# Virginia Western Community College

# Catalog 80/81

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# VIRGINIA WESTERN COMMUNITY COLLEGE

## CATALOG

## 1980-81

The statements and provisions in this catalog are not to be regarded as an irrevocable contract between the student and the college. The college reserves the right to change, when warranted, any of the provisions, schedules, programs, courses, or fees, as might be required.

Supplements may be issued to this catalog as considered necessary by the college.

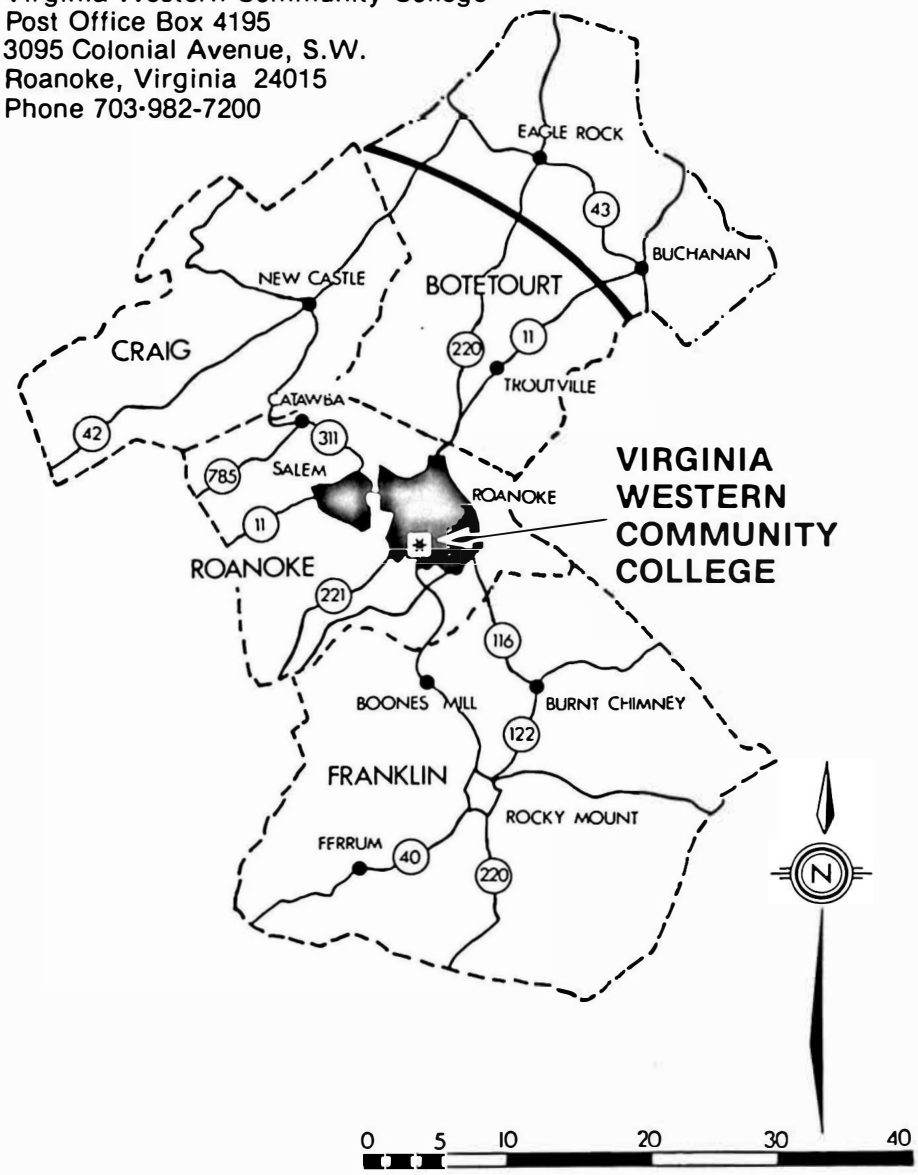
An equal opportunity/affirmative action institution.


**3095 Colonial Avenue, S.W.**
**Roanoke, Virginia 24015**

| | |
|---|---|
| **General Information** | **(703) 982-7200** |
| **Admissions** | **(703) 982-7231** |
| **Continuing Education** | **(703) 982-7281** |
| **Counseling** | **(703) 982-7237** |

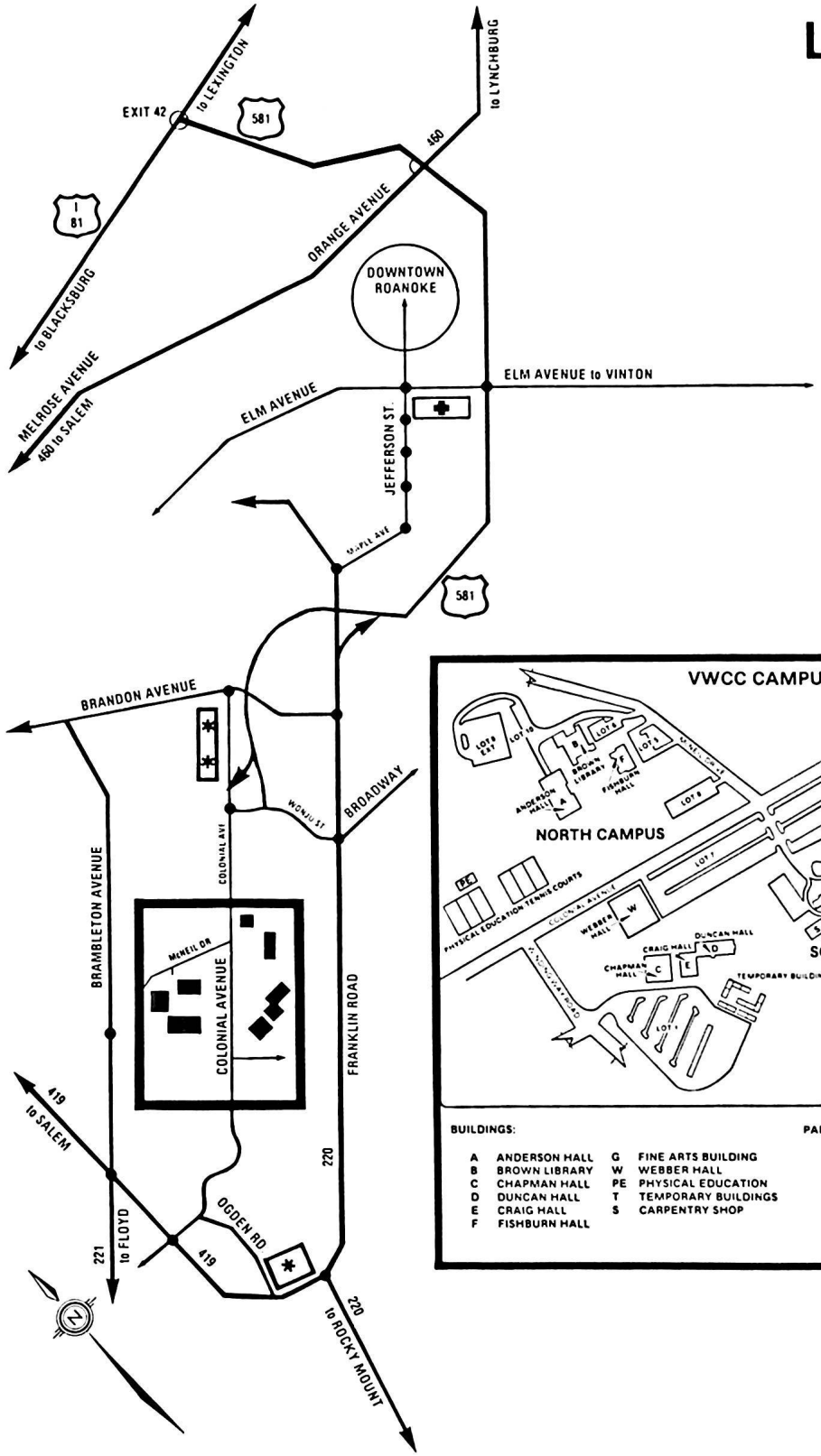
# Virginia Western Community College Area

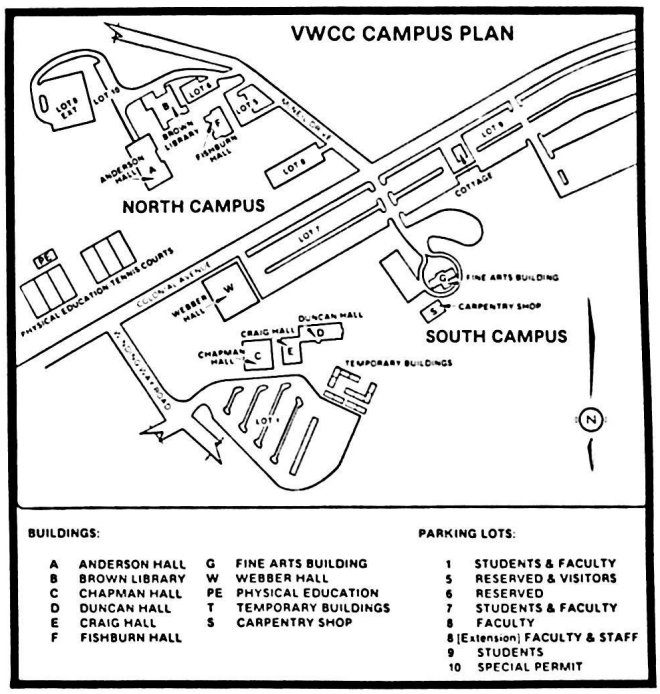
Dr. Harold H. Hopper, President
Virginia Western Community College
Post Office Box 4195
3095 Colonial Avenue, S.W.
Roanoke, Virginia 24015
Phone 703-982-7200



# Location

## Virginia Western Community College



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BROWN LIBRARY

# CALENDAR

| | |
|---|---|
| Fall Quarter Begins | Mid-September |
| Winter Quarter Begins | January |
| Spring Quarter Begins | Mid-March |
| Summer Quarter Begins | Mid-June |

The "Schedule of Classes" which is printed quarterly contains all specific academic dates.

# 1980

### SEPTEMBER

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# 1981

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### AUGUST

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### SEPTEMBER

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### OCTOBER

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### NOVEMBER

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### DECEMBER

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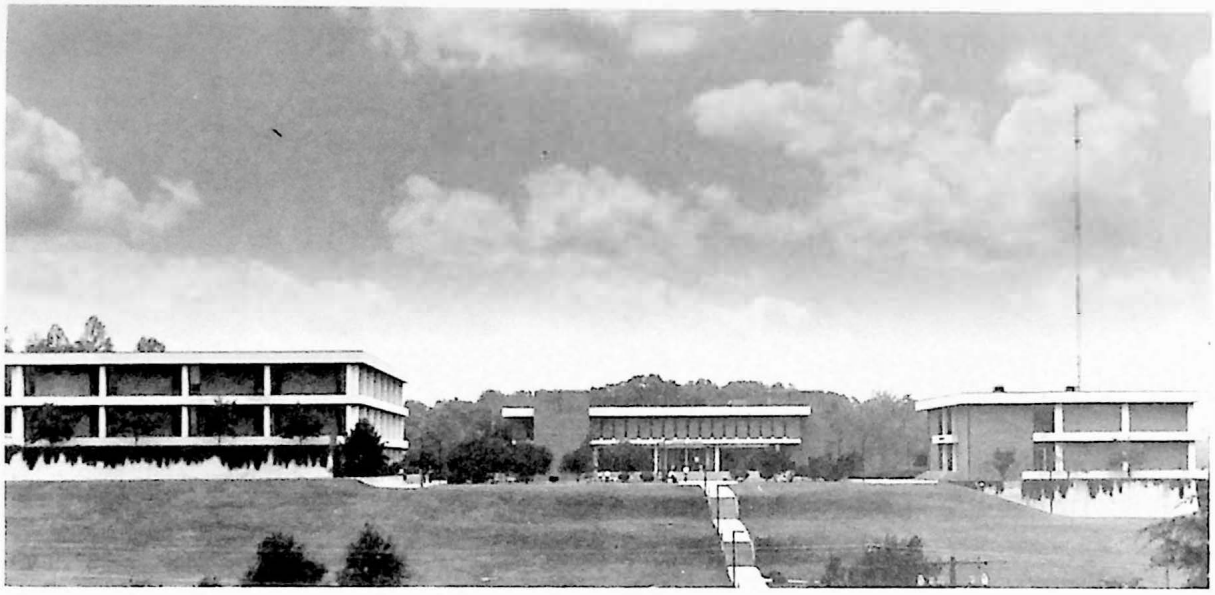
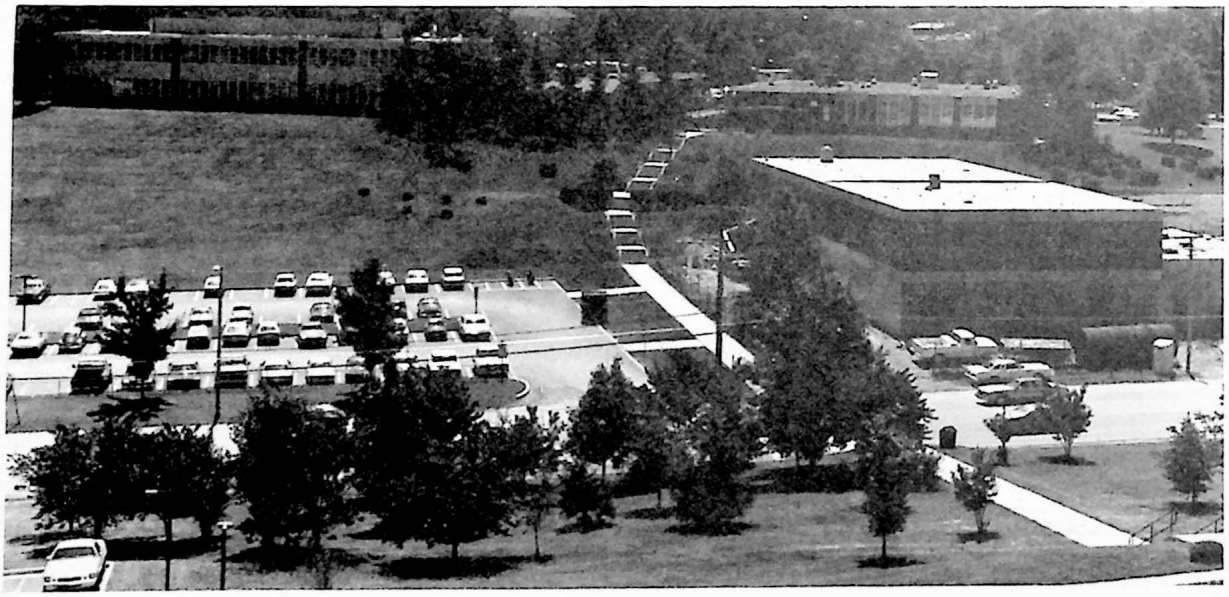


NORTH CAMPUS



SOUTH CAMPUS

Part 1

# GENERAL INFORMATION

## THE COLLEGE

Virginia Western Community College is a two-year institution of higher education established under a state-wide system of community colleges in the Commonwealth of Virginia, and serving an area within driving distance of the City of Roanoke. This includes the cities of Roanoke and Salem, the southern portion of Botetourt County, the northern portion of Franklin County, and the counties of Craig and Roanoke. The areas covered have a population of approximately two hundred fifty thousand.

