent. Characteristics of gases; applied study of steam cycles and combustion processes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 265 THERMODYNAMICS II (4 cr.)—Prerequisite MECH 264. Advanced thermodynamics with emphasis on applications relating to internal combustion engines and gas turbines. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 286 PRECISION MEASUREMENTS (3 cr.)—A study of the various precision measuring instruments and their uses in modern industry. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MECH 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

MECH 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. Variable hours.

MEDICAL LABORATORY

MDLB 100 INTRODUCTION TO MEDICAL LABORATORY TECHNOLOGY (2 cr.)—Designed to orient the student to the medical laboratory by introducing the basic principles, techniques and vocabulary applicable to all phases of medical laboratory technology. It is principally a laboratory practicum taught in the hospital laboratories and includes venipuncture, specimen preparation, laboratory safety, laboratory glassware, laboratory and hospital organization and professional relationships. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MDLB 110 CLINICAL MICROSCOPY (1 cr.)—A study of visible and ultraviolet microscopic techniques with an emphasis on the study of clinical specimens including: urine, feces, cerebrospinal fluid, blood, sputum and body exudates. Basic methods of specimen preparation are considered. Laboratory 3 hours per week.

MDLB 124 CLINICAL HEMATOLOGY I (3 cr.)—The study of various blood components. The student will learn how to obtain blood, methods of examination such as measuring hemoglobin, volume of blood, and how to do white blood count, red blood count, and platelet count. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

MDLB 190 COORDINATED PRACTICE (1-5 cr.)—Supervised practice in selected health agencies coordinated by the College. Credit/Practice Ratio 1:5 hours. May be repeated for credit. Variable hours.

MDLB 225 CLINICAL HEMATOLOGY II (7 cr.)—Prerequisite MDLB 124. Advanced course in the study of blood. Includes coagulation studies, blood formation, abnormalities, and changes seen in various diseases. Lecture 3 hours, Laboratory 12 hours, Total 15 hours per week.

MDLB 230 BLOOD BANKING (5 cr.)—A fundamental course in blood grouping and typing, compatibility testing, antibody screening, component preparation, donor selection, and transfusion reactions and investigation. Included is a student laboratory and, after proficiency here, a supervised clinical experience in hospital medical laboratories. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

MDLB 240 SEROLOGY (3 cr.)—The principles of basic serology including serologic procedures such as those involving precipitation, agglutination, flocculation and complement fixation reactions. A student laboratory accompanies the lecture for student performance of certain tests, followed by supervised clinical experience in hospital laboratories. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MDLB 256 CLINICAL BACTERIOLOGY (6 cr.)—A study of bacteria related to man and their normal and pathogenic roles. The study considers the isolation, propagation, identification and antimicrobial susceptibility testing of these organisms. Techniques and methods of basic bacteriology are stressed. Lecture 3 hours, Laboratory 9 hours, Total 12 hours per week.

MDLB 257 MYCOLOGY (2 cr.)—A study of pathogenic fungi and environmental contaminants. Isolation and identification of commonly encountered genera are considered with emphasis on morphologic criteria. Laboratory 6 hours per week.

MDLB 258 PARASITOLOGY AND VIROLOGY (2 cr.)—A study of common parasites affecting man. Methods of isolation and identification are stressed. Laboratory 6 hours per week.

MDLB 264-265 CLINICAL CHEMISTRY I-II (5 cr.)(8 cr.)—Prerequisite CHEM 103. Instruction and practice in methods of performing biochemical analysis on biological fluids and clinical specimens. Students are supervised in developing good laboratory techniques and in recognizing technical problems. Lecture 3-4 hours, Laboratory 7-15, Total 7-18 hours per week.

MDLB 290 COORDINATED PRACTICE (1-5 cr.)—Supervised practice in selected health agencies coordinated by the College. Credit/Practice Ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

MDLB 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. Variable hours.

MEDICAL RECORDS

MDRS 100 MEDICAL REPORT TRANSCRIPTION (3 cr.)—Prerequisites HLTH 120 or 124 and ability to type 40 words per minute. The operation and care of dictating and transcribing machines; development of skill in the transcription and preparation of reports for the medical record. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MDRS 111-112 MEDICAL RECORD SCIENCE I-II (3 cr.)(3 cr.)—Provides an understanding of the routine procedures necessary for adequate maintenance and preservation of medical records. Includes methods of analyzing, coding, indexing, and recording of statistical information, preparation of medical abstracts and insurance reports; legal aspects of medical records; administrative duties of the medical record technician; standards of hospital accreditation; and the role of electronic data processing procedures in the storage and retrieval of medical records. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MDRS 190 COORDINATED PRACTICE (1-5 cr.)—Provides a supervised learning experience in a cooperating clinical agency in which the student will develop beginning skills in the various procedures related to the establishment and maintenance of the medical record. Credit/Practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

MDRS 213-214 MEDICAL RECORD SCIENCE III-IV (3 cr.)(4 cr.)—A continuation of MDRS 111-112. Lecture 2-3 hours, Laboratory 3 hours, Total 5-6 hours per week.

MDRS 290 COORDINATED PRACTICE (1-5 cr.)—Provides a supervised learning experience through placement in a medical record department of a cooperating hospital or other health agency. Students will develop skill in all aspects of medical record procedures. Credit/Practice ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

MDRS 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. Variable hours.

MUSIC

MUSC 109 MUSIC FOR CHILDREN (3 cr.)—A study of the selection and use of music for children's activities. Music for singing, rhythm, and movements. Use of the keyboard and autoharp. Emphasis on pre-school through elementary grades. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MUSC 111-112-113 MUSIC THEORY I-II-III (4 cr.)(4 cr.)(4 cr.)—Elements of musical notation. Structure of scales, intervals, triads and chords. Development of ability to sing at sight and write from dictation melodies in all keys, clefs, and meters. Beginning analysis of the Bach chorale style and construction of cadential phrases in that style. Similar experience at the keyboard. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

MUSC 121-122-123 MUSIC APPRECIATION I-II-III (3 cr.) (3 cr.) (3 cr.)—This course aims to increase the variety and depth of the student's interest in music and related cultural activities. Emphasis is upon the relation of music as an art to our daily lives and to society, to promote an understanding of the spirit of the art which will lead to the emotional and aesthetic development of the individual, and enable him to enjoy intelligent listening. Lecture 3 hours per week.

MUSC 124-125 AMERICAN MUSIC I-II (3 cr.) (3 cr.)—The development of music in America from the Pilgrims to the present, in the light of the philosophical, political, geographical, and sociological developments of the country. Lecture 3 hours per week.

MUSC 137 APPLIED MUSIC-Voice (1-2 cr.)—Singing, proper breath control, diction and development of tone. Standard vocal repertoire will be studied. Departmental permission required. One-two half-hour lessons per week. 4-8 hours practice (laboratory) required.

MUSC 138 CHORUS (1cr.)—Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 139 SMALL VOCAL ENSEMBLE (1 cr.)—Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 147 APPLIED MUSIC—KEYBOARD (1-2 cr.)—Instruction in piano or organ. Standard repertoire will be studied. Departmental permission required. One-two half-hour lessons per week. 4-8 hours practice (laboratory) required.

MUSC 148 ORCHESTRA (1 cr.)—Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 149 BAND (1 cr.)—Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 157 APPLIED MUSIC—WOODWINDS (1-2 cr.)—Instruction in fundamentals of the woodwind instruments. Standard repertoire will be studied. Departmental permission required. One-two half-hour lessons per week. 4-8 hours practice (laboratory) required.

MUSC 159 WOODWIND ENSEMBLE (1 cr.)—Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 167 APPLIED MUSIC—STRINGS (1-2 cr.)—Instruction in fundamentals of the string instruments. Standard repertoire will be studied. Departmental permission required. One-two half-hour lessons per week. 4-8 hours practice (laboratory) required.

MUSC 169 STRING ENSEMBLE (1 cr.)—Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 177 APPLIED MUSIC—BRASS (1-2 cr.)—Instruction in fundamentals of the brass instruments. Standard repertoire will be studied. Departmental permission required. One-two half-hour lessons per week. 4-8 hours practice (laboratory) required.

MUSC 179 BRASS ENSEMBLE (1 cr.)—Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 187 APPLIED MUSIC—PERCUSSION (1-2 cr.)—Instruction in fundamentals of percussion instruments. Standard repertoire will be studied. Departmental permission required. One-two half-hour lessons per week. 4-8 hours practice (laboratory) required.

MUSC 189 PERCUSSION ENSEMBLE (1 cr.)—Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

MUSC 198 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite permission of instructor. 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. Variable hours.

MUSC 199 SUPERVISED STUDY (1-5 cr.)—Preparation of concert material for recital, supervised by the instructor. Variable hours.

MUSC 211-212-213 ADVANCED MUSIC THEORY I-II-III (4 cr.) (4 cr.) (4 cr.)—Continuation of MUSC 111-112-113. Development of facility in the analysis and usage of diatonic and chromatic harmonies. Continued study in analysis of Bach style, sight-singing, ear-training, and keyboard harmony. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

MUSC 214-215 COMPOSITION I-II (2 cr.) (2 cr.)—Prerequisite MUSC 111-112-113 or departmental permission. Individually supervised practice in writing short compositions in specified small forms. Lecture 1 hour. Laboratory 3 hours, Total 4 hours per week.

MUSC 220 THE HISTORY OF JAZZ (3 cr.)—A study of the underlying elements of jazz concentrating on its cultural and historical development from its earliest stages to the present. Illustrated by musical examples through recordings and other audio visual devices. No previous knowledge of music is required. Lecture 3 hours per week.

MUSC 221-222-223 HISTORY OF MUSIC I-II-III (3 cr.) (3 cr.) (3 cr.)—Primarily for music majors. A chronological study of musical styles from antiquity to the present time. Relationship of the historical development of music to parallel movements in art, drama, and literature. Development of techniques for listening analytically and critically to music. I. Music to 1600 II. 1600 to 1820. III. 1820 to present. Lecture 3 hours per week.