The College operates under the policies established by the State Board for Community Colleges and with the support and advice of a local Community College Board. It is financed primarily by State funds supplemented by Federal funds and by contributions from the various local political subdivisions, individuals, and businesses.

## LOCATION AND FACILITIES

Virginia Western Community College is located in Southwest Roanoke at 3095 Colonial Avenue. The campus consists of 70 acres split roughly in half by Colonial Avenue.

The South Campus has five buildings, four of which were acquired in 1966 from the Roanoke Technical Institute. Webber Hall, the Occupational/Technical Building, was dedicated on May 19, 1980, by Governor John N. Dalton.

Chapman Hall houses laboratories for Civil and Mechanical Engineering Technology Programs, Photography, and Radio and Television Production. General classrooms are located in Craig Hall. Duncan Hall contains facilities for the Mental Health, Nursing, and Radiologic Technology Programs, in addition to general classrooms. Webber Hall houses the Automotive Technology, Electronics Engineering Technology, and Welding Programs, and laboratories for Architectural Drafting and Engineering Graphics.

The North Campus has three buildings surrounding a mall planted with flowers and shrubs selected to bloom alternately in each of the four seasons. The campus was dedicated on October 23, 1969, and its buildings were named for men influential in education or in the development of the Southwestern Virginia region.

Fishburn Hall, the Administration Building, houses Business Science classrooms, the Office of Continuing Education, and the WVWR-FM Radio Station. Opposite is the Science Building, Anderson Hall, containing laboratories and equipment of the most modern design, a Dental Laboratory, Reading Laboratory, classrooms, Cooperative Education Office, and faculty offices. In the center is Brown Library with its 41,690 volumes, a Learning Laboratory, Language Laboratory, Career Life Development Center, Auditorium, Office of Veterans' Affairs, and Financial Aid Offices on the second floor. The Admissions and Records Offices, Counseling Center, Special Services Office, and the Bookstore are located on the ground floor.

## HISTORY

Since 1927, the Extension Division of the University of Virginia, its programs under the direction and supervision of the University, served students in the Roanoke Valley. In 1960, the area's educational opportunities were further expanded by establishment of the Roanoke Technical Institute, its programs an extension of Virginia Polytechnic Institute. In February 1966, by authorization of the General Assembly of Virginia, these two facilities were combined into the comprehensive institution of higher education now known as Virginia Western Community College with the University of Virginia continuing to offer its upper division program.

## PURPOSE

Virginia Western 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 his awareness of his role and responsibility in society. The College is devoted to serving the educational needs of its community and assumes a responsibility to help meet the requirements for trained manpower in the region through a cooperative effort with local industry, business, professions, and government.

Various opportunities are available for post-high school age youth and adults. These include high quality instructional programs at the associate degree level and at the preparatory or foundations level. A strong guidance and counseling program and other student services are provided to help each student make sound decisions regarding his occupational, educational, and personal-social plans.

Virginia Western Community College is a comprehensive institution of higher education, offering programs of instruction gener-

ally extended not more than two years beyond the high school level. Programs include:

1. **Occupational-Technical Education.** The occupational and technical education programs are designed to meet the increasing demand for technicians, semiprofessional workers, and skilled craftsmen for employment in industry, business, the professions, and government. The curricula 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 member of a family, a worker, a consumer, and a citizen.
4. **Continuing Adult Education.** The adult education programs enable the adults in the region to continue their learning experiences. This work includes both degree credit and non-degree credit work during the day and evening hours.
5. **Cooperative Education Programs.** The cooperative education programs are designed to enrich the student's total development by integrating classroom study with well planned and supervised practical work experience.

   The programs provide a solid foundation for career planning and vocational guidance by giving the student the opportunity to gain an understanding of the work related to his career objectives.
6. **Developmental Programs.** The developmental programs 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 the individual develop the basic skills and understanding 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, speaker's bureau, and special community projects which are designed to provide needed cultural and educational opportunities for the citizens of the region.
8. **Broadcasting Service.** WVWR-FM, Virginia Western's stereo non-commercial public radio station, went on the air in August of 1973. The station increased its power to 100,000 watts in September 1975 in order to serve additional community colleges and communities outside the Roanoke Valley. The purposes of the station are to extend the educational resources and activities of the College and the Virginia Community College System to the community, and to provide an educational, informational, and cultural service not presently available. WVWR-FM provides attractive, challenging programming that involves its listeners as completely as possible in the learning experience. The radio station offers programs such as news and public affairs from the National Public Radio Network, college courses for credit, educational enrichment programs, music ranging from jazz to classical, and discussions on important contemporary subjects. The Radio Reading Service provides print handicapped individuals with newspaper and current periodical readings, as well as with various special programs not available through the Library of Congress. WVWR-FM broadcasts daily on 89.1 MHz. Studios and offices are located on the campus in Fishburn Hall.
9. **Special Training Programs.** Special training may be provided where specific job opportunities are available for new or expanding industries. This special training shall be coordinated with Virginia's economic expansion efforts and with the needs of employers.

**Recognition**

The College is a division of the Virginia Community College System and is approved by the State Board for Community Colleges and the State Department of 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 was given full academic accreditation by the Southern Association of Colleges and Schools in December 1969.

The College has institutional membership in the American Association of Community and Junior Colleges and has been approved by the Veterans Administration for V.A. assistance and by the U.S. Office of Education for various federal funding programs.

The College is listed among the approved institutions of higher education in the Education Directory of the U.S. Office of Education.

HAROLD H. HOPPER, PRESIDENT

HAROLD H. HOPPER, PRESIDENT

FISHBURN HALL
ADMINISTRATION BUILDING

Part II

# ADMINISTRATIVE INFORMATION

### Admission Requirements

The College does not illegally discriminate on the basis of race, color, religion, national origin, political affiliation, sex, age or handicap in violation of Section 504 of the Rehabilitation Act of 1973, or other nonmerit factors and complies with the Civil Rights Act of 1964.

### General Admission to the College

Any person who has a high school diploma or the equivalent, or who is 18 years of age, and in any case is able to benefit from a program at the College, may be admitted as a regular student when the following items have been received by the Office of Admissions:

1. A completed "Application for Admission;"
2. A $5.00 application fee that is not refundable unless the requested program or course is not offered;
3. Official transcripts from all high schools, colleges and universities attended.

For all special students, the following items are required:

1. A completed "Application for Admission;"
2. A $5.00 application fee, nonrefundable (unless the requested program or course is not offered).

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

Prior to admission every applicant will be required to meet with a College counselor to (a) discuss his educational interest, (b) determine what additional tests may be needed, (c) plan admission to a specific curriculum or program, and (d) examine other reasonable standards to insure that the applicant possesses the potential to meet program requirements.

Students entering the College may be required to take a diagnostic test battery. The test battery is normally administered at the College prior to registration and is used to assist the counseling staff in placing students in an appropriate level of instruction.

Persons wishing to apply for the noncredit community service programs should contact the College's Office of Continuing Education for additional information.

### SERVICES FOR THE HANDICAPPED

The College suggests that persons with a physical disability who are considering applying for admission on a full- or part-time basis schedule an appointment with a college counselor and a tour of the campus to discuss program accessibility and the needs of the individual. Handicapped applicants who plan to enroll in the College are encouraged to advise the college counselor of their need for auxiliary aids, readers, interpreters, taped materials or other services and devices as far in advance as possible before classes begin.

### Student Permanent Record File

The Office of Admissions and Records at Virginia Western Community College maintains a file for each student attending, or who has attended, the College. This file contains the following.

1. High school transcripts and GED records (M)
2. Other college transcripts and evaluations (M)
3. Application and fee receipts (M)
4. VWCC permanent record card (M)
5. Correspondence with student
6. Grade change form
7. Requests for Transcripts (M)
8. Graduation fee receipts
9. Schedule Change forms
10. Registration Identification forms

The Coordinator of Admissions and Records is the official in charge of student records. Administrators, counselors, and faculty who have need to see student records to assist an individual in his academic pursuits have access to these records. Clerical employees in Admissions and Student Development create and maintain student records. College personnnel involved in institutional research may be permitted access to records on a need-to-know basis. All others are required to have written permission from the student.

The permanent files of students are microfilmed after a student has not been in attendance for several quarters. The items retained are marked on the above list with the letter "M."

In order for a student to review his or her file, a request must be made to the Coordina-

tor of Admissions and Records who will arrange to review the file with the student.

If a student finds that statements or other information contained in his file are — to his knowledge — incorrect, the following procedure should be followed to clarify the situation.

A. The student will call the Coordinator's attention to any possible errors.

B. If the Coordinator finds the item or items to be in error, he will initiate corrective action.

C. If the Coordinator cannot resolve the problem, it will be referred to the Dean of Student Services for review and further action. The student will be informed of any action taken.

Students may obtain copies of information from their file by paying a cost of copying fee. The fee is 25¢ per page with a minimum of $1.00 applicable. The cost applies to each request.

The information considered "Directory Information" and, therefore, available to anyone requesting such information shall include the following:

A. Name and address

B. Name of program

C. Quarters in attendance

### Admission to Specific Curriculums

The specific requirements for each curriculum in the College are listed in the Curriculum Offerings section of the catalog. The College reserves the right to make changes in program and/or course requirements. A current Curriculum Guide Sheet (form C-3), detailing elective and required courses, is available to each student from the Student Development Office. Any deviation requires divisional approval. 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 a developmental studies program and/or prerequisites.

### International Students — Admission Requirements

In addition to the general requirements of the College, all international students must demonstrate proficiency in both written and spoken English.

Written English proficiency may be demonstrated by submitting acceptable scores on the "Test of English as a Foreign Language" (TOEFL — administed by the College Entrance Examination Board, Princeton, N.J.). The required score for acceptance on the TOEFL may be obtained by contacting the Coordinator of Admissions and Records. If these preliminary scores are acceptable, the applicant must also demonstrate, by personal interview at the College, oral proficiency both in speaking and understanding the English language. If a personal interview is not possible, a letter which testifies to the student's oral proficiency will be acceptable. This must be executed by an official of the U.S. Government residing in the student's native country. TOEFL scores must be submitted along with the application.

In the event that test scores and interview results indicate minimum acceptable levels of proficiency, applicants will be required to complete noncollege credit developmental courses prior to acceptance to a particular curriculum.

The policy of the U.S. Immigration Department states that international students must show proof of how financial responsibility will be met.

### Developmental Studies Program

A Developmental Studies Program is offered to assist individuals in the acquisition of skills necessary for the successful completion of their chosen program of study. After a close analysis of the high school transcript, test scores, and a personal interview with a College counselor, students may be identified for inclusion in a Developmental Studies Program.

Specialized teaching methods permit students to progress through the area of their weakness at their own rate. Personnel in the Learning, English, Reading, and Mathematics Laboratories and other faculty are available for individualized assistance to students.

A grade of "S" is awarded when all objectives required for each course are completed. A grade of "R" is awarded when students are making satisfactory progress but have not yet mastered all course objectives. Students receiving an "R" must reenroll for that course the following academic quarter. A grade of "U" indicates that students have failed to show interest or application in their studies. Students receiving a "U" will be required to discuss their program of studies with the appropriate division chairman and may not be permitted enrollment the following two academic quarters.

**Sample Developmental Studies Program**

| COURSE NUMBER | COURSE TITLE | CREDITS |
|---|---|---|
| ENGL 01 | Verbal Studies | 5 |
| ENGL 08 | Reading Improvement | 5 |
| MATH 05/06 | Developmental Math or other Math Sequence | 3 |
| GENL 100 | Orientation and/or | 1 |
| GENL 198 | Study Skills and/or | 1 |
| GENL 298 | Personal/Career Development | 2 |
| | | 14-15 |

Those students who have shown marginal progress in mathematics, either from test scores or high school grades, will be placed in Math 05/06. Students with a deficiency in high school algebra will be placed in Math 31 or 32. Grades earned in Engl 01/08 and Math 05/06 will not be computed in the student's grade point average. Students assigned to a developmental course will not be permitted to advance to a higher level course until they demonstrate satisfactory completion of the lower level course.

A student may not be permitted to repeat a Developmental Level Course more than once without the approval of the appropriate division chairman. A failure to remove all academic deficiencies within four academic quarters may subject the student to "Academic Suspension."

### Residence Requirements

Applicants will be required to sign a residence affidavit to determine state residency eligibility for tuition purposes. Questions concerning residency requirements should be directed to the Coordinator of Admissions and Records.

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

### Students Transferring from Other Colleges

Usually a student transferring from another college who is eligible for reentrance at the last college shall be eligible for admission to this College.

It is the role of the College to help each student succeed in a program from which he can benefit. Counseling and testing services are available to help students select a program appropriate to his interests and abilities. If a transfer student is ineligible to return to a particular curriculum in a previous college, generally he will not be allowed to enroll in the same curriculum in the College until two quarters elapse or until he completes an approved developmental program at the College. Special conditions for the admission of such students, including placement on probation, will be imposed as deemed appropriate by the College.

Each student transferring from another college should contact the Student Development Office for an assessment of credits in order to determine his standing before registering for classes. Generally no credit will be given for courses with grades 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.

### Students Transferring within the Virginia Community College System

Students transferring from one community college to another within the System are not required to pay additional application fees after they have paid the first application fee in the System. A student transferring within the Community College System will not be charged a fee for transcripts sent to the community college to which he is transferring.

When a student transfers from one community college to another within the System, his grades and grade-point average (GPA) are transferred with his record; and his quality points for the courses previously taken are utilized in the computation of his grade-point average (GPA).

### Transfer Between Curriculums

No changes in program or curriculum can be made without the approval of the Student Development Office and the instructional division to which transfer is requested.

### Students Applying for Credit or Waiver of Requirements

Students who have reason to believe that previous educational studies, training programs, work experience or test results may entitle them to an adjustment in the course requirements for a particular curriculum should contact the Coordinator of Admissions and Records to determine procedures before registering for classes.

### Auditing A Course

Students desiring to attend a course without taking the examination or receiving credit for the course may do so by obtaining signatures of both the instructor and division chairman. Students desiring to change status in a course from audit to credit must do so the first week of the quarter. A change from credit to audit should be made prior to the end of the first week of the quarter. After the first week, consult the appropriate Division Chairman.

Audited courses carry no credit but count as a part of the student's course load for fee purposes. Payment of educational benefits through the Veterans Administration for audits is not permitted.

## CREDIT BY EXAMINATION

A Credit by Examination may be administered to a student not more than once per quarter in each subject area. The examination schedule will be determined by the instructor and division chairman. If the student wishes to take a reexamination in a subsequent quarter, he must demonstrate to the division chairman that he has substantially improved his knowledge of the subject. Any student electing to obtain college credit through institutional examination will be charged at a rate of $5.00 per examination. Payment must be made before credit is granted.

### Admission of Senior Citizens

Under the Virginia "Senior Citizens Higher Education Act of 1974," amended in 1977, anyone who is over 60 years of age, who is a legal resident of Virginia, and whose taxable income does not exceed $5,000 is eligible to enroll in credit courses at the College without charge. Those senior citizens whose taxable income exceeds $5,000 may audit a maximum of three courses (credit and/or non-credit) per quarter without charge. Senior citizens must submit an application and be admitted to the College. The application fee is waived for those who qualify to enroll in credit courses without charge. Under the law, senior citizens will be accommodated on a space available basis (after all tuition paying students have registered) commencing with the announced late registration period.

## CLASSIFICATION OF STUDENTS

All students are classified according to the following categories:

### Regular Student.

A full-time or part-time student working toward completion of an associate degree, diploma, certificate, or developmental program.

### Special Student.

1. A part-time student taking course(s) as audit for no credit;

2. A high school student who, with the permission of his school principal, is concurrently enrolled in a college course;

3. A part-time student not enrolled in an associate degree, diploma, or certificate program who may be taking a course(s) for credit (such students may later apply to the College for admission to a program as a regular student);

4. A student who has not yet fulfilled all of the requirements as a regular student but who is admitted under special consideration by the Admissions Committee of the College. It is expected that such students would fulfill all requirements within three weeks of the commencement of the quarter or face dismissal from the College.

**Full-time Student.** A student is considered a full-time student if he is carrying 12 or more course credits.

**Part-time Student.** A student is considered a part-time student if he is carrying less than 12 course credits.

**Freshman.** A student is classified as a freshman until he has completed 45 course credits in his designated curriculum.

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

## EXPENSES

### Application Fee

An application fee of $5.00 must accompany the application for admission to the College for each student. This fee is not applicable to tuition, nor refundable unless the requested program is not offered.

### Tuition

| | |
|---|---|
| Full-time Student (12 or more credits) | |
| Virginia Resident | $100.00 |
| Out-of-State Resident | 335.00 |
| Part-time Student (less than 12 credits): | |
| Virginia Resident | $ 8.50 per credit |
| Out-of-State Resident | 28.00 per credit |

A Virginia resident is one who has been domiciled in, and is and has been an actual bona fide legal resident of Virginia, for a period of at least one year prior to the commencement of the quarter for which he is enrolling.

Payment of tuition enables the student to use the library, bookstore, parking lot, student lounge and other facilities of the College.

### Transcripts

Student transcripts must be requested in writing from the Admissions and Records Office.

There is a charge of $1.00 for an official or unofficial transcript. An official transcript is one which is sent by the College and bears the College seal; an unofficial transcript is one without the seal and will be given to the student with "UNOFFICIAL" stamped on it.

### Graduation Fee

A graduation fee of $10.00 is charged each graduating student for each degree, diploma, or certificate awarded.

### Other Fees and Charges

There may be special fees from time to time such as Physical Education fees, Credit by Examination fees, etc. Students who damage or lose school property will be expected to pay charges for such losses.

### Parking

The use of an automobile on the campus by any student registered at this College is regarded as a privilege and not as a right. Students who wish to use the College parking facilities must apply for a permit from the Business Office.

A thorough understanding of the regulations regarding parking is important. Violations may result in needless expense and inconvenience. Student parking on the College campus is permitted only in the spaces ***marked in white;*** faculty and reserved spaces are marked in yellow. The College assumes no responsibility for the care or protection of any vehicle or contents at any time it is operated or parked on campus.

### 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 $75 per quarter for the full-time student. This cost is subject to change since it is based on publishers' and suppliers' listed prices.

The Bookstore, located on the ground floor of Brown Library, carries a complete line of textbooks, supplies, art material and general merchandise.

### Rules for Bookstore Refunds

The Bookstore Manager is the only authorized person who can accept books for refund. Books returned for refund are subject to inspection and must be in new condition with no markings or other damage. The cash register receipt must be presented with the book for a refund. The book must be presented to the Bookstore Manager within two weeks from date of purchase (date shown on cash register receipt) to be considered for a refund. Refunds are made by check, and the check will be mailed to the student.

Refunds will be made only if the course is cancelled, the course is dropped (drop slip must be presented), or the incorrect book is purchased. All books with misprint, pages missing, or other publishing mistakes may be exchanged at any time for the same book by presenting the cash register receipt.

### Tuition Refunds

1. Effective summer quarter 1980, students shall be eligible for a refund for those credit hours dropped during the add/drop period for the session when the student's credit hour load falls below full-time student status. The refund will be at the full credit rate for those credits dropped below 12 hours. After the census date has passed, there will be no refunds.
2. Eligibility
   a. The student must complete a withdrawal form and obtain the appropriate signatures.
   b. The form must be completed in the time frame described.
   c. The student must deliver the form to the Admissions and Records Office and have it receipted and dated. This date is the official withdrawal date.

### Suspension of Students for Nonpayment of Tuition and Fees, College Loans, College Fines, or Other Debts Owed the College

A student's continued attendance at the college is dependent upon proper settlement of all debts owed the institution. Should the student fail to satisfy all due and payable amounts for tuition and fees, college loans, college fines, or other debts owed the college, ***the student may be suspended.*** If suspended, no student will be allowed to register

in any succeeding quarter until all current debts owed to the college have been satisfied.

### Student Accounts

No transcripts, certificates, diplomas, or degrees will be issued, nor will students be permitted to complete registration, until accounts are satisfactory to the Business Office, Bookstore, and Library.

## CREDITS

Usually one credit for a course is given as follows:

1. One hour of in-class lecture plus an average of two hours of out-of-class study, or
2. Two hours of laboratory or shop study plus an average of one hour of out-of-class study, or
3. Three hours of laboratory or shop study with no regular out-of-class assignments.

Fixed credit hours are assigned to most college courses.

Variable credit (1-5 credits) is assigned to all Supervised Study, Seminar and Project, Coordinated Internship and Cooperative Education courses.

## GRADING SYSTEM

The quality of performance in any academic course is reported by a letter grade, the assignment of which is the responsibility of the instructor. These grades denote the character of study and are assigned quality points as follows:

A Excellent — 4 grade points per credit

B Good — 3 grade points per credit

C Average — 2 grade points per credit

D Poor — 1 grade point per credit

F Failure — 0 grade points per credit

Incomplete — No credit. Used for verifiable unavoidable reasons. Since the "incomplete" extends enrollment in the course, requirements for satisfactory completion will be established through student/faculty consultation. Courses for which the grade "I" (incomplete) has been awarded should be completed as soon as possible and in all cases must be completed by the end of the sixth week of the next quarter (excluding summer). After the sixth week, a grade of "F" will be assigned.

R Re-enroll — No Credit. The student is making progress but the course objectives have not been completed; to be used only for Developmental Studies (courses numbered 01-09). Re-enrollment for the completion of course objectives may be required.

S Satisfactory — No credit. Student completed course objectives. Applies only to Developmental Studies and noncredit courses.

U Unsatisfactory — No credit. Student is not making satisfactory progress and may not be considered for readmission for two quarters. Applies only to Developmental Studies and noncredit courses.

W Withdrawal — No credit. A student withdrawal from a course without academic penalty may be made within the first six weeks after the beginning of a quarter. During the first week the registration will be deleted. From the second through the sixth week a "W" will be given. After the sixth week the student will receive a grade of "F."

X Audit — No credit. Permission of the Instructor, the Division Chairman, and the appropriate Dean is required to audit a course.

NOTE: Deviations from the stated grading policies may be made with the approval of the appropriate Dean when mitigating circumstances are properly documented.

The grade point average (GPA) is determined by dividing the total number of grade points earned in courses by the total number of credits attempted. Courses numbered 01 to 09 are not included.

### Grade Reports

Final grade reports are mailed to the student after the end of each quarter. Final grades are a part of the student's record and are recorded on the student's permanent file.

## DEGREES, DIPLOMAS, AND CERTIFICATES

The College offers the following degrees, diplomas, or certificates for students who successfully complete approved programs at the College.

1. **Associate in Arts Degree (AA)** is awarded to students majoring in the Liberal Arts. Students receiving an AA generally transfer to four-year colleges or universities.

2. **Associate in Science Degree (AS)** is awarded to students majoring in specialized curriculums such as Business Administration, Engineering, Education and Science. Students receiving an AS generally transfer to four-year colleges or universities.

3. **Associate in Applied Science Degree (AAS)** is awarded to students majoring in an occupational-technical curriculum. Students receiving an AAS may elect to transfer to selected four-year colleges or universities or to pursue immediate employment.

4. **Diploma** is awarded to students who complete a two-year nondegree occupational curriculum.

5. **Certificate** is awarded to students who complete an approved, nondegree curriculum which is usually less than two years in length.

## GRADUATION REQUIREMENTS

With the exception of Summer Quarter, if a student is out for two or more quarters normally the catalog under which he returns becomes the catalog under which he graduates.

Attendance at the formal graduation exercise is required of all students meeting the academic standards for an associate degree, diploma, or certificate program. Request for waiver of this requirement must be submitted in writing to the President of the College for his consideration.

### Associate Degree and Diploma Requirements

To be awarded an Associate Degree from the College, a student must:

1. Have fulfilled all of the course requirements of his curriculum as outlined in the College catalog;

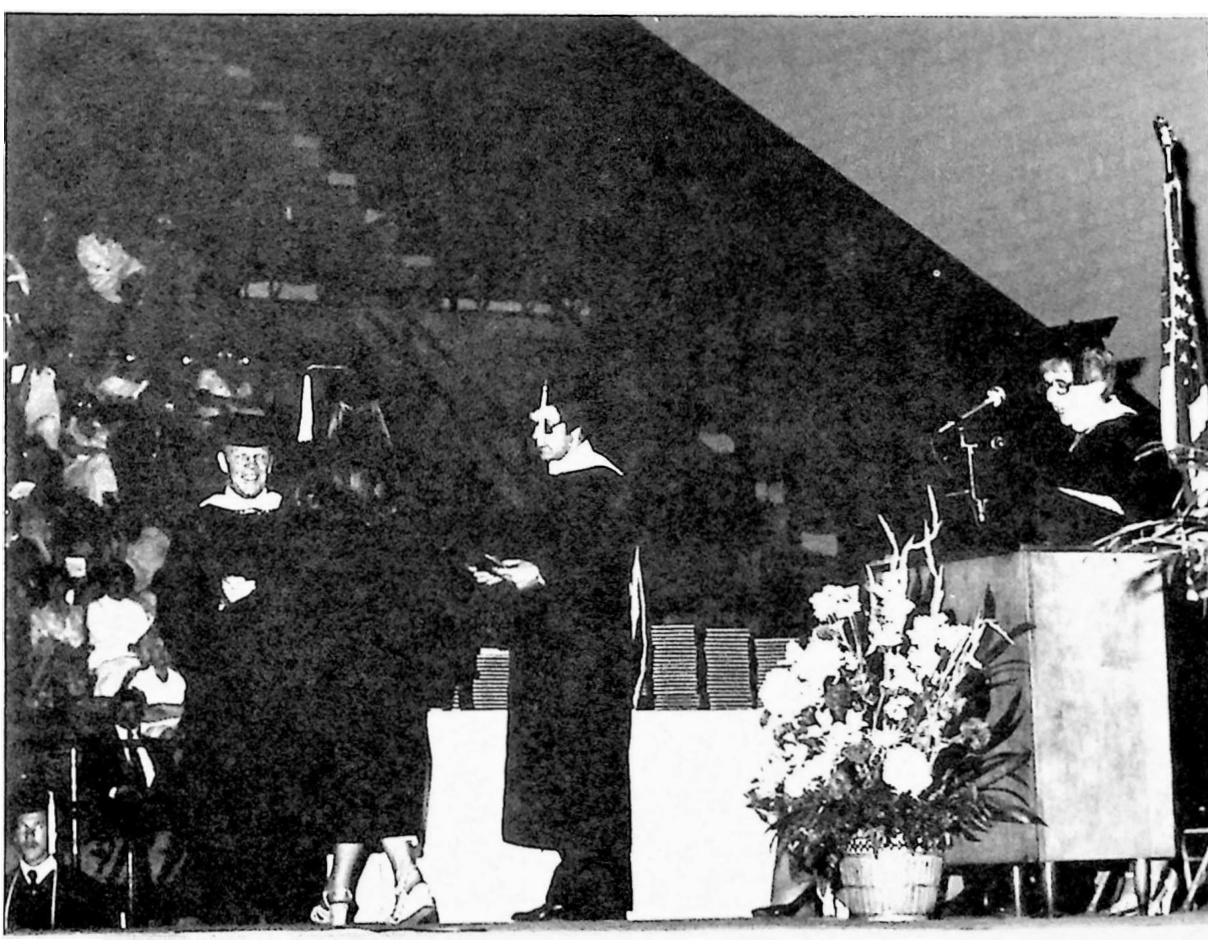
2. Have been recommended for graduation by the appropriate instructional authority in his curriculum;

3. Have completed at least 97 credits applicable to an associate degree of which 20% must be acquired at the College through classroom instruction.

4. Have earned a grade point average of at least 2 on all courses attempted which are applicable toward graduation in his curriculum;

5. Have filed an application for graduation in the Office of Admissions and Records by the required deadline;

6. Have resolved all financial obligations to the College and returned all library and other college materials.



### Certificate Requirements

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. No less than 50 percent of the class credits must be earned at the college. Also, if he pursues a degree or diploma program but is unable to complete graduation requirements, he may, upon the recommendation of the appropriate instructional division and the Dean be issued a certificate provided the portion of study successfully completed is equivalent to an approved certificate program offered at the College. A curriculum GPA of 2 must be achieved.

### Second Degree, Diploma, or Certificate

In awarding students an additional certificate, diploma, or degree, the College may grant credit for all previously completed applicable courses which are requirements of the additional certificate, diploma, or degree.

## ACADEMIC REGULATIONS

In order to achieve and maintain academic standards, levels of responsibility must be established for each student. Students should use the following policies and regulations to guide them in achieving their full academic potential while at Virginia Western.

A faculty member may be designated as advisor to provide academic and educational assistance in the student's field of specialization. The faculty advisor may be helpful in providing information on the knowledge and skills needed along with information on the job opportunities in your field.

The College attempts to keep the student informed of his academic standing. Students will be notified by statement on the grade report if they are academically deficient and when they have regained acceptable academic standing. The College will assist the student in meeting the academic standards of the institution and to ultimately attain graduation.