MUSC 224-225 THE HISTORY OF OPERA I-II (3 cr.) (3 cr.)—Development of operatic style through the study of representative works from 1600 to present. Lecture 3 hours per week.

MUSC 237 ADVANCED APPLIED MUSIC—VOICE (1-2 cr.)—A continuation of MUSC 137.

MUSC 238 CHORUS (1 cr.)—A continuation of MUSC 138.

MUSC 247 ADVANCED APPLIED MUSIC—KEYBOARD (1-2 cr.)—A continuation of MUSC 147.

MUSC 248 ORCHESTRA (1cr.)—A continuation of MUSC 148. (Laboratory 3 hours per week).

MUSC 257 ADVANCED APPLIED MUSIC—WOODWINDS (1-2 cr.)—A continuation of MUSC 157.

MUSC 267 ADVANCED APPLIED MUSIC—STRINGS (1-2 cr.)—A continuation of MUSC 167.

MUSC 277 ADVANCED APPLIED MUSIC—BRASS (1-2 cr.)—A continuation of MUSC 177.

MUSC 296 RECREATION MUSIC (1 cr.)—The role and integration of musical activities in recreation and park programs; singing, instruments, rhythm and dance. Introduction to leadership skills, utilization and resource materials. Laboratory 3 hours per week.

NATURAL SCIENCE

NASC 100 SURVEY OF SCIENCE (4 cr.)—A general survey course designed to familiarize the student with the basic principles of biological and physical sciences. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

NASC 111-112-113 HEALTH SCIENCE I-II-III (4 cr.) (4 cr.) (4 cr.)—Human anatomy and physiology, microbiology, pathology and bacteriology; study of organ tissues, body systems and functions, chemistry as it relates to physiology, principles of physics as applied to health science. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

NASC 121-122-123 NATURAL SCIENCES I-II-III (4 cr.) (4 cr.) (4 cr.)—This is a multidisciplinary course primarily for non-science majors. The course integrates the main fields of science, and emphasizes the motivations of the scientific disciplines and how these interact. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

NASC 126 SCIENCE IN INDUSTRY (3 cr.)—This course is designed to provide a background in the physical sciences for the draftsman and other industrial workers. A study of the laws and principles of physics, chemistry and other fields of science with consideration to their relationship to industrial processes, products and methods will be undertaken. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

NURSING

NURS 111 FUNDAMENTALS OF NURSING I (5 cr.)—The development of nursing skills for the physical, psychological, and social needs of patients. Selected clinical laboratory experience in cooperating health and welfare agencies. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

NURS 112 FUNDAMENTALS OF NURSING II (6 cr.)—Continuation of NURS 111. Lecture 3 hours, Laboratory 9 hours, Total 12 hours per week.

NURS 113 FUNDAMENTALS OF NURSING III (8 cr.)—Continuation of NURS 112. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

NURS 221-222-223-224 NURSING IN MAJOR HEALTH PROBLEMS I-II-III-IV (8 cr.) (8 cr.) (8 cr.) (8 cr.)—Prerequisites NURS 111-112-113, NASC 111-112-113. Representative problems in the nursing care of patients of all age groups with illness requiring medical, surgical, and psychiatric care. Related clinical experiences to further develop the knowledge and skills required to provide nursing care for each patient's needs. The scope, prevention, diagnosis, treatment, and control of major areas of illness in the United States. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

NURS 298 SEMINAR (1-5 cr.)—The role of the graduate registered nurse. Emphasis on career opportunities, professional organizations, legal and ethical implications, and methods of planning and assigning patient care. Variable hours.

PHILOSOPHY AND RELIGION

PHIL 101-102-103 INTRODUCTION TO PHILOSOPHY I-II-III (3 cr.) (3 cr.) (3 cr.)—An introductory study of some philosophical issues concerning the perception and belief of man in society. Lecture 3 hours per week.

PHIL 110 LOGIC (3 cr.)—The study of logic as the scientific investigation of valid reasoning. Lecture 3 hours per week.

PHIL 201-202-203 HISTORY OF WESTERN PHILOSOPHY I-II-III (3 cr.) (3 cr.) (3 cr.)—A historical survey of representative philosophers from the Pre-Socratics to the present. Introduces the student to the development of philosophical thought through selected readings of original works and appropriate critical materials. Lecture 3 hours per week.

PHIL 216 AESTHETICS (3 cr.)—An examination of a variety of attempts to define beauty and the norms of taste and criticism. Attention is given to problems specific to particular art forms as well as to the more general theories about the nature of art. Lecture 3 hours per week.

PHIL 221 LITERATURE OF THE BIBLE I (3 cr.)—A study of the literature of the Old Testament. Lecture 3 hours per week.

PHIL 222 LITERATURE OF THE BIBLE II (3 cr.)—A study of the literature of the New Testament. Lecture 3 hours per week.

PHIL 231 COMPARATIVE RELIGION I (3 cr.)—A survey of the religions of India and East Asia—Hinduism, Buddhism, Confucianism, Taoism & Shinto. Lecture 3 hours per week.

PHIL 232 COMPARATIVE RELIGION II (3 cr.)—A survey of the four great monotheistic religions—Zoroastrianism, Judaism, Islam and Christianity. Lecture 3 hours per week.

PHIL 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 hours.

PHYSICAL EDUCATION

PHED 100 FUNDAMENTALS OF PHYSICAL ACTIVITY (1 cr.)—The role of physical activity in daily living; methods of personal evaluation of physical fitness and performance, meaningful interpretations of such evaluations, and the design of activity programs and patterns. Lecture 1 hour. Laboratory 1 hour, Total 2 hours per week.

PHED 106 PHYSICAL PERFORMANCE AND CONDITIONING (1 cr.)—Principles underlying the development of performance and conditioning factors such as strength, balance, power, agility, cardiovascular function, coordination. Lecture 1 hour, Laboratory 1 hour, Total 2 hours per week.

PHED 108 PHYSICAL ACTIVITIES FOR CHILDREN (3 cr.)—Methods and materials for teaching simple rhythm, recreational games, singing games and other movement experiences. Emphasis on the pre-school through elementary ages. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week. This course cannot be taken to satisfy the physical education requirement for graduation.

PHED 109 PHYSICAL ACTIVITIES FOR PRE-ADOLESCENTS & ADOLESCENTS (3 cr.)—An understanding of the physical development & physical capabilities of pre-adolescents & adolescents. The methods & materials for teaching are group games, individual & team sports skills, & other movement experiences. Emphasis on the role of the aide in supervising activities, on the social adjustments, safety precautions, and relationship of physical development to total development of both age groups. Lect. 2 hrs., Lab 2 hrs., Total 4 hours a wk. This course cannot be taken to satisfy the physical education requirement for graduation.

PHED 110 ANGLING AND CASTING (1 cr.)—The fundamentals of sport fishing, spinning, spin casting, bait casting and fly casting with the related knowledge of conservation and safety. Laboratory 2 hours per week.

PHED 111 ARCHERY (1 cr.)—The fundamentals of target archery and/or field archery; equipment, safety, and conservation. Laboratory 2 hours per week.

PHED 112 CAMPING (1 cr.)—The fundamentals of self-maintenance and survival out-of-doors; food selection, and maintenance; packing, preparation, preservation, and storage; shelter selection, construction, and maintenance; nature, conservation, camping facilities and equipment; application to varying age group; personal and group safety. Laboratory 2 hours per week.

PHED 113 BOATING (1 cr.)—Prerequisite appropriate skill in swimming. The fundamentals used in propelling and handling canoes, row boats, and other small craft; descriptive and functional terminology, construction and care of equipment, conservation, and safety. Laboratory 2 hours per week.

PHED 115 ICE SKATING (1 cr.)—The fundamentals of ice skating; figures, equipment, types of skating, and safety. Laboratory 2 hours per week.

PHED 117 SHOOTING AND FIREARM SAFETY (1 cr.)—Shooting and firearm safety; arms, selection and care of equipment, forms of the sport of shooting; personal safety and survival in situations associated with hunting and sport shooting. Lab. 2 hours per week.

PHED 130 BADMINTON (1 cr.)—Badminton; equipment, strategy for play, and rules. Lab 2 hours per week.

PHED 131 BOWLING (1 cr.)—A course designed to present the fundamentals of bowling; equipment, rules, and personal conduct. Laboratory 2 hours per week.

PHED 132 FAMILY RECREATIONAL ACTIVITIES (1 cr.)—The performance techniques, individual and team strategies and contests which are appropriate for all ages; horse-shoes, table tennis, aerial tennis, croquet, paddle tennis, shuffle board. Adaptation of activities for varying age groups, selection and care of equipment, rules of performance and conduct, and safety. Laboratory 2 hours per week.

PHED 133 GOLF (1 cr.)—The fundamentals of golf; equipment, rules, strategy for play, and personal conduct. Laboratory 2 hours per week.

PHED 134 HANDBALL (1 cr.)—The fundamentals of handball, types of games, rules, equipment, and strategy for team and individual play. Laboratory 2 hours per week.

PHED 135 TENNIS (1 cr.)—The fundamentals of tennis; rules, strategy for team and individual play, and personal dress and conduct. Laboratory 2 hours per week.

PHED 137 FENCING (1 cr.)—Study and practice in fundamentals of foil fencing. Laboratory 2 hours per week.

PHED 150 DIVING (1 cr.)—Prerequisite appropriate skill in swimming. The fundamentals of diving; performance and personal safety. Laboratory 2 hours per week.

PHED 151 SENIOR LIFE SAVING (1 cr.)—Prerequisite appropriate skill in swimming. The fundamentals of rescue and survival in the water; first aid and safety. Preparation for the examination for the Red Cross Senior Life Saving Certificate. Laboratory 2 hours per week.

PHED 152 SKIN AND SCUBA DIVING (1 cr.)—The fundamentals of swimming; personal performance and safety. Laboratory 2 hours per week.

PHED 153 SWIMMING (1 cr.)—The fundamentals of swimming; personal performance and safety. Laboratory 2 hours per week.