The normal academic load is 15-17 credits. The minimum full-time load is 12 credits and the normal maximum full-time load is 18 credits. To carry an academic load of more than 18 credits, students should have a 3.0 average or higher and must have the approval of the Coordinator of Admissions and Records or the Coordinator of Counseling Services. Students on "Academic Probation" may not be permitted to register prior to the day designated for late registration. This will give students the opportunity to seek assistance from members of the Counseling Staff in an effort to regain good academic standing.

### Class Attendance

Registration in a course presupposes that regularly scheduled classes and laboratory sessions will be attended. When absence from a class becomes necessary it is the responsibility of the student to inform the instructor prior to the absence. Frequent unexplained absences may result in dismissal from a course.

The student is responsible for making up all work missed during an absence. If a student cannot appear for a test or final examination, he should try to contact the instructor prior to the test period. If he is unable to reach the instructor, he should leave word with the division office.

The policy on attendance and make-up examinations is generally the prerogative of each instructor. Instructors must, however, provide students with a statement of their policy during the first class meeting of each quarter, and instructors should file a copy of their policy in the division office.

The following procedures must be incorporated into each instructor's attendance policy:

a. Any student absent from one week of class should be contacted by the instructor with regard to reason.

b. The name of any day or night student missing two weeks of class should be forwarded on the appropriate referral form to the Coordinator of Counseling.

c. Class rosters will be examined carefully and the instructor will submit at the end of the third week of each quarter a withdrawal form for all no-shows.

d. When the number of unexcused absences for a student reaches an amount equivalent to thirty percent of the total instructional time (e.g., three weeks in a ten-week course) the instructor will drop the student from the class. Students who are dropped from a class because of lack of attendance should be awarded a grade of W if the drop is made during the first six weeks of the quarter, and a grade of F if the drop is made during the last four weeks of the quarter. No-shows should in all cases be awarded a W.

### Change of Registration

In all cases students should follow established procedures for making any changes in their programs after registration. Failure to do so could place their college record in jeopardy.

1. Withdrawal from a course:
A student does not receive a "W" auto-

matically if he stops attending class. HE MUST FILE a Student Schedule Change Form with the Office of Admissions and Records.

2. Addition of a course:
In most cases a student may not enter a new class after the first week of instruction. Any request for entry after this period will be considered by the Coordinator of Admissions and Records.

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 prejudice his return to this or another college.

A three quarter history of withdrawals, either student or instructor initiated, whether at the developmental or college level, constitutes a lack of normal progress. Such action may subject the student to Academic Suspension.

## ACADEMIC STANDING

The College attempts to keep the student informed of his academic standing. The student will be notified by statement on the Grade Report if he is academically deficient and when he has regained acceptable academic standing. The College will assist the student to increase his effectiveness in meeting the academic standards of the institution and to ultimately attain graduation. Students are expected to maintain a 2 (C) grade point average to be making normal academic progress toward graduation.

### Academic Warning

Any student who fails to attain a minimum grade point average of 2 for any 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 until such time as his average is 1.5 or better. The statement "Placed on Academic Probation" will be placed on his permanent record. A person on probation is ineligible for appointive or elective office in student organizations and usually will be required to carry less than a normal course load the following quarter. A student on academic probation is required to consult with a counselor prior to class registration. 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 in his curriculum is a prerequisite to the receipt of an associate degree. Students shall be placed on probation only after they have attempted twelve quarter credit hours.

### Academic Suspension

The student on academic probation who fails to attain a grade point average of 1.5 for the next quarter for which 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. A student who has been informed that he is on academic suspension may submit an appeal in writing to the Chairman of the Admissions Committee for reconsideration of his case. A suspended student may be readmitted after termination of the suspension period and upon formal written petition to the Chairman of the Admissions Committee. Students will be placed on suspension only after they have attempted twenty-four (24) quarter credit hours.

### Academic Dismissal

Students who have been placed on academic suspension and achieve a 2 grade point average for the quarter following their reinstatement must maintain at least a 1.5 grade point average in each subsequent quarter of attendance. The student remains on probation until his overall grade point average is raised to a minimum of 1.5. Failure to attain a 1.5 grade point average 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. Part-time students will be dismissed only after they have attempted thirty-six (36) quarter credit hours.

### Self-Advising

Students eligible to self-advise will be mailed their pre-printed R.I. Form. They need not consult with an advisor/counselor to gain approval for courses. Qualifications for self-advising are as follows:

1. All students who have completed 18 or more college credits, who are in a program of study and who have a cumulative grade point average (GPA) of 2.25, will be assigned to self-advising. Students enrolled in a developmental course or whose assessed academic

preparation suggests a need for developmental courses can not be assigned to self-advise.

2. Any nondevelopmental student can be placed on self-advising with the approval through the Office of Student Development.
3. Each self-advising student will be assigned an advisor who will serve as an academic advisor when assistance is necessary.
4. Self-advising is a status which must be maintained through consistently positive academic progress. Poor academic progress is a problem alert.
   a. A self-advising student will be required to meet with his or her advisor during the quarter following being placed on "academic warning."
   b. A student on "academic probation" will be required to be advised and/or counseled through the Office of Student Development during the quarter following being placed on "academic probation."
   c. Once removed from self-advising, the status can be reinstated with approval through the Office of Student Development or attainment of minimal standards for self-advising.

Self-advising students, as well as other students, are responsible for course selection.

**Repeating a Course**

If a course is repeated one or more times for credit, only the last repetition is counted toward graduation. All grades are included on the permanent record.

**Examinations**

All students are expected to take their examinations at the regularly scheduled times. No exceptions will be made without the permission of the appropriate Dean and the instructor of the class.

**Academic Honors**

At the end of each quarter the Dean's List is prepared, recognizing all regular full-time students who earned a grade point average of 3.2 or better. Regular full-time students who earned a grade point average of 3.5 or better are placed on the President's Honor Roll. The College cannot be responsible for newspaper publicity of these lists.

If you have attended a VCCS community college for a minimum of 45 credit hours, you may be eligible for graduation honors. Appropriate honors are recorded on your diploma. The honors based on your overall academic achievement at Virginia Western Community College are as follows:

3.2 Cum laude (with honor)
3.5 Magna cum laude (with higher honor)
3.8 Summa cum laude (with highest honor)

PART III

# STUDENT SERVICES/ HANDBOOK

### Student Development Services

The College maintains a staff of professional counselors in addition to faculty advisors in each instructional program. The counselors assist students in making decisions regarding their vocational, educational, and personal-social plans. As a part of this assistance, the College makes available appropriate tests, inventories, occupational and educational information, and information regarding financial assistance or employment.

The many and complex problems which may suddenly confront students in the new situations presented in college, the pressures of achieving at a higher level, the anxieties brought about by parental attitudes, peer attitudes, etc., often require that a nonjudgmental, professional counselor committed to your well-being and future success be permitted to assist you in reaching a proper decision. Sessions with counselors are matters of strict confidence.

### Career Life Development Center

The Career Life Development Center was established to provide career related information and to assist students and area residents in making sound career decisions.

Informational components of the Center include college catalogs and transfer manuals; resources for exploring the nature of specific occupations; part-time, full-time, and summer employment opportunities; employment-seeking skill guides and various other career developmental resources.

A computerized occupational and educational information system, the Guidance Information System (GIS), offers detailed descriptions of occupations, salary ranges and employment outlooks for specific occupations. A computer assisted search makes use of an individual's occupational and personal characteristics by matching these traits to occupations that require such qualities. Information on educational opportunities ranging from two-year colleges to graduate school is also accessible through the GIS.

In addition to occupational and educational information systems, individual counseling is provided to afford the student a logical system of career guidance and counseling. Also available through the Career Life Development Center are various psychometric instruments designed to identify occupational interests and aptitudes. The results of the evaluations are an additional source of information used by the counselor in assisting the student with the career development process.

### TESTING

The Student Development Office administers a testing program that includes instruments for determining interests, measures of study habits, and attitudes, educational and occupational ability tests, and personality assessments. These tests are useful if you wish to understand yourself better in terms of your interests, motivations, abilities, and occupational and life goals. Frequently, such tests are recommended by the counselor during a consultation. They are also available upon request.

### CLEP

Virginia Western is an "open" test center for the College-Level Examination Program, a comprehensive testing program with the broad purpose of establishing a national system of awarding college credit by examination.

There are two types of examinations: the **General Examinations** designed to provide a comprehensive measure of undergraduate achievement in five basic areas (English composition, mathematics, natural sciences, humanities, social sciences-history) and the **Subject Examinations** designed to measure achievement in specified undergraduate courses. The CLEP is given at various times throughout the year. For specific information, interested persons should contact the Dean of Student Services.

### ORIENTATION

An orientation program has been established to acquaint new students with the purposes and programs of the College. The orientation program begins weeks before registration when the applicant is asked to consult with a counselor at the College for an interview to discuss the student's educational interests, and to determine what additional tests may be needed. The student will also meet with a counselor to plan his program and course of study.

Orientation conferences (General 100) are provided to aid students in their personal, social, and academic adjustments and in career exploration. Attendance at one of the conferences is required of all newly entering full-time regular students.

## FINANCIAL AID

Virginia Western Community College endorses the philosophy that no student shall be denied an opportunity to pursue postsecondary education due to the lack of financial resources. Paramount to this philosophy is the assumption that the student and his or her family shall contribute to the costs of that education up to the limits of their capacity to do so. However, should such contribution be insufficient to meet the total costs, the student normally is deemed eligible to receive financial assistance from the College. The expected family contribution is determined through a federally-approved method of need analysis.

### Application Procedure

A Financial Aid Handbook providing detailed information on the College's financial aid programs, is available upon request from the Financial Aid Office. The following are the basic steps to be completed in applying for assistance:

1. Apply for admission to the College at the Office of Admissions and Records.
2. Complete a "Financial Aid Form," which can be obtained within the Office of Financial Aid or from a high school counselor. This form must be submitted to College Scholarship Service, Box 176, Princeton, New Jersey 08540.
3. Present the BEOG Student Eligibility Report, received approximately 4-6 weeks following submission of the Financial Aid Form, to the Financial Aid Office at the College.
4. Complete a "Supplementary Application for Financial Aid," indicating plans for part-time employment, availability of private scholarships, etc. This form can be obtained from the Financial Aid Office, and must be returned directly to that office.
5. If an independent student, or a dependent student living outside the parental home, also complete a budget sheet providing information on monthly maintenance expenses.
6. Sign an affidavit of educational purpose, confirming that all financial assistance will be used for legitimate educational purposes, and that, otherwise, appropriate repayment will be provided. This affidavit may be signed and notarized within the Financial Aid Office.

Determination of the financial aid award is made when the student's admission and financial aid files have been completed.

### Types of Financial Assistance

Virginia Western Community College participates in a variety of financial aid programs, including the following:

**Federal:**

1. Basic Educational Opportunity Grant Program
2. College Work-Study Program
3. Supplemental Educational Opportunity Grant Program
4. Nursing Loan Program
5. Nursing Scholarship Program
6. Law Enforcement Education Program
7. Guaranteed Student Loan Program
8. Veterans Administration Educational Benefits Programs
9. Social Security Educational Benefits Program

**Commonwealth of Virginia:**

1. College Scholarship Assistance Program
2. General Assembly Nursing Scholarship Program
3. State Law Enforcement Officer's Educational Program
4. Department of Vocational Rehabilitation Educational Benefits Program
5. Dental Hygiene Scholarship Program

**Private:**

Several scholarships are available from private donors, normally based upon a combination of a student's financial need and potential to demonstrate high academic achievement. In most cases, these are limited to students within specified curricula (electrical engineering technology, mental health technology, etc.)

**Institutional:**

Each year, Virginia Western Community College provides several academic scholarships to graduating high school seniors within its service region. Interested students are asked to discuss the scholarships with a high school counselor.

STUDENTS RECEIVING FINANCIAL ASSISTANCE THROUGH THE COLLEGE, OR FINANCIAL ASSISTANCE BASED UPON COLLEGE CERTIFICATION OF ACADEMIC STATUS, ARE RESPONSIBLE FOR ENSURING THAT ALL COURSES SATISFY A LEGITIMATE PLACE WITHIN AN APPROVED PROGRAM OF STUDIES. CURRICULUM GUIDE SHEETS (C-3 FORMS) ARE AVAILABLE FROM COLLEGE COUNSELORS.

## OFF-CAMPUS EMPLOYMENT

Full-time students are committed to specific class schedules which require fifteen or more hours per week of class work. In addition, students are usually responsible for an average of two or more hours of study per week for each hour in the classroom.

These standards result in an average student work load of approximately forty-five hours, depending on the particular courses and course load of the student.

A student who is considering part-time employment should discuss the question with a counselor or faculty advisor prior to seeking a position. Caution should be used in making a commitment for more than twenty hours of part-time work per week.

## COOPERATIVE EDUCATION

The Cooperative Education Program is designed to provide interested students with supervised work experiences related to their course of study. Currently in the United States there are over 1,000 two- and four-year colleges providing cooperative education experiences for their students.

The cooperative education student has the advantage of gaining early insights into his or her chosen career by working on a supervised, and work related assignment in business, industry, a profession or the government. Of equal importance, they acquire an excellent reference to add to their resumes when ultimately seeking full-time employment after graduation.

In order to be eligible for participation in the co-op program, an interested student must complete an application at least two weeks before the quarter starts. The criteria for acceptance are at least an 2.0 academic average for two quarters, be involved in a curriculum that has one or more elective courses for substitution of co-op academic credit and be approved by the curriculum division head and the Cooperative Education Office. The number of quarters a student can participate in co-op varies with the number of elective subjects that are available in the particular college major.

During the quarter in which they are participating, the students must be employed on the job providing real and substantial training and must submit to the co-op office a job description, a self-appraisal of the job experience, a schedule of hours worked and a performance appraisal by the supervisor.

The Cooperative Education Office develops job placement openings and approves the student's job for related training acceptability in relation to the student's major. In addition, each job site is visited or the supervisor contacted during the quarter by a co-op office representative. Counseling is provided for any problems that may develop on the job.

Approved two-year associate degree curriculums that meet all college education requirements and government agency requirements are listed as follows:

Accounting
Architectural Technology
Automotive Technology
Business Administration
Engineering Technology — Civil/Electrical/Electronic/Mechanical
Commercial Art
Data Processing Technology
Hotel, Restaurant and Institutional Management
Management/Banking and Finance/Real Estate
Mental Health Technology
Merchandising/Marketing
Radio and Television Technology
Secretarial Science — Legal/Medical/Executive
Traffic and Transportation

Other curriculums may be added by special arrangements with the Division Chairman and the Cooperative Education Director.

All students interested in the cooperative education program are invited to visit the Cooperative Education Office in Anderson Hall for more information about the opportunities and the advantages of joining the program.

## PLACEMENT

The college maintains a Student Placement Service to assist students who are seeking permanent placement upon graduation in their chosen field. This service includes assisting the student in preparing a suitable resume and letters of transmittal, coaching in job interviewing techniques, planning the job locating strategy, contacting potential employers and working with the students to identify employers and locations of interest to the graduating student.

The Student Placement Office coordinates its efforts with the Cooperative Education Program in order to obtain related job placement opportunities for students in that program. The Placement Office is in continuous contact with the Virginia Employment Service, industry, business, the professions, and governments to develop the latest job availability information. Numerous full- and part-time temporary jobs are located in the course of this placement research that are in turn made available to students who are seeking part-time or full-time employment while attending college.

The Student Placement Office, in cooperation with the Career Life Development Center, attempts to match available jobs with student's career interests, in order to provide optimum student job satisfaction and valuable on-the-job experience.

Students who are interested in working should contact the Placement Office in Anderson Hall for assistance in locating current part-time or full-time job opening opportunities.

## VETERANS — OFFICE OF VETERANS' AFFAIRS

Programs and courses of study at this College are approved by the State Department of Education for Veterans Administration educational benefits. A "Veteran's Application for Program of Education or Training" must be obtained from, completed, and returned to the Office of Veterans' Affairs.

The Office has the responsibility for veterans' outreach, recruitment, and special education programs, including educational, vocational, and personal counseling. Inquiries concerning eligibility, benefits, tutorial assistance, and other matters that may be of concern to veterans should be directed to personnel in this office.

## SPECIAL SERVICES

The Student Special Services project at Virginia Western Community College is designed for students with academic potential who by reason of educational, cultural, or economic background, or physical handicap, are in need of special services to assist them to initiate, continue, or resume their post-secondary education and to enhance their success in the academic environment. The focus of Special Services is to help qualified students (part-time and full-time) to remain in and successfully complete college.

Services available include tutoring, career counseling, personal counseling, assistance in obtaining financial aid, academic counseling, cultural activities and individualized assistance as needed.

### Services for the Handicapped

We strongly recommend that all students who may have physical or mental limitations or handicaps inform each of their instructors in order that proper assistance and consideration may be given. In some instances, special arrangements may be made to assist where limitations exist. When we are aware of any problems you have, we are in a better position to work with you.

## CUSTOMIZED LEARNING PACKAGES

This instructional mode offers students the opportunity to work at their own pace, with guidance from instructors, as they master course objectives in a variety of subjects. Consisting of video tapes and/or cassettes, Customized Learning Packages are college courses designed for credit or personal satisfaction. They offer the same degree of credit, transferability and other benefits as traditional classes, but present the opportunity for an alternative individualized approach.

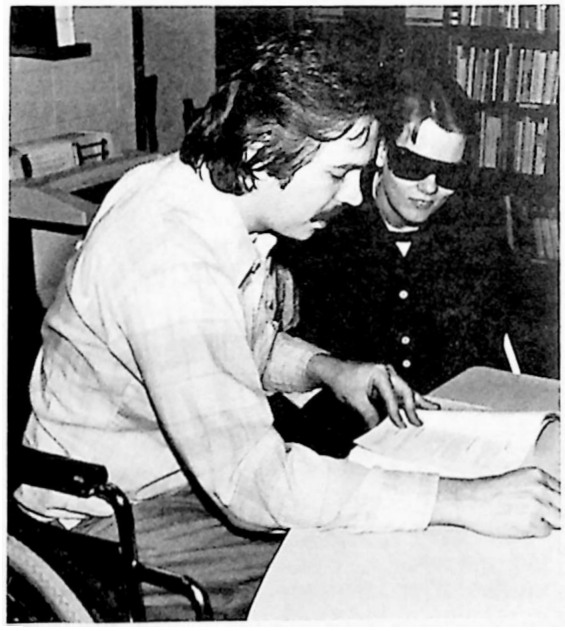
Students can complete these courses outside of the classroom. The grading policy, outlined on page 18 of the College Catalog, applies to students enrolled in Learning Packages courses.

## LEARNING LABORATORY

Instructional design for individualized learning is the major function of the comprehensive Learning Laboratory. It contains equipment and materials especially designed to reinforce, supplement, and enrich classroom instruction.

Electronic study carrels are equipped for audio and visual presentations which support independent learning within curriculum requirements.

Instructors in the Learning Laboratory consult with all learners on choosing enrichment and developmental materials and on the use of audio-visual equipment. They also work with individuals on a one-to-one basis to guide them in the development of a program of study. In addition, they administer and grade tests, and provide tutorial services.

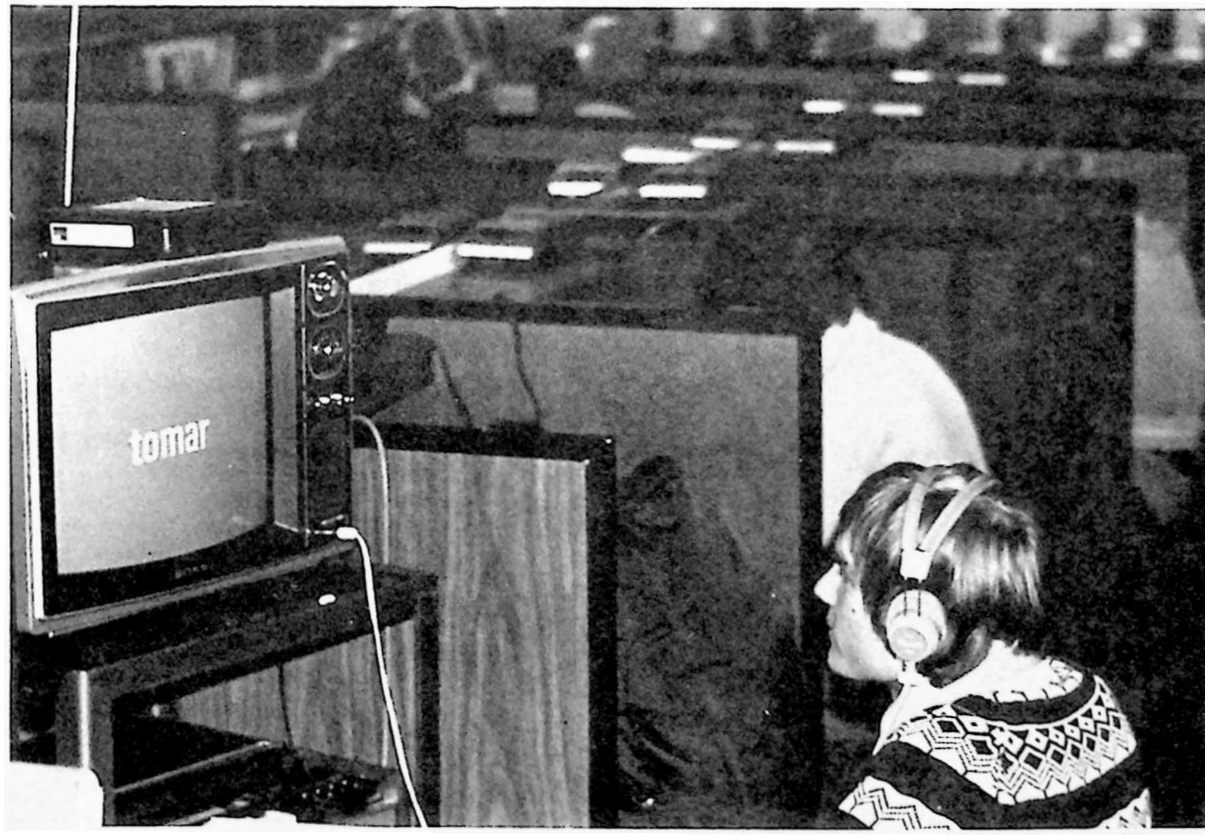


## LIBRARY

Every educational program undertaken by Virginia Western Community College is supported in Brown Library by a collection of relevant books and study materials. The considerable variety of reading matter in the collection reflects the multitude and diversity of programs offered at the College. In the selection of library materials, consideration is also given to the personal and professional interests and needs of students and faculty. Formal and informal instruction in the use of books and libraries is given throughout the student's college stay.

Library resources include: 40,000 books; 2,000 record albums and cassette tapes; 7,000 reels of microfilm; and current subscriptions to 600 periodicals and 30 newspapers. Adjacent reading areas are carpeted and equipped with individual study carrels to reduce noise levels and create an atmosphere conducive to browsing, reading, and study. Special tables are equipped with stereophonic record and cassette players, which may be used with headphones.

A guide to the library has been prepared by members of the library staff and is available free of charge at the Library Information Desk. Before beginning work on research assignments or term papers, students are advised to consult with a reference librarian.



## EVENING AND WEEKEND COLLEGE

Students may continue their education at Virginia Western Community College and earn the baccalaureate degree from a co-operating institution of higher education.

For further information, contact the Office of Admissions.

## FIELD TRIPS

Field trips are established as official parts of many courses and curricula including ART & COMMERCIAL ART, AUTO 291, ARCH 111 & 211, MECH 131, BIOL 101-102-103, BIOL 114-115, BIOL 214-215, BIOL 220, BIOL 226, BIOL 267, BIOL 276, GEOL 101-102-103.

### Food Services

Two commercially operated snack bars are located on campus. One is on the ground floor of Brown Library on the North Campus and the other is located in the breezeway adjacent to Craig Hall on the South Campus.

### Lost and Found

Articles which have been found are to be turned in to the Dean of Student Services where they may be claimed upon identification. If not claimed in a reasonable time, items will be disposed of by the College.

### Student Health Services

Since Virginia Western is a "commuter-college," no health services are provided. Students are encouraged to attend to their own personal well-being by following good health practices.

### Bulletin Boards

The materials to be posted on the three official student announcement boards must be approved by the Coordinator of Counseling. These boards are to be used for such things as items for sale, notices of school activities, coming events at the College, and information of general student interest. These boards are located inside and outside the lunchroom on the ground floor of Brown Library and on the first floor corridor of Duncan Hall. All other bulletin boards are to be used for Division communications or for items of interest to students within a curriculum.

All materials should be removed from the boards by the person posting them after the function has been served. Normally the boards will be checked and cleared of materials over two weeks old by those persons assigned responsibility for that bulletin board.

The use of any space other than bulletin boards for the advertising of any special events must have prior approval of the Dean of Student Services. Posters, advertisements, announcements, etc., should not be posted on any glass, doors, or walls.

## STUDENT ACTIVITIES

Virginia Western has a varied activities program for students: publications, intramural athletics for men and women, dramatic activities, music activities, departmental clubs, and special interest groups. All activities must have a faculty advisor or sponsor. The Office of Student Development coordinates all student activities. There is no student activity fee.

Any student interested in joining a club or other organization may contact this office for information.

The activities program is designed to supplement the academic program in providing meaningful educational, cultural, and social experiences.

## STUDENT CONDUCT

Each College student is considered a responsible adult, and it is assumed that men and women of college age will maintain standards of conduct appropriate to membership in the college community. Emphasis is placed on standards of student conduct rather than on student limits or restrictions. Guidelines and regulations governing student conduct are developed by representatives of the students, faculty, counseling staff, and administration. The College refrains from imposing a rigid code of discipline but reserves the right to take disciplinary action compatible with its own best interest when it is clearly necessary.

Failure to meet standards of conduct acceptable to the College may result in disciplinary probation or dismissal, depending upon the nature of the offense. A disciplinary probation period, unless otherwise specified, is for the duration of one quarter. A student who is dismissed must reapply to the College and will normally be required to appear before a special committee before readmission can be considered.

The Virginia Community College System guarantees to each student the privilege of exercising his right of citizenship under the Constitution of the United States without fear of prejudice. Special care is taken to assure due process and to spell out clearly-defined routes of appeal when a student feels his rights have been violated.

For student conduct which tends to discredit or injure the College, the Chancellor is authorized by the State Board for Community Colleges to impose such penalty as he may deem appropriate, including expulsion from the College. This authority has been delegated by the Chancellor to the Administration of each community college, subject to review by the Chancellor or his delegated representative.

Any student found guilty of participating in or inciting a riot or an unauthorized or disorderly assembly is subject to suspension or dismissal.

Groups of students who wish to have a public assembly on campus must file proper notification in both the Office of the President and the Student Development Office 96 hours in advance. Forms are available in the Student Development Office.

To prevent misunderstanding, the Chancellor has issued the following clarification:

1. When an assembly on campus of students not authorized by the College has been requested to disband by the President or other designated officer, those refusing to comply will be subject to immediate suspension, and/or dismissal and legal action.
2. In the event that an assembly appears to be a demonstration related to grievances, those present should be advised that orderly procedures for the hearing of grievances are available and must be adhered to. College officials will not negotiate with such groups under conditions of duress, such as unauthorized occupation of College property.
3. Any unauthorized occupation of buildings and/or College property constitutes reason for immediate suspension and/or dismissal from the institution of students who may be involved. Furthermore, legal action will be brought against any student involved in acts on community college property which are prohibited by law.
4. Any person currently not a student is not allowed to participate in demonstrations on the campus.

**COLLEGE COLORS** Colonial Blue and White

## COLLEGE RINGS

Official College rings are sold through the Bookstore. Students are eligible to purchase a college ring during the year in which they plan to graduate.

The crest of VWCC which appears on the shank of the ring has the following meaning. The triangular shape represents the three basic types of programs offered — certificate, diploma, and degree. The VCC in the center denotes that the College is part of the Virginia Community College System. The compass and slide rule on the upper left corner represent the technologies or more particularly, the engineering technologies. The open book with a lamp flame in the right corner represents the liberal arts area. The atom at the bottom is symbolic of the various science programs.

### Emergency Information

The College's security officers should be notified immediately concerning the nature and location of the emergency. They will notify the fire department, police, rescue service or College personnel, as necessary.

In case of a fire or fire drill, the building will be evacuated in accordance with posted instructions. Fire extinguishers are strategically placed about the buildings for use in putting out small fires.

It is College policy to remain in operation to the maximum extent possible. When weather

conditions are so severe as to require reduced operations, students will be notified through announcements by local radio and television stations.

### Smoking

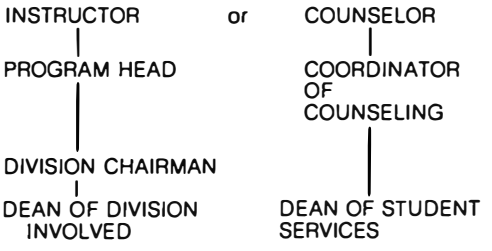
Smoking is prohibited in all laboratories, classrooms, and Brown Library (other than offices).

### Suggestions, Grievances, Channels of Communications

Each student has the right to express an opinion, make suggestions, and submit grievances. Channels of communication are always open to students with personal problems and to those who wish to suggest improvements, etc.

While students may elect to resolve a non-instructional conflict by contacting the Office of Student Development, instructional related concerns should first be addressed through appropriate academic channels.

To facilitate the communication process, the use of the following administrative channels is suggested:




In the event that the conflict cannot be resolved following these channels, an ad hoc Grievance Committee may be convened by the Dean of Student Services. Findings of such a committee are advisory to the President of the College.