PHED 160 CONTEMPORARY DANCE (1 cr.)—The fundamentals and techniques employed in dance as a creative art form; choreography and performance. Laboratory 2 hours per week.

PHED 161 FOLK DANCE (1 cr.)—The fundamental step patterns, rhythmic patterns positions, and formations of the traditional and ethnic group and individual dances emphasizing those of foreign origin; dance forms, their cultural environment, social performance, and significance. Laboratory 2 hours per week.

PHED 163 SOCIAL DANCE (1 cr.)—The fundamental step patterns, rhythmic patterns and positions of the social or ballroom dance forms; dance as a significant form of social behavior. Laboratory 2 hours per week.

PHED 164 SQUARE DANCE (1 cr.)—The fundamental step and movement patterns, rhythmic patterns, and formations of the American square dance; historical significance and development. Laboratory 2 hours per week.

PHED 170 BASKETBALL (1 cr.)—Basketball; proper skills, techniques, teamwork and strategy in play, equipment, rules and safety. Laboratory 2 hours per week.

PHED 174 VOLLEYBALL (1 cr.)—Volley; proper skills, techniques, team play, and strategy in play; rules, equipment and safety. Laboratory 2 hours per week.

PHED 200 AN INTRODUCTION TO HEALTH, PHYSICAL EDUCATION AND RECREATION (2 cr.)—An introduction to the terms, aims, objectives, teacher preparation programs, career opportunities, professional organizations, and problems in the fields of health, physical education, and recreation. Primarily for prospective majors in the field. Lecture 2 hours per week. This course cannot be taken to satisfy the physical education requirement for graduation.

PHED 201 BODY DYNAMICS (2 cr.)—An understanding and performance of skilled movements in various activities. Essential factors effecting the human body in skilled movement and performance. Lecture 2 hours per week. This course cannot be taken to satisfy the physical education requirement for graduation.

PHYSICAL THERAPY

PSTH 101 FUNDAMENTALS OF PHYSICAL THERAPY I (5 cr.)—An introduction to the principles of physical therapy, rehabilitative procedures, and basic patient care skills. Includes the development of basic skills involving application of common treatment modalities, body mechanics, transfer techniques. Includes selected clinical laboratory experience in cooperating health agencies. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

PSTH 102 FUNDAMENTALS OF PHYSICAL THERAPY II (5 cr.)—A continuation of Fundamentals of Physical Therapy I. Lecture 1 hour, Laboratory 12 hours, Total 13 hours per week.

PSTH 103 FUNDAMENTALS OF PHYSICAL THERAPY III (8 cr.)—A continuation of Fundamentals of Physical Therapy II. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

PSTH 201-202-203 ADVANCED PHYSICAL THERAPY ASSISTING PROCEDURES I-II-III (8 cr.)—Designed to enable the student to participate in the care of the more complex

medical-surgical disability groups; assist with appropriate rehabilitative care and testing procedures; and continue the development of skills in utilizing the special treatment modalities, applied kinesiology and therapeutic exercises. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

PSTH 298 SEMINAR AND PROJECT (1-5 cr.)—Discusses the role and functions of the physical therapist assistant as a practitioner. Includes trends in physical therapy, professional organizations, career opportunities, legal and ethical implications. Variable hours.

PHYSICS

PHYS 06 PHYSICS (1-5 cr.)—A developmental course in general physics designed to develop a basic understanding of physics. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

PHYS 101-102-103 INTRODUCTORY PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.)—A survey of general physics, treating briefly the fundamentals of mechanics, properties of matter, heat, magnetism, electricity, sound, light, and radiation. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 198 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. Variable hours.

PHYS 199 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 hours.

PHYS 221-222-223-224 GENERAL UNIVERSITY PHYSICS I-II-III-IV (4 cr.) (4 cr.) (4 cr.) (4 cr.)—Prerequisite MATH 143 or corequisite MATH 241 or equivalent. General University Physics designed for students in engineering, physics or mathematics. Includes mechanics, relativity, electro-magnetism, ray and wave optics, statistical and quantum mechanics, solid state and nuclear physics. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 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. Variable hours.

PHYS 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 hours.

PSYCHOLOGY

PSYC 28 SURVEY OF HUMAN RELATIONS (3 cr.)—A survey of the basic principles of psychology as applied to everyday problems of American living. Designed to familiarize the student entering an occupation with the attitudes and habits of successful citizens. Lecture 3 hours per week.

PSYC 110 PRINCIPLES OF APPLIED PSYCHOLOGY (3 cr.)—The general principles of perception, learning, and conscious and unconscious motivation which are operative in all practical applications of psychology to life and work. Lecture 3 hours per week.

PSYC 116 THE PSYCHOLOGY OF PERSONAL ADJUSTMENT (3 cr.)—Prerequisite PSYC 110. Characteristics of mental health. Psychological principles applied to the develop-

ment of a mature personality and to the problems of everyday life. Effective methods in study and work. Lecture 3 hours per week.

PSYC 120 EXPERIENCES IN PERSONAL GROWTH (3 cr.)—An interdisciplinary approach designed to enable an individual to understand himself better in relation to his immediate environment, community and society. Simulation, role playing, and other experiential techniques will be used to accomplish this objective. Some of the experiences will take place off campus. Approval of division is required for admission. Lecture 3 hours per week.

PSYC 128 HUMAN RELATIONS (3 cr.)—The study of human personality and its reaction upon other personalities. The application of psychology to problems in industry and private life. Some introduction to such matters as selection, training and placement of employees. Lecture 3 hours per week.

PSYC 130 CHILD GROWTH AND DEVELOPMENT (3 cr.)—Prerequisite PSYC 110 or division permission. The development of the child from one stage of growth to the next, concentrating on the physical, intellectual, social and emotional factors in his personality. Recent studies in child development will be presented. The course is designed to provide a background for those students who intend to become nurses, teachers, or enter other occupations involving continuous work with children. Lecture 3 hours per week.

PSYC 198 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite division permission. Completion of a project of 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. Variable hours.

PSYC 199 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 hours.

PSYC 201-202-203 GENERAL PSYCHOLOGY I-II-III (3 cr.) (3 cr.) (3 cr.)—The principles of behavior with a relating of experimental data to practical problems: the measurement of ability, sensory and perceptive processes, organic basis of behavior, hereditary, maturation, learning and thinking, motivation, emotion, personality and social factors in behavior. Lecture 3 hours per week.

PSYC 204-205 GENERAL PSYCHOLOGY I-II (5 cr.) (4 cr.)—The principles of behavior relating experimental data to practical problems: the measurement of ability, sensory and perceptive processes, organic behavior, heredity, maturation, learning and thinking, motivation, emotion, personality and social factors in behavior. Lecture 4-5 hours per week.

PSYC 210 SOCIAL PSYCHOLOGY (3 cr.)—A study of the individual in social contexts, his social role and socialization process. Personal and social factors in perceptive attitudes toward individuals and groups; group structures and intergroup relations. Lecture 3 hours per week.

PSYC 230 HUMAN GROWTH AND DEVELOPMENT (5 cr.)—Prerequisite PSYC 110 or equivalent. The principles and processes of human development, with emphasis upon the role of experience. Major aspects of the personality (motive, emotion, intellect, etc.) are traced through experimental stages, and their characteristic interaction in organized behavior examined. Lecture 5 hours per week.

PSYC 231-232-233 HUMAN GROWTH AND DEVELOPMENT I-II-III (3 cr.) (3 cr.) (3 cr.)—The study and interpretation of human behavior through the life cycle. Concepts and principles describing the dynamics of human development and behavior and their rela-

tion to the work and purpose of the school. The scientific method, heredity, psychological development, perception, motivation, learning, emotions, cognitive processes, personality, frustration, intelligence, and mental processes. Lecture 3 hours per week.

PSYC 246 EDUCATIONAL PSYCHOLOGY (5 cr.)—Prerequisite PSYC 202 or 130 or equivalent. Human behavior and learning treated in the context of educational processes. The nature of various mental characteristics (intelligence, interest, knowledge, etc.) is examined, with special consideration given to their measurement and appraisal and their significance for educational goals. Lecture 5 hours per week.

PSYC 298 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite division permission. 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. Variable hours.

PSYC 299 SUPERVISED STUDY (1-5 cr.)—Prerequisite division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

PUBLIC SERVICE

PBSV 100 INTRODUCTION TO HIGHWAY TRANSPORTATION (4 cr.)—Nature and scope of the Highway Transportation System. Survey of the major functional areas of the highway transportation systems with emphasis on their interaction. Lecture 4 hours, Total 4 hours per week.

PBSV 104 HIGHWAY TRAFFIC ADMINISTRATION I (4 cr.)—Examination of United States transportation systems, emphasizing efficient, safe and rapid operation. Activities and agencies concerned with increasing efficiency. System's development components, social, economic and political impacts. Survey of present and future needs. Lecture 4 hours, Total 4 hours per week.

PBSV 105 HIGHWAY TRAFFIC ADMINISTRATION II (4 cr.)—Police and court traffic administration. Administration and maintenance of motor vehicle and driver records. Traffic direction and control, traffic accident investigation, and traffic law enforcement. Communication aspects of highway traffic administration. Highway traffic education programs and public information. Motor vehicle fleet safety programs. Utilizing traffic safety research. Lecture 4 hours, Total 4 hours per week.

PBSV 108 SAFETY PRINCIPLES IN MOTOR VEHICLE TRANSPORTATION (3 cr.)—An investigation of the principles and practices which have a bearing on highway traffic safety and its attendant problems. Topics include: the role of driver education, effect of traffic density, traffic operations and control, influencing driver behavior, economics of highway safety, convenient highway transportation. Lecture 3 hours, Total 3 hours per week.

PBSV 150 INTRODUCTION TO COMMUNITY AND SOCIAL SERVICE (3 cr.)—Consideration of the basic principles, scope, and functions, as well as the practices and current trends in community and social service work. A broad view of the field is presented to provide students with an appreciation of community and social service work as a career. Lecture 3 hours per week.