## STATEMENT OF STUDENT RIGHTS, RESPONSIBILITIES AND CONDUCT

### Student Rights

### I. Students' Rights

The following statement of student rights shall not be construed to deny other rights normally enjoyed by students in their role as citizens.

A. Students' freedom to pursue their educational goals in an atmosphere of free inquiry and expression is a reasonable expectation.

B. No disciplinary sanctions may be imposed upon any student without notice to the accused of the nature and cause of the charges and, upon request, a fair hearing which shall include confrontation of witnesses against him and the advice of a person of his own choosing.

C. Every student has the right to be interviewed on campus by any college-approved organization desiring to recruit at the institution.

### II. Definitions

A. The terms "institution" and "college" are used interchangeably to mean Virginia Western Community College, and collectively, those responsible for its control and operation.

B. The term "student" includes all persons taking courses sponsored by the College.

C. The term "instructor" means any person employed by the institution to conduct classroom activities.

D. The term "administration" means any person employed by the institution to assume responsibility for its day-to-day management.

E. The term "legal compulsion" means a judicial or legislative order which requires some action by the person to whom it is directed.

F. The term "organization" means a number of persons who have complied with the formal requirements for institutional recognition.

G. The term "group" means a number of persons who have not yet complied with the formal requirements for becoming an organization.

H. The term "campus press" means either an organization whose primary purpose is to publish and distribute any publication on campus or a regular publication of an organization.

I. The term "shall" is used in the imperative sense.

J. The term "may" is used in the permissive sense.

K. All other terms have their natural meaning unless the context dictates otherwise.

### III. Access to Higher Education

Within the limits of its facilities, the institution shall be open to all applicants who are qualified according to the admissions policies as published in this Catalog. Under no circumstances shall an applicant be denied admission on the basis of race, religion, sex, ethnic background or physical handicap.

## IV. Classroom Expression

A. The Instructor should encourage free discussion, inquiry, and expression. Student performance will be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards. Discussion and expression of all views relevant to the subject matter are permitted in the classroom, subject only to the responsibility of the instructor to maintain order.

B. Students will be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for the content of any course of study in which they are enrolled. Requirements of participation in classroom discussion and submission of written exercises are not inconsistent with this section.

C. Students will have protection through proper channels as established by the institution against improper academic evaluations. At the same time, they are responsible for maintaining standards of academic performance established for each course in which they are enrolled.

D. Information about student views, beliefs, and political associations acquired by instructors in the course of their work as teachers, advisors, and counselors is confidential. Judgments of ability and character may be provided under appropriate circumstances, normally with the knowledge or consent of the student.

## V. Campus Organizations

A. Procedures for forming an organization may be obtained from the Dean of Student Services.

B. A group shall become a recognized organization when approved by the Dean of Academic and Student Affairs and the President of the College.

C. Rules for the governance of all student clubs and organizations:

1. All student organizations operating on the Virginia Western Community College campus must be approved in accordance with the procedures given in the "Procedures for Formation of New Clubs . . ."
2. Membership is limited to registered students. This does not restrict any organization from inviting guests to visit or to speak to the membership from time to time. Invited guests should not attend on a regular basis nor should they take part in the regular activities of the membership.
3. The assignment of a meeting room is controlled through the Dean's office. Each club or other activity will be assigned space, as available, upon request of the club president. Space for special meetings requiring larger facilities and/or special equipment must be requested in advance (at least two weeks) through the Dean of Student Services.
4. Guest speakers on campus are subject to regulation as to the time, place, and manner. Regulations are not imposed to prohibit any speaker from appearing on campus except when it is shown that the speaker's presence constitutes a clear and present danger of disruption or violence. This determination shall be made by the Dean of Student Services.
5. Organizations having speakers for regularly scheduled meetings are not normally required to make special arrangements. The faculty sponsor will be responsible for any regulations as in No. 4.
6. A faculty sponsor is required for each student organization. The sponsor's duty is to advise the membership about the College regulations and other advice as may be appropriate to the proper operation of the activity.
7. An approved organization may be penalized for members' actions which are in violation of College policy. Such penalties shall not be invoked upon an organization because of the acts of individual members unless the organization has failed to fulfill its responsibilities and/or the incidents occur in conjunction with an activity of the organization.

D. Institution facilities shall be assigned to organizations, groups, and individuals within the college community for regular business meetings, for social programs, and for programs open to the public.

1. Reasonable conditions may be imposed to regulate the timeliness of request, to determine the appropriateness of space assigned, to regulate time and use, and to insure proper maintenance.
2. Preference may be given to programs designed to audiences consisting primarily of members of the college community.
3. Allocations of space shall be based on the order in which requests are received and the demonstrated needs of the organization, group, or individual.

4. The institution may delegate the assignment function to an administrative official or to a student committee on organizations.
5. Charges may be imposed for use of facilities.
6. Physical abuse of assigned facilities shall result in reasonable limitations on future allocation of space to offending parties and restitution for damages.
7. The individual, group, or organization requesting space must inform the institution of the general purpose of any meeting open to persons other than members and the names of outside speakers.

E. No individual, group, or organization may use the college name without the express authorization of the institution.

### VI. Campus Publications

Participation by students is encouraged in order that the attainment and best interests of students shall be mirrored in all publications. The aim is the highest good for both the College and the students. Material for publication should be as interesting and factual as possible within the generally accepted limits of decency and morality.

The most important tenets are: fairness, accuracy, and good taste.

### VII. Institutional Government

Clearly defined means shall be provided for student expression on all institutional policies affecting academic and student affairs.

A. Students will assist in the development of activities and organizations, and in other matters affecting their welfare on campus.

B. Students will be represented on appropriate standing committees of the college.

### VIII. Protection of Student Freedoms

#### A. Institutional Authority and Civil Penalties

Students who violate the law may incur penalties prescribed by civil authorities, but institutional authority will never be used merely to duplicate the function of general laws. Only where the institution's interests as an academic community are distinct and clearly involved will the special authority of the institution be asserted.

#### B. Privacy

1. Students have the same rights of privacy as any other citizen and surrender none of those rights by becoming members of the academic community.
2. Inquiry is permitted into the activities of students away from the campus where their behavior may have an adverse impact on the academic community.

#### C. Student Records

1. Transcripts of academic records will contain only information about academic status, except that disciplinary action taken against a student which affects his eligibility to reregister within the institution will be recorded.
2. Information from disciplinary or counseling files will not be made available to unauthorized persons on the campus or to any person off campus without the expressed consent of the student involved, except under legal compulsion or in cases where the safety of persons or property is involved.
3. Provisions will be made for periodic routine destruction of noncurrent disciplinary records.
4. No records will be kept for the sole purpose of reflecting the activities or beliefs of students.
5. Administrative staff, faculty and other employees will respect confidential information about students which they acquire in the course of their work.
6. Upon graduation or withdrawal from the institution, the records and files of former students shall continue to be subject to the provisions of this Code of Conduct.

### IX. Procedural Standards in Disciplinary Proceedings

In developing responsible student conduct, disciplinary proceedings play a role substantially secondary to example, guidance, and admonition. At the same time, educational institutions have a duty and the corollary disciplinary powers to protect their educational purpose through the setting of standards of scholarship and conduct for the students who attend them and through the regulation of the use of institutional facilities. In the exceptional circumstances when the preferred means fail to resolve problems of student conduct, proper procedural safeguards will be observed to protect the student from unfair imposition of serious penalties.

#### A. Proscribed Conduct

Generally, institutional discipline 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 as set forth in any of the above-mentioned sanctions:

1. All forms of dishonesty, including cheating, plagiarism, knowingly furnishing false information to the institution, and forgery, alteration or use of institution documents or instruments of identification with intent to defraud.
2. Disruption or obstruction of teaching, research, administration, disciplinary proceedings or other college activities.
3. Physical abuse of any person on college premises or at college sponsored or supervised functions.
4. Theft from or damage to college premises or damage to property of a member of the institutional community on institution premises.
5. Failure to comply with directions of college officials acting in the performance of their duties.
6. Possession or use of alcoholic beverages on campus not in connection with an approved function where an appropriate license has been secured.
7. Possession, use, or distribution of illegal drugs either on or off campus.
8. Violation of published institutional regulations including those relative to entry and use of institutional facilities, the rules in this Code of Conduct, and any other regulations which may be enacted.
9. Violation of any local, state, or federal law in a way that affects the college community's pursuit of its proper educational purposes.

## B. Disciplinary Proceedings

This institution may make a preliminary investigation to determine if the charges can be disposed of informally by mutual consent without the initiation of disciplinary proceedings. If the charges cannot be disposed of informally by mutual consent, disciplinary proceedings will be initiated in accordance with the following principles.

1. Any academic or administrative official, faculty member, or student may file charges against any student for misconduct. When the President or his designate believes that the continued presence of a person charged with misconduct presents a serious and immediate danger to the college community, the student may be suspended pending consideration of the case. Such suspension shall not exceed a reasonable time.
2. All charges shall be presented to the accused student in written form and he shall respond within seven calendar days. The time may be extended for such response. A time shall be set for a hearing which shall not be less than seven nor more then fifteen calendar days after the student's response.
3. A calendar of the hearings in a disciplinary proceeding shall be fixed after consultation with the parties. The institution shall have discretion to alter the calendar for good cause.
4. Hearings shall be conducted in such manner as to do substantial justice.
   a. Hearings shall be private if requested by the accused student. In hearings involving more than one student, severance shall be allowed upon request.
   b. An accused student has the right to be advised by counsel or an adviser who may come from within or without the institution.
   c. Any party to the proceedings may request the privilege of presenting witnesses subject to the right of cross-examination by other parties.
   d. Production of records and other exhibits may be required.
5. In the absence of a transcript, there shall be both a digest and a verbatim record, such as a tape recording, of the hearing, in cases that may result in the imposition of the sanctions of restitution, suspension, and expulsion as defined in Section IX A above.
6. No recommendation for the imposition of sanctions may be based solely upon the failure of the accused student to answer the charges or appear at the hearing. In such a case, the evidence in support of the charges shall be presented and considered.
7. Disciplinary procedures within the institution shall consist of two stages:
   a. The initial hearing board, composed of college personnel holding faculty rank and students, shall be charged with the responsibility of conducting the hearing, determining the guilt or innocence of the accused student, and recommending sanctions to the President of the College. Findings of this board are advisory to the President of the College.
   b. Within five calendar days of receipt of the hearing board's recommen-

dations, the President of the College shall act on the recommendations and notify the student and the hearing board, in writing, of his decision.

8. When the penalty for misconduct is suspension or dismissal, the student may appeal the decisions to the Appeals Committee. Members of the Appeals Committee will be selected by the College President from among those persons holding faculty rank and will include two or more students. Members of the initial hearing board shall not serve on the Appeals Committee. Such appeal must be made within ten days of notification of the decision.
   a. Appeal shall be limited to a review of the full report of the hearing board for the purpose of determining whether the institution acted fairly in light of the charges and evidence presented.
   b. An appeal may not result in a more severe sanction for the accused student.
   c. Findings of this board are advisory to the President of the College.
9. When the penalty for misconduct is suspension or dismissal, the student may appeal the decision to the Local College Board. Final appeal may be made to the State Board of Community Colleges.

## C. Sanctions

Disciplinary proceedings may result in the following sanctions:

1. Admonition: A written statement to a student that he is violating or has violated institution rules.
2. Warning: Notice, in writing, that continuation or repetition of conduct found wrongful, within a period of time stated in the warning, may cause more severe disciplinary action.
3. Censure: A written reprimand for violation of specified regulations, including the possibility of more severe disciplinary sanctions in the event of the finding of a violation of any institution regulation within a stated period of time.
4. Disciplinary probation: Exclusion from participation in privileged or extracurricular college activities as set forth in the notice for a period of time not exceeding one school year.
5. Restitution: Reimbursement for damage to or misappropriation of property. This may take the form of appropriate service or other compensation.
6. Suspension: Exclusion from classes and other privileges or activities as set forth in the notice for a definite period of time not to exceed two years.
7. Expulsion: Termination of student status for an indefinite period. The conditions of readmission, if any, shall be stated in the order of expulsion. No sanctions may be imposed for violation of rules and regulations for which there is not actual or constructive notice.

## D. Judicial Authority

1. The Disciplinary Committee composed of administrators, faculty members, and students handle all questions of student discipline. Findings of such judicial bodies are advisory to the President of the College, whose decisions are final.
   a. The judicial bodies may formulate procedural rules which are not inconsistent with the provisions of this code.

PART IV

# CURRICULUMS OF STUDY

**DEGREE**

**MAJOR(S)**

**SPECIALIZATION(S)**

**Associate in Arts (AA)**

Fine Arts
Liberal Arts

**Associate in Science (AS)**

Business Administration
Education
Engineering
General Studies
Science

**Agricultural & Natural Resources Technology (AA)**

Horticulture

**Arts & Design Technology (AAS)**

Commercial Art

**Business Technology (AAS)**

Accounting
Data Processing
  Computer Programming
Hotel-Restaurant-Institutional Management
  Food Service
Management
  Management
  Banking & Finance
  Real Estate
Merchandising
Secretarial Science
  Executive
  Legal
  Medical
Traffic & Transportation

**Engineering Technology (AAS)**

Architecture
Civil
Electrical/Electronics
  Communications
  Power
Mechanical

**Health Technology (AAS)**

Dental Hygiene
Mental Health
Nursing
Radiologic Technology

**Industrial Technology (AAS)**

Automotive

**Public Service Technology (AAS)**

Administration of Justice
Child Development Education
Radio and Television Production

**Diploma**

Automotive Analysis and Repair
Electronic Servicing

**Certificate**

Air Conditioning & Refrigeration
Architectural Drafting
Automotive Mechanics
Child Development Aide
Clerk Typist
Dental Assistant
Educational Assistant
Educational Secretary
Engineering/Technical Assistant
Food Service Management
Legal Assistant
Medical Transcriptionist
Respiratory Therapy Technician
Savings and Loan Administration
Stenographic
Welding

## STATE AND REGIONAL SPECIALIZED CURRICULUMS

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.

| Program | Community College |
|---|---|
| Agricultural & Natural Resources Technology Majors: | |
| Animal Science | Blue Ridge<br>Northern Virginia |
| Agronomy | Paul D. Camp |
| Forestry | Dabney S. Lancaster |
| Horticulture | Northern Virginia<br>J. Sargeant Reynolds<br>Virginia Western |
| Natural Resources Management & Security | Lord Fairfax |
| Wildlife | Dabney S. Lancaster |

| | |
|---|---|
| **Arts and Design Technology** | |
| Majors: | |
| Media Advertising Arts | Tidewater |
| **Business Technology** | |
| Majors: | |
| Aviation Administration | Northern Virginia |
| **Engineering/Industrial Technology** | |
| Majors: | |
| Broadcast Engineering | Northern Virginia |
| Environmental Science | J. Sargeant Reynolds |
| | Wytheville |
| Environmental & Science Instrumentation | Northern Virginia |
| | New River |
| Marine Science | Rappahannock |
| | Thomas Nelson |
| Mining | Southwest Virginia |
| | Mountain Empire |
| **Health Technology** | |
| Majors: | |
| Dental Laboratory | J. Sargeant Reynolds |
| | Northern Virginia |
| Funeral Services | John Tyler |
| Opticianry | J. Sargeant Reynolds |
| Physical Therapy | Northern Virginia |
| Radiology | Central Virginia |
| | Virginia Western |
| **Public Service Technology** | |
| Majors: | |
| Air Traffic Control | Northern Virginia |
| Occupational Safety and Health | Northern Virginia |
| | Thomas Nelson |
| Radio and Television Production | Virginia Western |

## MINIMUM REQUIREMENTS FOR ASSOCIATE DEGREES (SB)

### Associate in Arts (AA)
### Associate in Science (AS)
### Associate in Applied Science (AAS)

| | Number of Credits (Quarter Hours) | | |
|---|---|---|---|
| | AA[1] | AS[1] | AAS |
| **Humanities** | | | |
| English Composition | 9 | 9 | 0 |
| Communication Skills | 0 | 0 | 6-9 } 9 |
| Literature (English, American, or World) | 6-9 | 0-3 | - |
| English or Speech | 0-3 } 9 | 0-3 } 3 | 0-3 } 9 |
| Art, Drama, Music, Humanities and/or Philosophy | 0-6 | 0-3 | |
| Foreign Language | 12-24[2] | | |
| **Social Sciences** | | | |
| History (American or Western Civilization) | 9 | 3-9 | |
| Economics | 0-9 | 0-9 | 3 |
| Government | 0-9 } 9[3] | 0-9 } 9[3] | 3 } 4 |
| Psychology or Human Relations | 0-9 | 0-9 | 3 |
| Sociology | 0-9 | 0-9 | |
| **Natural Sciences and Mathematics** | | | |
| Natural Sciences (Laboratory) (Biology, Chemistry, Geology, Physics) | 12-15 | 12-24 | |
| Mathematics | 9 | 9 | |
| Health, Physical Education or Recreation | 3-6 | 3-6 | 3-6 |
| Orientation | | 1 | 1 |
| Electives and Other Major Field Requirements | 3-21[1] | 48 | 75[5] |
| Minimum Total Number of Credits for Degree | 97 | 97 | 97 |

[1]Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and further to consult with the Counseling Department of the community college in planning their program and selecting electives.
[2]Students who have successfully completed two years of a foreign language in high school may petition for advance placement to the sophomore course of this foreign language.
[3]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, sociology and/or psychology.
[4]SOSC 101-102-103 may be substituted for ECON, GOVT, and PSYC.
[5]The Associate in Applied Science degree programs should be organized approximately as follows:

| | |
|---|---|
| Specialized and degree related courses | 50% |
| General education courses | 25% |
| College electives | 25% |

## FINE ARTS

### ASSOCIATE IN ARTS DEGREE

*Purpose:* The curriculum is designed for persons who plan to transfer to a four-year program in professional art schools or to a four-year program in fine arts. Students who are interested in art but who do not elect immediately to transfer will find this program suited to their needs. **Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. 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.**

*Special Curriculum Admission Guidelines:* A satisfactory aptitude in visual art is preferred for entry into the art program, and applicants may be asked to submit a portfolio for placement. Developmental courses may be recommended for students with deficiencies in English and mathematics.

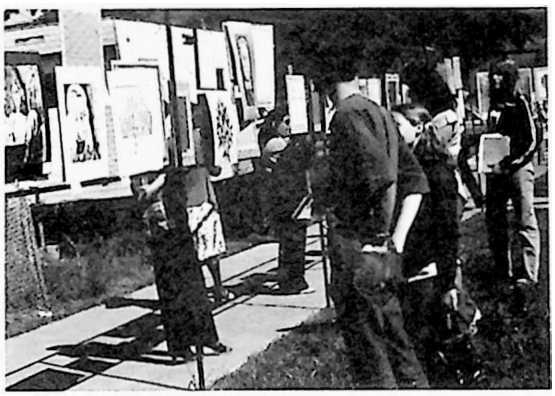
### Fine Arts Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| ARTS 111-112-113 History and Appreciation of Art | 3 | 3 | 3 |
| ARTS 121-122-123 Theory and Practice of Drawing | 3 | 3 | 3 |
| ARTS 154-155-156 Design I II III | 3 | 3 | 3 |
| ENGL 111-112-113 English Composition | 3 | 3 | 3 |
| GENL 100 Orientation | 1 | | |
| [1]MATH 161-162-163 College Mathematics (or MATH 181-182-183) | 3 | 3 | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 17-19 | 16-18 | 16-18 |

| (Second Year) | | | |
|---|---|---|---|
| ARTS 266-267-268 Illustration | 3 | 3 | 3 |
| ARTS 231-232-233 Theory and Practice of Painting | 3 | 3 | 3 |
| HUMN 201-202-203 Survey of Western Culture | 3 | 3 | 3 |
| ARTS 274 Intro. to Printmaking | 3 | | |
| ARTS 275-276 Art Printmaking Workshop | | 3 | 3 |
| Literature (American or English) | 3 | 3 | 3 |
| Electives | 2 | 2 | 2 |
| Total Credits | 17 | 17 | 17 |

Total Minimum Credits for Degree . . . 97

[1]Math courses chosen should fulfill requirement of four-year college or university the student plans to attend.



## LIBERAL ARTS

ASSOCIATE IN ARTS DEGREE

*Purpose:* The curriculum 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 to major in the following fields:

| | |
|---|---|
| English | Social Sciences |
| Foreign Language | Philosophy |
| Humanities | Pre-Law |
| Journalism | Speech-Drama |

**Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. 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.**

*Special Curriculum Admission Guidelines:* 4 units of English; 2 units of college preparatory mathematics; 1 unit of laboratory science; and 1 unit of history. The remaining units are elective courses, but at least two units of a foreign language are recommended. Students are urged to check the mathematics requirement 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. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Liberal Arts Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| ENGL 111-112-113 English Composition | 3 | 3 | 3 |
| GENL 100 Orientation | 1 | | |
| HIST 111-112-113 American History (or HIST 101-102-103) | 3 | 3 | 3 |
| [1]MATH 161-162-163 College Mathematics (or MATH 181-182-183) | 3 | 3 | 3 |
| [2]Foreign Language | 4 | 4 | 4 |
| Natural Science with laboratory | 4 | 4 | 4 |
| Health or Physical Education | | 1-3 | |
| Total Credits | 18 | 18-20 | 17 |
| (Second Year) | | | |
| Foreign Language | 4 | 4 | 4 |
| Literature (American or English) | 3 | 3 | 3 |
| Social Science | 3 | 3 | 3 |
| Speech | | 3 | |
| Electives | 6 | 3 | 0-6 |
| Health or Physical Education | | 1-3 | |
| Total Credits | 17-19 | 17-19 | 10-16 |

Total Minimum Credits for Degree . . . . . 97

[1]Math courses chosen should fulfill requirement of four-year college or university the student plans to attend.
[2]Students who have completed two years of a foreign language in high school may petition for advanced placement into the second year of the foreign language at the college. Students must complete the intermediate level of a single college foreign language course. If the beginning language course is not taken, 12 hours of elective courses must be substituted for it.

## BUSINESS ADMINISTRATION

ASSOCIATE IN SCIENCE DEGREE

*Purpose:* The curriculum is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in business administration. **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 office of the community college in planning their program and selecting electives. 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.**

*Special Curriculum Admission Guidelines:* 4 units of English; 3 units of mathematics (algebra and geometry); 1 unit of laboratory

science; and 1 unit of social studies. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Business Administration Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ENGL 111-112-113 English Composition | 3 | 3 | 3 |
| GENL 100 Orientation | 1 | | |
| HIST 111-112-113 United States History (101-102-103) | 3 | 3 | 3 |
| MATH 161-162-163 College Mathematics | 3 | 3 | 3 |
| Natural Science with laboratory | 4 | 4 | 4 |
| [1]Electives | 3 | 3 | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 17-18 | 17-19 | 17-19 |
| (Second Year) | | | |
| ACCT 211-212-213 Principles of Accounting | 3 | 3 | 3 |
| [2]ECON 211-212-213 Principles of Economics | 3 | 3 | 3 |
| Literature/Speech | 3 | 3 | 3 |
| [1]Electives | 6 | 6 | 6 |
| Total Credits | 15 | 15 | 15 |
| Total Minimum Credits for Degree | | | 97 |

[1]Electives must be selected from Humanities, Natural Sciences, Social Sciences
[2]In addition to the Economics requirement for the community colleges, students are advised to complete a Government and Psychology course, or a full year of a sophomore social science if required by the four-year college or university to which they plan to transfer.

## EDUCATION

ASSOCIATE IN SCIENCE DEGREE

*Purpose:* The curriculum is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Teacher Education, or Early Childhood Education. Students who are considering certification in Early Childhood Education should consult the Early Childhood staff of the Virginia Western Community College. **Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and to consult with the counseling office of the community college in planning their program and selecting electives. 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.**

*Special Curriculum Admission Guidelines:* 4 units of English; 2 units of college preparatory mathematics; 1 unit of laboratory science; and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English and mathematics. Eligible students may qualify for the State Teachers' Scholarships.

### Education Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ENGL 111-112-113 English Composition | 3 | 3 | 3 |
| GENL Orientation | 1 | | |
| HIST 111-112-113 United States History (or Hist 101-102-103 West Civ.) | 3 | 3 | 3 |
| MATH 154-155 Modern Math for Elementary Teachers | 3 | 3 | |
| MATH 158 Modern Math or Elementary Teachers-Methods & Applications | | | 3 |
| Natural Sciences with laboratory | 4 | 4 | 4 |
| [1]Electives | 3 | 3 | 3 |
| Total Credits | 17 | 16 | 16 |
| (Second Year) | | | |
| Literature (American, English, World) | 3 | 3 | 3 |
| [2]PSYC 201-202-203 General Psychology | 3 | 3 | 3 |
| Social Science Electives | 3-6 | 3 | 3 |
| SPDR 137 Public Speaking | 3 | | |
| Electives | 3 | 6 | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 16-18 | 16-18 | 16-18 |
| Total Minimum Credits for Degree | | | 97 |

[1]Math courses and electives chosen should fulfill requirement of four-year college or university the student plans to attend.
[2]In addition to the Psychology requirements, students should complete a full year of sophomore level social science.

## ENGINEERING

ASSOCIATE IN SCIENCE DEGREE

*Purpose:* The curriculum 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 | Chemical | Mechanical |
| Agriculture | Civil | Metallurgical |
| Building Construction | Electrical | Mining |
| | Industrial | Nuclear |
| Ceramics | | |

**Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. 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.**

*Special Curriculum Admission Guidelines:* 4 units of English; 4 units of mathematics (2 units of alegbra, 1 unit of plane geometry, 1 unit of advanced math or trigonometry and solid geometry); 1 unit of laboratory science; and 1 unit of social studies. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Engineering Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| CHEM 111-112-113 General Inorganic Chemistry | 4 | 4 | 4 |
| ENGL 111-112-113 English Composition | 3 | 3 | 3 |
| ENGR 104-105 Introduction to Engineering Methods | 3 | 3 | |
| ENGR 121-122-123 Engineering Graphics | 2 | 2 | 2 |
| ENGR 140 Statistics of Particles and Rigid Bodies | | | 3 |
| GENL 100 Orientation | | | |
| MATH 141-142-143 Introductory Mathematical Analysis | 5 | 5 | 5 |
| Total Credits | 18 | 17 | 17 |
| (Second Year) | | | |
| ECON 211-212-213 Principles of Economics I II III | 3 | 3 | 3 |
| ENGR 206 Engineering Economy | 3 | | |
| ENGR 241 Mechanics of Particles | 3 | | |
| ENGR 242 Dynamics of Rigid Bodies | | 3 | |
| ENGR 243 Mechanics of Deformable Solids | | | 5 |
| Humanities Elective | | 3 | |
| MATH 241-242-243 Advanced Mathematical Analysis | 4 | 4 | 4 |
| PHYS 222-223-224 General University Physics | 4 | 4 | 4 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 18-20 | 18-20 | 17-19 |
| Total Minimum Credits for Degree | | | 105 |

## GENERAL STUDIES

ASSOCIATE IN SCIENCE DEGREE

***Purpose:*** The curriculum is designed for students who are uncertain about their vocational or education goals. It offers sufficient flexibility so that students may take courses which are accepted in most four-year colleges and universities in a wide number of baccalaureate degree programs. It also provides greater opportunity than that offered in other college transfer programs for the student to take courses which emphasize areas of academic strength and interest. In addition, it provides for students who want a broad two-year educational experience in a degree program but who do not intend to transfer.

*Special Curriculum Admission Guidelines:* 4 units of English; 2 units of college preparatory mathematics; 1 unit of laboratory science; and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### General Studies Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ENGL 111-112-113 English Composition | 3 | 3 | 3 |
| GENL 100 Orientation | 1 | | |
| HIST 111-112-113 American History (or HIST 101-102-103) | 3 | 3 | 3 |
| [1]MATH 161-162-163 College Mathematics (or MATH 181-182-183) | 3 | 3 | 3 |
| [1]Natural Science with laboratory | 4 | 4 | 4 |
| Electives | 3 | 3 | 3 |
| Health or Physical Education | | 1-3 | 1-3 |
| Total Credits | 17 | 17-19 | 17-19 |
| (Second Year) | | | |
| Humanities or Social Science Electives | 3 | 3 | 3 |
| Literature (American or English) | 3 | 3 | 3 |
| PSYC 201-202-203 General Psychology | 3 | 3 | 3 |
| SPDR 137 Public Speaking | 3 | | |
| Electives | 6 | 6 | 6 |
| Health or Physical Education | | 1-3 | |
| Total Credits | 18 | 16-18 | 15 |
| Total Minimum Credits for Degree | | | 97 |

[1]Student has the option of taking either math or a natural science, however, if transfer is contemplated, both courses should be taken. Math courses chosen should fulfill requirement of four-year college or university the student plans to attend.

## SCIENCE

ASSOCIATE IN SCIENCE DEGREE

***Purpose:*** The curriculum 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 | Pre-Medicine |
| Biology | Nursing |
| Chemistry | Pharmacy |
| Pre-Dentistry | Physical Therapy |
| Forestry | Physics |
| Geology | Science Education |
| Home Economics | Pre-Veterinary |
| Mathematics | |

**Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. 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.**

*Special Curriculum Admission Guidelines:* 4 units of English; 3 units of college preparatory mathematics; 1 unit of laboratory science; and 1 unit of social science. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Science Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ENGL 111-112-113 English Composition | 3 | 3 | 3 |
| GENL 100 Orientation | 1 | | |
| HIST 101-102-103 History of Western Civilization (or HIST 111-112-113) | 3 | 3 | 3 |
| MATH 161-162-163 College Mathematics (or MATH 141-142-143) | 3-5 | 3-5 | 3-5 |
| Science with laboratory | 4 | 4 | 4 |
| [2]Electives | | 3 | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 15-19 | 17-21 | 17-21 |
| (Second Year) | | | |
| [2]Humanities Elective | 3 | | |
| MATH 261-262-263 Calculus (or MATH 241-242-243 or elective) | 3-4 | 3-4 | 3-4 |
| [1]Science with laboratory | 4 | 4 | 4 |
| [2]Social Science Elective | 3 | 3 | 3 |
| [2]Electives | 3-4 | 6-7 | 6-7 |
| Total Credits | 16-18 | 16-18 | 16-18 |
| Total Minimum Credits for Degree | | | ....97 |

[1]Two science sequences in different disciplines are required and each sequence must be a full year with laboratory.
[2]Electives must be selected from the transfer courses listed on the Science C-3 Form.