PBSV 256 INTERVIEWING SKILLS (3 cr.)—A study and analysis of the technique of interviewing. Includes the significance of representing a government or private agency, human relations, confidentiality, beginning the interview, interchange of information, handling complaints and criticism, ending the interview. Lecture 3 hours per week.

RECREATION AND PARKS

RCPK 100 INTRODUCTION TO THE RECREATION AND PARKS FIELD (3 cr.)—Development of the recreation and parks movement. Theory of leisure and environmental awareness. The economic importance, type of areas and facilities. Career opportunities in public, private, and industrial agencies and institutions. Lecture 3 hours per week.

RCPK 101 RECREATION AND PARKS MANAGEMENT I (3 cr.)—Introduction to personnel management, supervision, planning and organization for the recreation and parks field. Community relations. Lecture 3 hours per week.

RCPK 102 RECREATION AND PARKS MANAGEMENT III (3 cr.)—Introduction to elements of fiscal planning and development, budget preparation, documentation and presentation of projects. Lecture 3 hours per week.

RCPK 103 RECREATION AND PARKS MANAGEMENT III (3 cr.)—Problems and practices in maintenance of buildings, areas and equipment. Tree pruning, safety and emergency procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

RCPK 116 SOCIAL RECREATION LEADERSHIP (3 cr.)—The programs for recreation in the schools, home, church, youth groups, and other community organizations and institutions. Practical work in social and recreational activity leadership. Designed for those who may wish to engage or specialize in recreational leadership. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

RCPK 126 NATURAL RESOURCES AND THE URBAN ENVIRONMENT (2 cr.)—Introduction to the wise use of natural resources in the urban situation. History and philosophy of conservation methods and techniques. Utilization of park facilities and interpretative programs. Interpretative techniques, the web of life. Lecture 2 hours per week.

RCPK 136 PROGRAM PLANNING ORGANIZATION AND GROUP LEADERSHIP (2 cr.)—Elements and principles or organizing, conducting, and evaluating various types of effective recreation programs for a variety of groups; playgrounds, recreation centers, parks, camps, and senior citizen groups. Lecture 2 hours per week.

RCPK 137 ORGANIZATION AND MANAGEMENT OF RECREATIONAL SPORTS ACTIVITIES (3 cr.)—Officiating and instructional activities; aspects of recreational sports; game rules and administering of tournaments. Lecture 3 hours per week.

RCPK 138 FUNDAMENTALS OF CAMP MANAGEMENT AND OPERATION (3 cr.)—Principles of modern camping; sites, equipment, programming. Managerial responsibility and operation, maintenance, supervision and planning of private and public camp grounds, and day camps. Organization and supervision of recreation group camping and private camps for various ages or family groups. Includes field trips. Lecture 3 hours per week.

RCPK 146 COMMUNITY AND FAMILY RECREATION (3 cr.)—Survey of problems, functions and methods of recreation services for the community. Interpretation and importance of community recreation. Family recreational activities. Programs and leadership; recreation services, standards, quality, coordination, and community organizations. Lecture 3 hours per week.

RCPK 190 COORDINATED INTERNSHIP (1-5 cr.)—Supervised on-the-job training in selected recreation or park organizations coordinated and approved by the College. Credit/work ratio 1:5 hours. May be repeated for credit. Variable hours.

RCPK 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Coopera-

tive Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

RCPK 216 INTERPRETATION IN URBAN ENVIRONMENT (4 cr.)—Practical applications of interpretative techniques and methods for the urban citizen. Problems in resources management: public relations activities and political pressures. Field studies—the future of man. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RCPK 290 COORDINATED INTERNSHIP (1-5 cr.)—Supervised training in selected recreation and park organizations coordinated by the College. Credit/Work ratio 1:5 hours. May be repeated for credit. Variable hours.

RCPK 297, COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

RCPK 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. Variable hours.

RECREATION VEHICLE

REVH 120 INTRODUCTION TO MOTORCYCLE MECHANICS (3 cr.)—The motorcycle, its systems, operating principles, problems and repair techniques. Introduction to tools, equipment, shop layout, general maintenance and diagnosis. Special emphasis is placed on shop safety and safe use of basic equipment. There is no pre-requisite for this course. Lecture 2 Hours, Laboratory 6 Hours, Total 8 Hours per week.

REVH 176 MOTORCYCLE TWO-STROKE ENGINES (3 cr.)—Analysis of piston, cylinder, rods, crankshafts, bearings, cases, lubrication systems and cooling systems. Special emphasis will be placed on diagnosis and rebuilding techniques. Lecture 2 Hours, Laboratory 3 Hours, Total 5 Hours per week.

REVH 177 MOTORCYCLE FOUR-STROKE ENGINES (4 cr.)—Analysis of piston and cylinder conditions, intake and exhaust valve mechanisms, bearings, crankshafts, rods, lubrication systems, and cooling systems. Special emphasis will be placed on diagnosis and rebuilding techniques. Lecture 2 Hours, Laboratory 3 Hours, Total 5 Hours per week.

REVH 116 MOTORCYCLE MACHINE LABORATORY (3 cr.)—The theory, practice and use of machinery equipment used in reconditioning and repairing motorcycles. Special emphasis will be placed on machinist, measuring instruments, valve refinishing, cylinder and piston re-finishing, use of dial indicator, resurfacing and welding.

REVH 126 MOTORCYCLE FUEL SYSTEMS (4 cr.)—Analysis of motorcycle fuel systems to include tanks, valves, filters and carburetors (slide type, diaphragm, and conventional type) and fuel injection. Special emphasis will be placed on diagnosis and adjustment, especially jetting and needle positioning. Lecture 2 Hours, Laboratory 3 Hours, Total 5 Hours per week.

REVH 127 MOTORCYCLE ELECTRICAL SYSTEMS (3 cr.)—Electricity and magnetism symbols and circuitry as applies to the motorcycle electrical system. Includes storage batteries, generators, alternators, regulating systems, starters, lighting systems. Lecture 2 Hours, Laboratory 3 Hours, Total 5 Hours per week.

REVH 156 MOTORCYCLE DRIVE TRAINS (3 cr.)—The operation, design, construction and repair of power train components including primary drive systems (both gear and

chain), clutches (wet, dry automatic and centrifugal), transmissions. Final drive systems (sprocket, chains, rings and pinion type). Lecture 2 Hours, Laboratory 3 Hours, Total 5 Hours per week.

REVEH 198 MOTORCYCLE SEMINAR AND PROJECT (2 cr.)—Completion of a project or research project related to the student's occupational objective and a study of the approaches to the selection and pursuit of career opportunities.

RESPIRATORY THERAPY

RPTH 104 FUNDAMENTAL ARTS OF RESPIRATORY THERAPY I (4 cr.)—Focus upon historical aspects leading to present status of modern day cardiorespiratory therapy; nursing areas relative to psychosocial, physical and special unit patient care and its interrelationship to therapy. General hospital safety. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RPTH 105 FUNDAMENTAL ARTS OF RESPIRATORY THERAPY II (3 cr.)—Prerequisite RPTH 104. Focus on administration, economics, planning and development of technical department management; ethics, professional behavior and responsibility, and legal considerations relative to therapy. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

RPTH 111 CARDIOPULMONARY SCIENCE I (4 cr.)—Prerequisite RPTH 105. Pharmacological basis of drugs used in cardiovascular and respiratory therapy. Focus on theory, origin, and source of drugs, prescriptions, mathematics of dosages and solutions, action influencing conditions, preparation, administration. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RPTH 112 CARDIOPULMONARY SCIENCE II (4 cr.)—Prerequisite RPTH 111. Focus on anatomy and physiology as it relates to cardiovascular and respiratory systems; basic normal and abnormal function and patterns of thorax and contents, basic embryology—comparing neonatal states to adult. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RPTH 113 CARDIOPULMONARY SCIENCE III (4 cr.)—Prerequisite RPTH 112. Pathophysiology of Medical and Surgical diseases. Emphasis on therapy's relation to basic pathological processes of disease problems from standpoint of ethiological, symptomatic, diagnostic, therapeutic, and prognostic point of view. Lecture 4 hours per week.

RPTH 190 COORDINATED PRACTICE (1-5 cr.)—Supervised practice in selected health agencies coordinated by the College. Credit/Practice Ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

RPTH 221 RESPIRATORY THERAPY THEORY AND PROCEDURES I (9 cr.)—Prerequisite RPTH 105. Focus on cardiopulmonary resuscitation and airway management plus management of emergencies involving cardiorespiratory problems in both adults and infants. Focus on gas, aerosol, and humidification therapies emphasizing the techniques, skills and understanding necessary to properly and effectively administer these therapy methods; and on cleaning, maintenance, storage and safety aspects of equipment involved. Lecture 6 hours, Laboratory 9 hours, Total 15 hours per week.

RPTH 222 RESPIRATORY THERAPY THEORY AND PROCEDURES II (5 cr.)—Prerequisite RPTH 221. Focus on artificial ventilation therapy—controlled and/or assisted or intermittent. All basic types of ventilator/respirators emphasizing all techniques, skills and understanding necessary to properly and effectively administer these methods. Focus on cleaning, maintenance, storage and safety aspects of equipment involved. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

RPTH 223 RESPIRATORY THERAPY THEORY AND PROCEDURES III (5 cr.)—Prerequisite RPTH 222. Focus on advanced techniques of ventilatory management, including respiratory monitoring, patient care plans, integration of team care. Emphasis on acute, intensive care patient cardiorespiratory problems. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

RPTH 224 RESPIRATORY THERAPY THEORY AND PROCEDURES IV (7 cr.)—Prerequisite RPTH 223. Focus on pulmonary function testing and diagnostics, blood gas analysis and gas analysis emphasizing relation to physiological states and interpolation to patient care objectives. Includes pulmonary physiotherapy with emphasis upon developing techniques, skills and understanding of breathing exercises, postural drainage, controlled cough and general rehabilitation of pulmonary problems by means of chest physical therapy. Lecture 4 hours, Laboratory 9 hours, Total 13 hours per week.

RPTH 290 COORDINATED PRACTICE (1-5 cr.)—Supervised practice in selected health agencies coordinated by the College. Credit/Practice Ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

RPTH 298 SEMINAR (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. Variable hours.

SCIENCE TECHNOLOGY

SCTE 101-102-103 SCIENCE TECHNOLOGY TECHNIQUES I-II-III (3 cr.) (3 cr.) (3 cr.)—A modularized course in the study of techniques widely used in the scientific, technical occupations within the area. Modules will include: (1) recordkeeping, use of pH meter, colorimeter, solution preparation, care and cleaning of glassware, use of simple and analytical balances; (2) computations of laboratory data, microscopic techniques, titration, pipetting, concepts of biochemistry; (3) bacterial culturing, media making, metric measurements, use of Spectronic 20, serial dilutions, slide and specimen preparation. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SCTE 110 CAREERS IN SCIENCE TECHNOLOGY (1 cr.)—Survey of career literature in science technology. Field trips to employers of science technology personnel to observe the responsibilities and opportunities of these occupations. Seminars to discuss and evaluate these experiences. Laboratory 3 hours per week.

SCTE 124-125 APPLIED SCIENCE TECHNIQUES I-II (3 cr.) (3 cr.)—Operating laboratory equipment, field settings, and experiences in an on-the-job setting. Modules, some prepared by personnel in the cooperating laboratories, will include air pollution measurements, water sampling, and animal care. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SCTE 204-205 SCIENCE TECHNOLOGY TECHNIQUES IV-V (3 cr.) (3 cr.)—Continuation of SCTE 103. Prerequisites: SCTE 103, 125. A modularized course in the study of advanced and specialized techniques widely used in the scientific, technical occupations within the area. Modules will include use of ion exchange apparatus, microtone, radiation techniques, tailored to particular student interests and employment prospects. Emphasis upon understanding concepts underlying techniques and upon ingenuity in modifying techniques for special purposes. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SCTE 221-222-223 SCIENCE TECHNOLOGY APPLICATIONS I-II-III (3 cr.) (3 cr.) (3 cr.)—Prerequisites: SCTE 103, 125. Technical applications in an on-the-job setting. Emphasis upon specialized equipment, learning in an actual laboratory setting, diversity

in technique types, the development of capacity for independent work. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SCTE 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 of career opportunities in the field. Variable hours.

SECRETARIAL SCIENCE

SECR 111 TYPEWRITING I (3 cr.)—Introduction to keyboard with emphasis on good technique and machine mastery; letter format and styles, tabulation and centering, manuscript typing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 112 TYPEWRITING II (3 cr.)—Prerequisite SECR 111 or departmental permission. Continuation of skill building with emphasis on standards required to meet job requirements in production typing. Lecture 2 hours. Laboratory 3 hours. Total 5 hours per week.

SECR 113 TYPEWRITING III (3 cr.)—Prerequisite SECR 112 or departmental permission. Skill development with high standards required to meet job requirements in production typing. Lecture 2 hours, Laboratory 3 hours. Total 5 hours per week.

SECR 121 SHORTHAND I (4 cr.)—Corequisite or prerequisite ENGL 101. Presentation of shorthand principles in Gregg Diamond Jubilee Series with emphasis on basic reading and writing skills, associated vocabulary and grammar. Lecture 3 hours. Laboratory 2 hours. Total 5 hours per week.

SECR 122 SHORTHAND II (4 cr.)—Prerequisite SECR 121 or departmental permission. Reinforcement of shorthand principles, further development of general business vocabularies and English usage. General business dictation. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SECR 123 SHORTHAND III (4 cr.)—Prerequisite SECR 122 or departmental permission. Increased speed in general business dictation. Introduction of specialized business dictation with emphasis on vocabularies. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SECR 131, 132, 133 SHORTHAND MACHINE Skills I, II, III (4 cr.)—Construction and operation of the machine, basic and advanced writing skills, rapidity in writing skills, development of vocabulary in general and technical language, general and technical letters and technical papers, additional dictation practice.

SECR 136 FILING AND RECORDS MANAGEMENT (3 cr.)—Indexing principles, filing procedures and techniques as applied to filing systems, establishment of filing system, selection of equipment and supplies. Survey of system using electronics and microfilm, solution of records management problems. Lecture 3 hours per week.

SECR 138 OFFICE RECORDKEEPING (3 cr.)—General office routine such as work flow, time scheduling, filing, and communications. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 156 PERSONAL DEVELOPMENT (3 cr.)—A course designed to develop, enlarge and improve the personality, over-all appearance, ease in handling business and social situations with resulting self-confidence in job interviews, placement and continued employment. Lecture 3 hours per week.

SECR 197 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupation-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

SECR 216 EXECUTIVE TYPEWRITING (3 cr.)—Prerequisite SECR 113 or departmental permission. Further development of speed and accuracy on production typing with emphasis on employment standards. Instruction in use of the executive style typewriters, reports, tabulations, statistical materials and justified copy. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 217 TYPEWRITING SKILL BUILDING (3 cr.)—Prerequisite SECR 113 or departmental permission. Further development of speed and accuracy on production and in-basket typing with emphasis on employment standards. Preparation for employers' secretarial placement examinations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 219 MAGNETIC TAPE SELECTRIC TYPEWRITER (3 cr.)—Prerequisite departmental permission. Operation of automatic typewriter, procedures for recording and playing back from tapes, revision and updating of tapes, merging information from two tapes. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 221 TRANSCRIPTION I (3 cr.)—Prerequisites SECR 113 and SECR 123 or program permission. Review of principles of shorthand, development of vocabulary and phrases, speed building on general business dictation and transcription. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 222 TRANSCRIPTION II (3 cr.)—Prerequisite SECR 221 or departmental permission. Continuation of speed building with emphasis on particular areas of general business, developing special vocabularies, phrases, and shortcuts. Emphasis on spelling, grammar, and other transcription skills. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 223 TRANSCRIPTION III (3 cr.)—Prerequisite SECR 222 or departmental permission. Speed building in typical business dictation with speed and accuracy in transcription from shorthand notes. Preparation for employers' secretarial placement examinations. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 224-225 (LEGAL) TRANSCRIPTION I-II (3 cr.) (3 cr.)—Prerequisite SECR 221 or departmental permission. Legal secretary preparation. Skill in taking dictation and transcribing material involving legal shorthand forms and phrases. Proficiency in use of legal vocabulary, forms, and procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 241 SECRETARIAL PROCEDURES I (3 cr.)—Prerequisite SECR 113 and SECR 123 or program permission. Development of skills in operation of stencil and spirit duplicating machines. Preparation of copy for reproduction of offset, stencil, and spirit process. Criteria for selecting a duplicating process. Study of type styles, paper, typewriter ribbons, and carbon paper. Lecture 2 hours; Laboratory 2 hours, Total 4 hours per week.

SECR 242 SECRETARIAL PROCEDURES II (3 cr.)—Prerequisite SECR 241 or program permission. Emphasis on the secretary's routine office responsibilities, including mail handling, communications services, telephone techniques, and the use of reference materials. Emphasis is placed on application of skills gained in typewriting and shorthand. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 243 SECRETARIAL PROCEDURES III (3 cr.)—Prerequisite SECR 242 or program permission. Continued emphasis on the secretary's office responsibilities, including handling of banking transactions, maintaining records on securities transactions, travel arrangements, planning of office layouts, and personnel policies. Practical experience in solving office problems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 256 ADVANCED MACHINE TRANSCRIPTION (3 cr.)—Prerequisite SECR 216 or departmental permission. Introduction to modern transcription incorporating good listening techniques, grammar, punctuation, and correct business English. Emphasis on mailability of copy with good production rates. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 264-265 LEGAL SECRETARIAL PROCEDURES I-II (3 cr.) (3 cr.)—Prerequisite SECR 241 and SECR 221 or program permission. Prerequisite or Corequisite BUAD 241. Instruction in law office procedures, law office filing and record keeping, extension of legal vocabulary, court rules, reference materials, preparation of forms and pleadings. Lecture 2 hours, Laboratory 2 hours, Total 4 hour per week.

SECR 297 COOPERATIVE EDUCATION (1-5 cr.)—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupation-technical curricula at the discretion of the College. Credit/Work Ratio 1:5 hours. May be repeated for credit.

SECR 298 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite SECR 222 and SECR 242 or program permission. Completion of a project or research report related to the study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

SECR 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 hours.

SOCIAL SCIENCE

SOSC 101-102-103 CONTEMPORARY AMERICAN CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.)—An analysis of the factors involved in the development of the American Society and American Culture to develop an understanding of American history, American government, American economics, and man's role in society. Lecture 3 hours per week.

SOSC 121-122-123 CURRENT AMERICAN SOCIAL PROBLEMS I-II-III (3 cr.) (3 cr.) (3 cr.)—A survey of contemporary America from the perspective of the Social Sciences designed to provide a basis for the forming of individual judgments on major American domestic issues. The Constitution of the United States provides a primary vehicle for exploration of problems underlying current political, economic, social and individual behavioral patterns and for discussions of relevant applications in the news of today. Lectures 3 hours per week.

SOSC 180 PROBLEMS OF MAN IN THE MODERN WORLD (3 cr.)—Prerequisite Division permission. Survey of contemporary social, political, and economic problems related to industrialization, urbanization, the role of government, national and international tensions. Lecture 3 hours per week.

SOSC 198 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite Division permission. A 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. Variable hours.

SOSC 199 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 hours.

SOCIOLOGY

SOCI 101-102-103 INTRODUCTORY SOCIOLOGY I-II-III (3 cr.) (3 cr.) (3 cr.)—SOCI 101 is prerequisite for either SOCI 102 or SOCI 103. The fundamental concepts and the general principles of sociology; social institutions, population study, human ecology and community study, culture, human nature and personality, social interaction and stratification, and social problems. Lecture 3 hours per week.

SOCI 104-105 INTRODUCTORY SOCIOLOGY I-II (5 cr.) (4 cr.)—The fundamental concepts and the general principles of sociology; social institutions, population study, human ecology and community study, culture, human nature and personality, social interaction and stratification, and social problems. (The student may take either SOCI 101-102-103 or SOCI 104-105 but not both.) Lecture 5-4 hours per week.

SOCI 106 GENERAL SOCIOLOGY (3 cr.)—The study of various forms of human association, their structure, processes and products in terms of culture systems, human nature and personality. Lecture 3 hours per week.

SOCI 116 CHILD-PARENT-COMMUNITY RELATIONS (3 cr.)—This course is designed to assist the student in learning about and utilizing resources within a given community that are designed to create an environment suitable for the development of children. The course will focus on the standards and interrelationships within the community that influence children's developing concepts concerning education, religion, ethical values, and citizenship. Lecture 3 hours per week.

SOCI 170 INTRODUCTION TO BLACK AMERICAN CULTURE (3 cr.)—An introduction to the study of the Black person in America. A broad historical view, population, family, economic and cultural trends; contributions of civic and political leaders, writers and artists. Lecture 3 hours per week.

SOCI 198 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite Division permission. Completion of a project or research report related to the student's occupational objective, a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

SOCI 199 SUPERVISED STUDY (1-5 cr.)—Prerequisite Division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

SOCI 236 MARRIAGE AND THE FAMILY (3 cr.)—Prerequisite SOCI 101, or 104. A study of comparative family systems and problems related to marriage and the family. Lecture 3 hours per week.

SOCI 237 MARRIAGE AND THE FAMILY (5 cr.)—Prerequisite SOCI 101, of 104. A study of comparative family systems and problems related to marriage and the family. Lecture 5 hours per week.

SOCI 240 INTRODUCTORY ANTHROPOLOGY (3 cr.)—A study of the origin and evolution of man based upon the fossil record, and an analysis of the status of modern racial grouping. Lecture 3 hours per week.

SOCI 244 INTRODUCTORY ANTHROPOLOGY (5 cr.)—A study of the origin and evolution of man based upon the fossil record, and an analysis of the status of modern racial grouping. Lecture 5 hours per week.

SOCI 246 CULTURAL ANTHROPOLOGY (3 cr.)—Prerequisite SOCI 101, 240, or 244. The application of the concept of culture to the study of contemporary societies, both primitive and modern. Such institutional areas as magic and ritual, crime, custom, law, economy, courtship, marriage and childbearing will be analyzed cross-culturally. Lecture 3 hours per week.

SOCI 247 CULTURAL ANTHROPOLOGY (5 cr.)—Prerequisite SOCI 101, 240 or 244. The application of the concept of culture to the study of contemporary societies, both primitive and modern. Such institutional areas as magic and ritual, crime, custom, law, economy, courtship, marriage and childbearing will be analyzed cross-culturally. Lecture 5 hours per week.

SOCI 248 CASE STUDIES IN CULTURAL ANTHROPOLOGY (3 cr.)—A comparative, in-depth study of the structure and organization of selected primitive societies. Lecture 3 hours per week.

SOCI 298 SEMINAR AND PROJECT (1-5 cr.)—Prerequisite division permission. 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. Variable hours.

SOCI 299 SUPERVISED STUDY (1-5 cr.)—Prerequisite division permission. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

SPANISH

SPAN 101-102-103 ELEMENTARY SPANISH I-II-III (4 cr.)(4 cr.)(4 cr.)—Introductory training in the understanding, speaking, reading, and writing of Spanish with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week. *Not recommended for students who have, within the past two years, received 2 years high school or one year college credit for this language.*

SPAN 106 REVIEW OF INTRODUCTORY SPANISH (5 cr.)—An intensive review of Spanish structure and phonology; designed for students who have had some previous training in Spanish, but whose proficiency does not qualify them for Spanish 201. *Permission of the department required.*

SPAN 199 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 hours.

SPAN 201-202-203 INTERMEDIATE SPANISH I-II-III (4 cr.)(4 cr.)(4 cr.)—Prerequisite Spanish 103, 106, or successful completion of two years of high school Spanish and permission of the instructor. Advanced training in the classroom. Lecture 3 hours, Laboratory and drill 2 hours, Total 5 hours per week.

SPAN 231-232-233 SURVEY OF SPANISH LITERATURE AND CIVILIZATION I-II-III (3 cr.)(3 cr.)(3 cr.)—Prerequisite SPAN 203 or equivalent. An introduction to Spanish life and culture and to the contributions of Spain to world civilization from medieval times to the present. Readings in the original Spanish. Spanish is used in the classroom. Lecture 3 hours per week.

SPAN 234-235-236 HISPANIC CULTURE AND CIVILIZATION I-II-III (3 cr.)(3 cr.)(3 cr.)—Prerequisite SPAN 103. An introduction to Hispanic Culture with emphasis on Latin American life and civilization and including literature survey. Spanish is used in the classroom.

SPEECH AND DRAMA

SPDR 106-107 INTRODUCTION TO THE THEATRE I-II (3 cr.)(3 cr.)—The principles of drama; the study of the development of theatre production; study of selected plays as theatrical presentations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SPDR 111-112-113 ACTING I-II-III (3 cr.)(3 cr.)(3 cr.)—A study of styles of acting. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SPDR 119 THEATRE WORKSHOP (1-5 cr.)—Organization and work in the various activities of play production. Practice in set design, stage carpentry, theatre development, sound, costumes, lights, stage managing, props, promotion, and stage crew. May be repeated for credit. Variable hours.

SPDR 130 PRINCIPLES OF PUBLIC SPEAKING (5 cr.)—Theory and principles of public address. Emphasis will be on preparation and delivery. Lecture 5 hours per week.

SPDR 136 ORAL COMMUNICATIONS (3 cr.)—A study of effective communication with emphasis on speaking and listening. Lecture 3 hours per week.

SPDR 137 PUBLIC SPEAKING (3 cr.)—Development of skill in speechmaking. Lecture 3 hours per week.

SPDR 157 DEBATE (3 cr.)—Prerequisite either SPDR 130, 136, 137, or permission of the division. The presentation of oral argument and debate. Emphasis upon effectiveness in the analysis of issues, evidence, the reasoning process and skill in oral presentation. Lecture 3 hours per week.

SPDR 198 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. Variable hours.

SPDR 199 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 hours.

SPDR 201-202-203 HISTORY OF THEATRE 1-11-111 (3 cr.)(3 cr.)(3 cr.)—A survey of theory and history of the theatre from Greeks to the Modern. Lecture 3 hours per week.

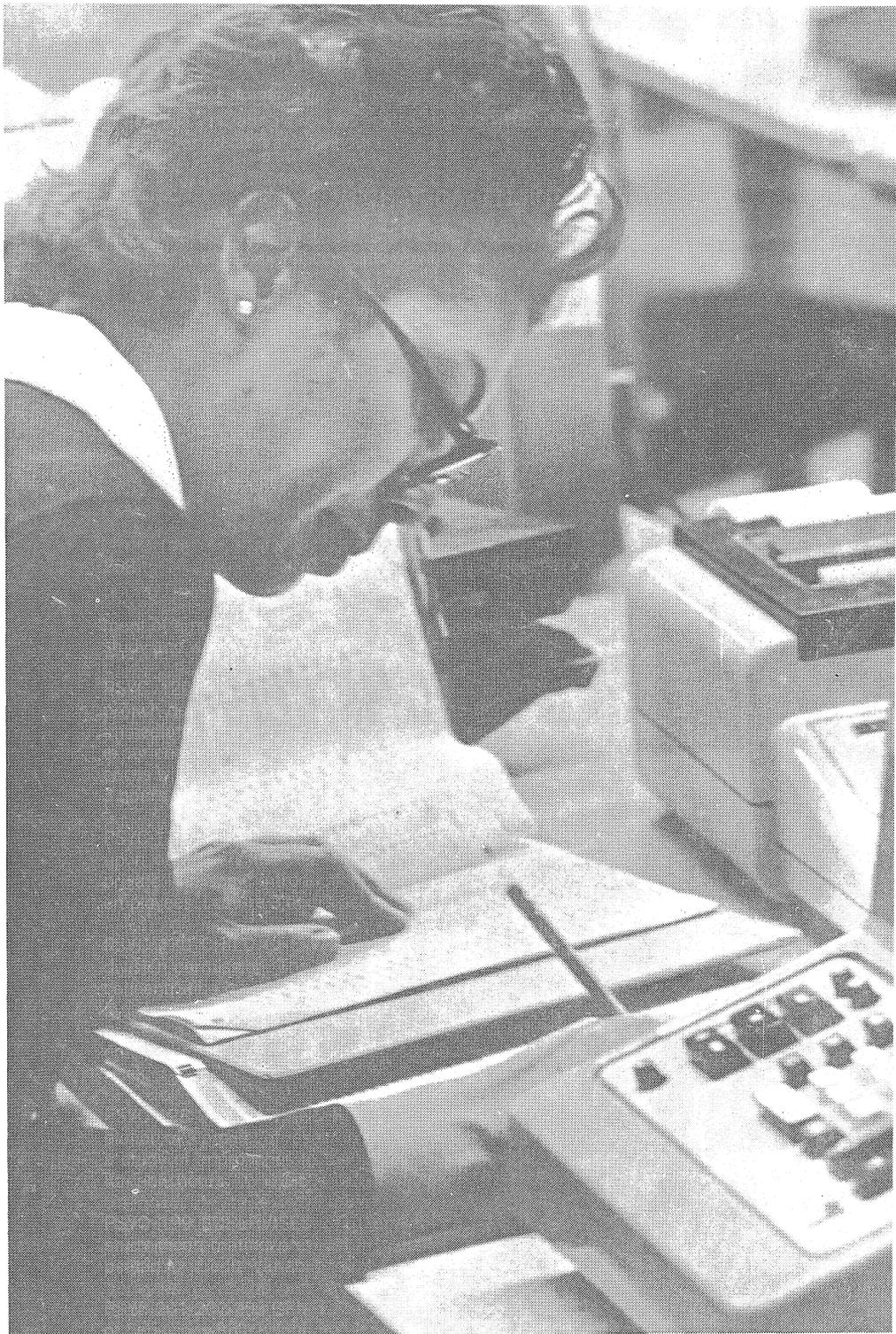
SPDR 230 ADVANCED PUBLIC SPEAKING (5 cr.)—Prerequisite either SPDR 130, 136, 137 or division approval. Preparation and delivery of the various advanced forms and methods of public address. Lecture 5 hours per week.

SPDR 256-257 GROUP DISCUSSION I-II (3 cr.)(3 cr.)—Techniques and purposes of group discussion. Lecture 3 hours per week.

SPDR 266 THE ART OF THE FILM (3 cr.)—Prerequisite departmental approval. An introduction to the art of the film: a survey of the history of the film; viewing, discussion and analysis of selected films; introduction to the film techniques of composition, shot sequence, lighting, visual symbolism, sound effects, editing. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SPDR 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. Variable hours.

SPDR 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 hours.



Business Machines Laboratory, Alexandria Campu.

FACULTY AND STAFF

The five campuses are indicated as follows: AL, Alexandria; AN, Annandale; LO, Loudoun; MA, Manassas and WO, Woodbridge. Those individuals with cross campus responsibilities are indicated as CS, College Staff.

- Acosta, Henry A.**, Assistant Professor Police Science (AL)
B.A.—St. John's College
M.P.A.—City University of New York
- Acosta, Joan V.**, Student Health Nurse (AL)
Nursing Diploma—Kings County Hospital School of Nursing
R.N.—New York, Virginia
- Alcorn, George M.**, Associate Professor Data Processing (AN)
B.A.—Eastern Nazarene College
M.Ed.—Keene State College, University of New Hampshire
- Alford, Terry**, Instructor History (AN)
B.A.—Mississippi State University
M.A.—Mississippi State University
Ph. D.—Mississippi State University
- Allen, Eileen A.**, Associate Professor English (AN)
A.B.—University of Maryland
M.A.—George Washington University
- Argue, Judith A.**, Instructor Mathematics (AN)
B.A.—Luther College
- Arnold, Merle H.**, Instructor Chemistry (AN)
B.S.—Seattle University
Ph.D.—University of Notre Dame
- Attig, Larry L.**, Instructor Counselor (AN)
B.A.—Drake University
M.Ed.—University of Virginia
- Auvil, Jean R.**, Assistant Professor Commercial Art (AL)
A.B.—Berea College
M.A.—American University
- Avery, Fay R.**, Assistant Professor Coordinator
B.A.—Parsons College Cooperative Education (AL)
M.Ed.—University of Buffalo
- Bailey, Haroldine**, Instructor Counselor (AL)
B.A.—Colby College
M.Ed.—Howard University
- Bailey, Sandra**, Instructor Head, Medical Record Program (AN)
B.S.—Indiana University
- Baldwin, Susan M.**, Assistant Professor Foreign Languages (AN)
B.A.—Boston College
M.A.—University of Kentucky

- Bandstra, James R.**, Assistant Professor
A.B.—Dordt College
Data Processing (AL)
- Belmore, William E.**, Assistant Professor
B.S.—State University College of New York
M.S.—University of Oregon
Ed.D.—Indiana University
Coordinator,
Learning Laboratory (AN)
- Berger, Pamela E.**, Instructor
B.A.—University of Michigan
M.A.—George Washington University
English (AN)
- Bernard, Lyle W.**, Instructor
B.S.—U.S. Military Academy
Mathematics (AN)
- Bernier, George B.**, Instructor
B.A.—Michigan State University
Hotel, Restaurant, and Institutional
Management (AN)
- Billups, Fred H.**, Associate Professor
B.A.—Wake Forest College
B.D.—Southern Baptist Theological Seminary
M.Ed.—College of William and Mary
Ed.D.—University of Virginia
Coordinator, Counseling Services (AN)
- Bimstein, Donald**, Associate Professor
B.S.S.—City University of New York
M.A.—George Washington University
Police Science (AN)
- Bisdorf, Donald L.**, Professor
B.M.—McPhail College, Minneapolis
M.M.—Michigan State University
Ph.D.—Michigan State University
Provost (AL)
- Black, Reading W.**, Assistant Professor
B.S.—Memphis State University
M.S.—Memphis State University
Staff Associate for
Community Services (AN)
- Blackstone, Edith**, Associate Professor
A.A.—Bakersfield Junior College
B.A.—San Jose State College
M.S.—University of Southern California
Business Management (AN)
- Boardman, William M.**, Assistant Professor
B.S.—Michigan State University
Police Science (AN)
- Bock, Benjamin**, Professor
B.S.—City College of New York
M.A.—George Washington University
Ph.D.—Stanford University
Government (AL)
- Bodnar, Mary Ellen**, Assistant Professor
A.A.—Worthington Junior College
B.S.—University of Minnesota
Mathematics (AL)
- Bolser, Frank C.**, Associate Professor
A.B.—Wabash College
M.A.—Peabody College
Ed.D.—University of Florida
Mathematics (AN)

- Bonette, Samuel J.**, Professor
B.B.A.—Niagara University
M. A.—George Washington University
Business Management (AL)
- Botscheller, John V.**, Assistant Professor
B.S.—City College of New York
M.S.—University of Minnesota
Chemistry (AL)
- Bowling, Charles Richard**, Instructor
A.B.—St. Mary's College
M.A.—University of Kentucky
Counselor (AN)
- Boyd, William B.**, Assistant Professor
B.S.—Michigan State University
Police Science (AN)
- Bracke, Peter**, Assistant Professor
B.S.—Purdue University
M.B.A.—University of Chicago
Pre-Engineering (AL)
- Bradley, III, James Lee**, Assistant Professor
B.F.A.—Richmond Professional Institute
Assistant to the President
for Public Relations (CS)
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B.A.—Pomona College
M.Phil.—University of Kansas
English (AN)
- Braun, Eugene A.**, Assistant Professor
B.S.B.A.—Bridgewater College
M.Ed.—Madison College
Business Management (AN)
- Braun, James F.**, Instructor
B.S.—U.S. Naval Academy
Aviation Technology Program (AN)
- Broida, Judi K.**, Instructor
B.A.—George Washington University
M.A.—George Washington University
Counselor (AN)
- Brown, Carolyn J.**, Assistant Professor
B.A.—University of Kentucky
M.A.—University of Kentucky
Secretarial Science (AN)
- Brown, Olinda D.**, Instructor
B.A.—George Washington University
M.A.—George Washington University
C.P.S.—Institute for Certifying Secretaries
Secretarial Science (AL)
- Bryan, Jonathan R.**, Associate Professor
B.A.—University of Virginia
M.A.—The George Washington University
Ph.D.—American University
English (AL)
- Buc, George L.**, Professor
B.S.—Rutgers University
M. A.—Columbia University
Ph.D.—Rutgers University
Physics (AN)
- Buckingham, Bryant**, Instructor
B.S.—Harvard University
J. D.—Northwestern University
Mathematics (AN)

- Bulmer, Jr., Walter**, Assistant Professor
B.S.—Salem College
M.S.—University of Arizona
Biology (AN)
- Bushong, Nancy V.**, Instructor
B.S.N.—Louisiana State University
M.N.—U.C.L.A.
Nursing (AN)
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A.B.—Mount Holyoke College
M.Ed.—Boston State College
Certificate in Advanced Graduate Study—Boston University
Reading (AL)
- Cady, John C.**, Assistant Professor
B.A.—University of Omaha
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Data Processing (AL)
- Carothers, Jerry**, Instructor
B.S.—University of Texas
Civil Technology (AN)
- Carter, Eltse B.**, Professor
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Chairman, Humanities Division (AN)
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B.A.—George Washington University
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English (AL)
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Hotel, Restaurant, and Institutional Management (AN)
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Electronics (AN)
- Charters, Ruth R.**, Instructor
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Acquisitions Librarian (AN)
- Chu, Gen Sen**, Assistant Professor
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Acquisitions Librarian (AL)
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M.A.—Teacher's College, Columbia University
Mathematics (AN)
- Clinton, Roy J.**, Instructor
B.S.—United States Military Academy
M.S.—Princeton University
Mathematics (AN)
- Cohen, Joyce T.**, Assistant Professor
B.A.—Regis College
M.A.—George Washington University
Commercial Art (AL)
- Cohen, Marietta**, Associate Professor
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Head, Nursing Program (AN)

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 M. Ed.—Western Maryland College
- Coleman, Edward A.**, Associate Professor Automotive (AL)
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 M.Ed.—University of Virginia
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 M.S.E.E.—University of Michigan
- Crawford, Gloria J.**, Instructor Counselor (AN)
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- Creed, Thomas W.**, Instructor Business Management (AL)
 B.S.—University of Tennessee
 M.B.A.—East Tennessee State University
- Crews, Thaddeus R.**, Associate Professor Physical Education (AN)
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 M.Ed.—University of Arizona
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 Master's Equivalent—University of North Carolina
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 B.S.—United States Military Academy Development (CS)
 M.S.—University of Southern California
 M.S.—George Washington University
- Darden, Frances M.**, Instructor English (AL)
 B.A.—University of Mississippi
 M.A.—University of Mississippi
- Davis, Ronald M.**, Instructor Mathematics (AL)
 B.S.—Albright College
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- Dearing, Stuart Jay**, Instructor Biology (AN)
 B.A.—Western Maryland College
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M.A.C.T.—University of Tennessee
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- DeGastynne, Serge**, Assistant Professor
B.A.—University of Portland
M.M.—University of Maryland
Ph.D.—University of Maryland
Music (AL)
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B.S.—Wilson Teacher's College
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Business Management (AN)
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M.A.—Seton Hall University
Counselor (AN)
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B.S.—State University College at Buffalo, New York
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D.A.G.S.—University of Virginia
Police Science (AN)
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Psychology (AN)
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BPA—Art Center College of Design
Commercial Art (AL)
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Ph.D.—Ohio State University
History (AN)
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B.Arch.E.—University of Detroit
Mathematics (AL)
- Douglas, Ruth A.**, Instructor
B.S.—St. Lawrence University
M.S.—Syracuse University
Biology (AL)
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B.A.—Radcliffe College
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Economics (AN)
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A.B.—Rutgers University
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Biology (AN)

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B.S.—University of Notre Dame
M.A.—University of Detroit
Mathematics (AN)
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B.A.—Southeastern Louisiana University
M.S.S.—Mississippi State University
Sociology (AN)
- Ellis, Tom Steele**, Associate Professor
A.A.—Little Rock University
B.S.—University of Arkansas
M.B.S.—University of Colorado
Chemistry (AN)
- Engdahl, William A.**, Associate Professor
B.S.—United States Naval Academy
B.S.—United States Naval Postgraduate School
M.S.—Massachusetts Institute of Technology
Electronics (AN)
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B.S.—University of Kentucky
M.S.—University of Wisconsin
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Biology (AL)
- Ernst, Richard J.**, Professor
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M.Ed.—University of Florida
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President (CS)
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Advanced Study—American Theatre Wing, New York
Speech and Drama (AL)
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Business (AN)
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B.S.—Arizona State University
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Marketing (AL)
- Fichter, Eugene H.**, Assistant Professor
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M.S.—William B. Paterson State College
Psychology (AN)
- Fish, Ronald S.**, Instructor
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Economics (AL)
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M.A.—State College at Boston
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- Flynn, Monica**, Assistant Professor
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Foreign Languages (AL)
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M.A.—George Washington University
Counselor (AL)

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 B.S.—U.S. Military Academy, West Point, N.Y.
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 Chairman, Public Service
 Technologies Division(AN)
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 Counselor (AN)
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 Commercial Art (AL)
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 M.S.—Florida State University
 Economics (AN)
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 M.A.T.—Brown University
 Physics (AN)
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 B.S.—Mount Union College
 L.L.B.—George Washington University
 J.D.—George Washington University
 Police Science (AL)
- Furman, Jacquelyn G.**, Associate Professor
 B.S.—University of Chicago
 B.A.—University of Chicago
 M.S.—University of Chicago
 Ph.D.—The Catholic University of America
 Biology (AL)
- Gannon, Judith P.**, Instructor
 B.S.—Adelphi College
 M.S.—Hofstra College
 Nursing (AN)
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 Coordinator of Student Activities (AL)
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 Secretarial Science (AN)
- Gibson, Mary Jo**, Instructor
 B.S.—University of North Carolina at Greensboro
 Secretarial Science (AN)
- Gillette, Pauline**, Assistant Professor
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 M.A.—Trinity College
 Assistant Division Chairman for
 Psychology and Sociology (AN)
- Gisvold, Jean**, Associate Professor
 B.A.—Assumption University of Windsor, Canada
 M.A.—American University
 Foreign Languages (AN)
- Glick, Ruth H.**, Assistant Professor
 B.S.N.—Eastern Mennonite College
 M.S.N.—Boston University
 Nursing (AN)

- Godfrey, Lydia S.**, Assistant Professor English (AL)
B.A.—Cornell University
M.A.T.—Harvard University
- Grant, Joseph W.**, Assistant Professor Director of Continuing Education (WO)
A.A.—Voorhees Junior College
B.A.—St. Augustine's College
M.Ed.—University of Virginia
Ph.D.—University of Maryland
- Graves, Virginia H.**, Assistant Professor Business Management (AL)
B.S.—Auburn University
M.A.—University of Alabama
- Gray, Jr., James V.**, Instructor Business Management (AL)
A.S.—Accounting—Northern Virginia Community College
B.S.—Accounting—Virginia Commonwealth University
- Greenberg, Florine A.**, Associate Professor Psychology (AN)
B.A.—Barnard College
M.A.—Columbia University
M.Ed.—University of Maryland
Ed.D.—George Washington University
- Greenfield, Alec T.**, Assistant Professor Head, Architectural Technology Program (AN)
M.A.—London, England
- Gregory, Donald**, Instructor Philosophy (AN)
B.A.—Grinnell College
M.A.—University of Iowa
Ph.D.—Vanderbilt University
- Gregory, Michael A.**, Instructor English (AN)
A.B.—St. Thomas College
M.A.—Harvard
- Grevert, Harry C.**, Assistant Professor Business Management (AN)
B.S.—University of Alabama
M.S.—University of Tennessee
- Griese, Alvin H.**, Assistant Professor Architectural Technology (AN)
M.Arch.—Harvard University
- Griffin, Richard W.**, Professor History (AN)
B.A.—Wake Forest University
M.A.—Ohio State University
Ph.D.—Ohio State University
- Gwatney, Harold**, Associate Professor Assistant Division Chairman for Physical Education (AN)
B.S.E.—Arkansas State Teachers College
M.S.E.—State College of Arkansas
Ed.D.—University of Mississippi
- Gwatney, Martha B.**, Associate Professor Business Management and Secretarial Science (AN)
B.S.E.—State College of Arkansas
M.S.E.—Arkansas State University
Ed.D.—University of Mississippi

- Hageman, Richard L.**, Associate Professor
B.S., M.A.—Kent State University
Psychology (AN)
- Haledjian, Dean**, Instructor
B.A.—Clemson University
M.S.—Virginia Polytechnic Institute
Sociology (AN)
- Hall, Janet L.**, Assistant Professor
B.S.—Concord College
M.A.—West Virginia University
English (AL)
- Halpern, Coyene I.**, Assistant Professor
B.S.—Indiana University
M.S.—Indiana University
Secretarial Science (AN)
- Hamer, Sara F.**, Instructor
B.A.—Winthrop College
M.Ed.—University of Florida
Counselor (AN)
- Hamilton, Lander C.**, Professor
B.A.—University of Alabama
M.P.A.—City University of New York
Head, Police Science Program (AN)
- Hanback, Linda A.**, Assistant Professor
B.S.—Radford College
M.S.—Radford College
English (AN)
- Hansborough, Charles E.**, Instructor
B.S.—D.C. Teachers College
M.S.—Michigan State University
Mathematics (AN)
- Hansen, Brian E.**, Instructor
B.A.—University of California at Davis
M.A.—University of California at Davis
English (AN)
- Hansen, Janet, H.** Assistant Professor
B.S.—University of Illinois
M.S. in L.S.—Catholic University of America
Reference Librarian (AN)
- Hanson, Muriel F.**, Instructor
B.A.—Highfield College
M.A.—Catholic University
Speech/Drama (AN)
- Harder, Robert H.**, Assistant Professor
B.S., Met. Eng.—Montana School of Mines
J.D.—Catholic University
Mechanical Technology (AN)
- Hardwick, Barbara**, Instructor
B.S.—St. Paul College
Nursing (AN)
- Hardy, Thomas W.**, Instructor
B.A.—Georgetown University
M.A.—University of North Carolina
English (AN)
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M.Ed.—Boston University
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Professional Diploma—Columbia University
Mathematics (AL)

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C.D.H.—West Liberty State College
Dental Assisting (AN)
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M.S.—Oklahoma State University
Ed.D.—University of Florida
Provost (AN)
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B.A.—Mississippi College
M.Ed.—Mississippi College
Counselor (AN)
- Harrison, Elizabeth**, Instructor
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Arts and Humanities (AL)
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M.A.—Wake Forest University
English (AL)
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A.B.—University of Illinois
M.S.—University of Maryland
Ph.D.—University of Maryland
Hotel, Restaurant, and Institutional
Management (AN)
- Havener, Ada R.**, Assistant Professor
B.S.—University of Tampa
M.A.—University of South Florida
Program Head
Secretarial Science (AL)
- Hawkins, Thomas M., Jr.**, Assistant Professor
B.S.—George Washington University
M.A.—George Washington University
Fire Science (AL)
- Hayden, Joseph Dunstan**, Assistant Professor
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Ph.B.—Catholic University
M.A.—Catholic University
Coordinator,
Learning
Laboratory (AL)
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B.S.—Rensselaer Polytechnic Institute
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Occupational Safety
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Counseling Services (AL)
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M.A.—University of Maryland
Mathematics (AN)
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B.S.—University of Texas
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Physical Education (AN)

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Foreign Languages (AN)
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Nursing Diploma—St. Elizabeth's Hospital
R.N.—District of Columbia, New Jersey, Virginia
Student Health Nurse (AL)
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Continuing Education (AL)
- Holmes, James W.**, Assistant Professor
B.S.—Southern Illinois University
M.A.—Murray State University
Physical Education (AN)
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Program (AN)
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M.P.A.—Temple University
Coordinator,
Cooperative Education (AN)
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Mathematics (AN)
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A.B.—Berea College
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Provost (MA)
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Business Careers Programs (AL)
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History (AN)
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 B.S.—Salem State College
 M.S.T.—University of New Hampshire
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 B.A.—University of North Dakota for Physical Science (AN)
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- Kennedy, Jack R.**, Associate Professor Psychology (AN)
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Police Science (AN)
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Real Estate (AN)
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Biology (AN)
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Anthropology & Sociology (AN)

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Sociology (AN)
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English (AL)
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English (AL)
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Ph.D.—Catholic University
Psychology (AL)
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Education (AL)
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Psychology (AL)
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M.S.—University of Illinois
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and Community Services (AL)
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for Art (AN)
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English (AN)
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Psychology (AN)

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Program (AN)
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Nursing (AN)
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Education (AL)

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Drafting Program (AN)
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Institutional Research	323-3016
Instructional Services, Coordinator	323-3198
Mobile Counseling & Information Services	323-3112
Personnel Office	323-3110
Planning & Development	323-3120
President	323-3100
Public Relations	323-3196
Student Services, Coordinator	323-3195
Veterans Recruitment	820-1400
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