## HORTICULTURE TECHNOLOGY

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* There is a distinct need in many horticultural and related industries for employees who have some basic training and experience in horticulture but who are not holders of a specialized baccalaureate degree. The Associate in Applied Science Degree in Horticulture Technology is designed to prepare students to fulfull that need. During the second year students may specialize in either floriculture or landscape/grower.

*Occupational Objectives:*

Manager or employee in a nursery or greenhouse

Grounds maintenance operator or supervisor

Floral designer or manager of a florist shop

Employee in a retail horticultural business or a related industry

*Cooperative Education:* Students in this program will be provided an opportunity to obtain on the job training through cooperative arrangements between the college and prospective employers.

*Special Curriculum Admission Guidelines:* Proficiency in high school English and 1 unit of high school algebra. Deficiences may be removed through developmental studies.

### Horticulture Technology Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| CHEM 110 Horticulture Chemistry | | | 4 |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| [1]GOVT 180 American Constitutional Government | | 3 | |
| HORT 100 Introduction to Horticulture | 4 | | |
| HORT 107 Plant Propagation | | 3 | |
| HORT 110 Tools and Equipment | 3 | | |
| HORT 130 Environmental Factors in Plant Growth | | | 3 |
| HORT 146 Horticulture Botany | | 4 | |
| MATH 151-152-153 Business Mathematics | 3 | 3 | 3 |
| [1]PSYC 128 Human Relations | | | 3 |
| Physical Education or Health | 1-3 | 1-3 | 1-3 |
| Speech or English | | | 3 |
| Total Credits | 15-17 | 17-19 | 17-19 |
| (Second Year-Floriculture Option) | | | |
| BUAD 174-175 Small Business Management | 3 | 3 | |
| [1]ECON 160 Survey of American Economics | | 3 | |
| HORT 120 Soils | | 4 | |
| HORT 156 Greenhouse Crop Production | | | 3 |
| HORT 217 Horticultural Plant Pathology | 3 | | |

| | | | |
|---|---|---|---|
| HORT 216 Horticultural Entomology | | | 4 |
| HORT 230 Greenhouse Management | | 3 | |
| HORT 250 Landscape Planning | | 2 | |
| HORT 257 Herbaceous Plants | 3 | | |
| HORT 260 Flower Shop Management | | | 3 |
| HORT 266 House and Conservatory Plants | 3 | | |
| HORT 270 Floral Design and Arranging I | 2 | | |
| HORT 276 Floral Design and Arranging II | | 2 | |
| HORT 290 Coordinated Internship or Cooperative Education | | | 1-5 |
| MKTG 100 Principles of Marketing | | | 3 |
| MKTG 109 Principles of Salesmanship | 3 | | |
| Horticulture Electives | | | 1-3 |
| Total Credits | 17 | 17 | 15-21 |
| (Second Year-Landscape/Grower Option) | | | |
| BUAD 174-175 Small Business Management | 3 | 3 | |
| [1]ECON 160 Survey of American Economics | | 3 | |
| HORT 126 Landscape Construction and Maintenance | 3 | | |
| HORT 120 Soils | | 4 | |
| HORT 217 Horticultural Plant Pathology | 3 | | |
| HORT 216 Horticultural Entomology | | | 4 |
| HORT 220 Nursery Management | | | 3 |
| HORT 230 Greenhouse Management | | 3 | |
| HORT 240 Turf Green Management | | | 3 |
| HORT 250 Landscape Planning | | 2 | |
| HORT 256 Woody Plants | | 3 | |
| HORT 257 Herbaceous Plants | 3 | | |
| HORT 290 Coordinated Internship or Cooperative Education | | | 1-5 |
| MKTG 100 Principles of Marketing | | | 3 |
| MKTG 109 Principles of Salesmanship | 3 | | |
| Horticulture Electives | 1-3 | | 1-3 |
| Total Credits | 16-18 | 18 | 15-21 |
| Total Minimum Credits for Degree | | | 98 |

[1]A year sequence in Social Science may be substituted.

## COMMERCIAL ART

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed primarily for persons who seek full-time employment in the commercial art field upon completion of the community college program.

*Occupational Objectives:*

Advertising
Illustrating
Printing
Photography
Related Occupations

*Special Curriculum Admission Objectives:* Proficiency in high school English and a satisfactory aptitude for drawing. Applicants may be required to submit several sample drawings for approval before final admission is granted. Developmental courses may be recommended for students with deficiences in English and mathematics.

### Commercial Art Curriculum

| | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| (First Year) | | | |
| ARTS 111-112-113 History and Appreciation of Art | 3 | 3 | 3 |
| ARTS 121-122-123 Theory and Practice of Drawing | 3 | 3 | 3 |
| ARTS 154-155-156 Design | 3 | 3 | 3 |
| PHTG 101 Photography | | | 3 |
| [1]ECON 160 Survey of American Economics | 3 | | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| [1]GOVT 180 American Constitutional Government | | 3 | |
| [1]PHYC 128 Human Relations | | | 3 |
| Health or Physical Education | | 1-3 | |
| English 113 or Speech | | | 3 |
| Total Credits | 16 | 16-18 | 18 |
| (Second Year) | | | |
| ARTS 266-267-268 Illustration | 3 | 3 | 3 |
| ARTS 231-232-233 Theory and Practice of Painting | 3 | 3 | 3 |
| ARTS 261-262-263 Advertising Design | 3 | 3 | 3 |
| ARTS 271-272-273 Graphic Techniques | 3 | 3 | 3 |
| [2]PHTG 201-202-203 Advanced Photography | 3 | 3 | |
| ARTS 298 Seminar and Project | | | 3 |
| Arts Elective | | | 3 |
| Health or Physical Education | 1-3 | 1-3 | |
| Total Credits | 16-18 | 16-18 | 18 |
| Total Minimum Credits for Degree | | | 100 |

[1]A year's sequence in social science may be substituted.
[2]Student is required to take any 2 quarters of this 3-quarter course.

## ACCOUNTING

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed for persons who seek full-time employment in the Accounting field.

*Occupational Objectives:* Technician or trainee in Accounting, Auditing or Management.

*Special Curriculum Admission Guidelines:* Minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Accounting Curriculum

| | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| (First Year) | | | |
| ACCT 111-112-113 Accounting (or ACCT 211-212-213) | 3-4 | 3-4 | 3-4 |

| | | | |
|---|---|---|---|
| BUAD 100 Introduction to Business | 3 | | |
| BUAD 164 Principles of Business Management | | 3 | |
| DAPR 106 Principles of Data Processing | | | 3 |
| [1]ECON 160 Survey of American Economics | 3 | | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| MATH 151-152-153 Introduction to Business Math | 3 | 3 | 3 |
| [1]PSYC 128 Human Relations | | | 3 |
| [2]SECR 111 Typewriting I (or elective) | | 3 | |
| English or Speech | | | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 17-20 | 16-19 | 16-19 |
| (Second Year) | | | |
| ACCT 261-262-263 Intermediate Accounting | 3 | 3 | 3 |
| ACCT 229 Auditing (or Business Elective) | | | 3 |
| ACCT 231-232-233 Cost Accounting | 3 | 3 | 3 |
| ACCT 244 Business Taxes I | | 3 | |
| ACCT 245 Business Taxes II (or Business elective) | | | 3 |
| BUAD 241-242 Business Law | 3 | 3 | |
| BUAD 246 Business Finance (or Business elective) | | 3 | |
| BUAD 254 Applied Business Statistics | 3 | | |
| DAPR 144 Computer Concepts | 3 | | |
| ENGL 180 Business English | 3 | | |
| GOVT 180 American Constitutional Government | | | 3 |
| Total Credits | 18 | 15 | 15 |
| Total Minimum Credits for Degree | | | 97 |

[1]A year sequence in Social Scence may be substituted.
[2]Students who have completed prior training in typewriting may petition for credit by examination.

## DATA PROCESSING TECHNOLOGY

(Computer Programming)

ASSOCIATE IN APPLIED SCIENCE DEGREE

***Purpose:*** The curriculum is designed to provide the types of education and training that would be required by both business and industry.

***Occupational Objectives:***

Computer Programming Technician or Trainee

Related Data Processing Occupations

***Special Curriculum Admission Guidelines:*** Minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

## Data Processing Technology Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| ACCT 111-112-113 Accounting (or Acct 211-212-213) | 3-4 | 3-4 | 3-4 |
| BUAD 164 Principles of Business Management | | 3 | |
| DAPR 106 Principles of Data Processing | 3 | | |
| DAPR 130 Operating Systems | | | 3 |
| DAPR 144 Computer Programming (Computer Concepts) | | 3 | |
| DAPR 147 Computer Programming (Cobol) | | | 3 |
| DAPR 198 Seminar | 1 | | |
| ENGL 111-112 English Composition | 3 | 3 | |
| English or Speech | | | 3 |
| GENL 100 Orientation | 1 | | |
| MATH 151-152-153 Introduction to Business Math (or MATH 161-162-163) | 3 | 3 | 3 |
| [1]PSYC 128 Human Relations | 3 | | |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 18-20 | 16-19 | 16-19 |
| (Second Year) | | | |
| BUAD 246 Business Finance or ACCT 231 Cost Accounting | | 3 | |
| BUAD 241 Business Law | 3 | | |
| BUAD 254 Applied Business Statistics | 3 | | |
| DAPR 138 Computer Architecture | 3 | | |
| DAPR 256 Computer Programming (Advanced Cobol) | 4 | | |
| DAPR 266 Computer Programming (Fortran) | | | 4 |
| DAPR 269 Computer Programming (Assembler) | | 4 | |
| DAPR 281-282-283 Systems Analysis | 3 | 3 | 3 |
| Data Processing Elective | | | 4 |
| [1]ECON 160 Survey of American Economics | | | 3 |
| [1]GOVT 180 American Constitutional Government | | 3 | |
| Electives in ACCT, BUAD, or MKTG | | 3 | |
| Electives | | | 3 |
| Total Credits | 16 | 16 | 17 |
| Total Minimum Credits for Degree | | | 97 |

[1]A year sequence in Social Science may be substituted.
[2]Prerequisite to DAPR 138 is DAPR 130.

## HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT

(Food Service)

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed primarily for persons who seek full-time employment in the public hospitality industry upon completion of the community college curriculum.

*Occupational Objectives:* Training and management positions with:

| | |
|---|---|
| Hotels and Motels | Resorts |
| Recreation Centers | Private Clubs |
| Hospitals | Other Hospitality Industries |

*Special Curriculum Admission Guidelines:* Minimum of two units of high school math, one of which must be algebra, or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Hotel, Restaurant and Institutional Management Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| ACCT 211 Principles of Accounting | | | 3 |
| BUAD 164-165 Principles of Business Management | | 3 | 3 |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| HLTH 110 Concepts of Personal & Community Health | 3 | | |
| HRIM 100 Introductiuon to Hotel/Restaurant Management | 3 | | |
| HRIM 111-112 Food Science I-II | | 3 | 3 |
| HRIM 124-125 Principles of Food Preparation | 4 | 4 | |
| HRIM 140 Principles of Baking | | | 4 |
| MATH 151-152 Introduction to Business Mathematics | 3 | 3 | |
| English or Speech | | | 3 |
| Total Credits | 17 | 16 | 16 |
| (Second Year) | | | |
| BUAD 241 Business Law | 3 | | |
| [2]BUAD 276 Personnel Management (or business elective) | | 3 | |
| [1]ECON 160 Survey of American Economics | 3 | | |
| [1]GOVT 180 American Constitutional Government | | 3 | |
| HRIM 113 Food Service III | 3 | | |
| HRIM 221-222 Quantity Food Preparation | 4 | 4 | |
| HRIM 236 Sanitation | | 3 | |
| HRIM 264 Food & Beverage Cost Control | | | 3 |
| HRIM 266 Food Purchasing | | 3 | |
| HRIM 286 Catering | | | 3 |
| HRIM 298 Seminar and Project | | | 1 |
| MKTG 100 Principles of Marketing | | | 3 |
| [1]PSYC 128 Human Relations | 3 | | |
| Electives | | | 6 |
| Total Credits | 16 | 16 | 16 |
| Total Minimum Credits for Degree | | | 97 |

[1]A year sequence in Social Science may be substituted.
[2]Requires departmental approval

## MANAGEMENT

(Management, Banking and Finance, Real Estate)

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed for persons who seek full-time employment in business and industry upon completion of the community college curriculum. Both persons who are seeking initial employment in a managerial position and those presently in management who are seeking promotion may benefit from the curriculum.

*Occupation Objectives:*

Management Training
Supervision
Real Estate Sales and Finance
Retail Credit

*Special Curriculum Admission Guidelines:* Minimum of two units of high school math, one of which must be algebra, or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Management Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| ACCT 111-112-113 Accounting (or ACCT 211-212-213) | 3-4 | 3-4 | 3-4 |
| BUAD 100 Introduction to Business | 3 | | |
| BUAD 164-165 Principles of Business Management | | 3 | 3 |
| [1]ECON 160 Survey of American Economics | 3 | | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| MATH 151-152-153 Introduction to Business Mathematics | 3 | 3 | 3 |
| MKTG 100 Principles of Marketing | | | 3 |
| [2]SECR 111 Typewriting I (or Business Elective) | | 3 | |
| English or Speech | | | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 17-20 | 16-19 | 16-19 |
| (Second Year) | | | |
| ACCT 244 Business Taxes | | 3 | |
| BUAD 241-242 Business Law | 3 | 3 | |
| BUAD 243 Business Law | | | 3 |
| BUAD 246 Business Finance | | 3 | |
| BUAD 254 Applied Business Statistics | 3 | | |
| BUAD 266 Financial Management | | | 3 |

| | | | |
|---|---|---|---|
| BUAD 276 Personnel Management | | | 3 |
| DAPR 106 Principles of Data Processing | 3 | | |
| DAPR 144 Computer Concept I (or Business Elective) | | 3 | |
| ENGL 180 Business English | 3 | | |
| [1]GOVT 180 American Constitutional Government | 3 | | |
| [1]PSYC 128 Human Relations | | 3 | |
| Business Electives | | | 3 |
| Electives | | | 6 |
| Total Credits | 15 | 15 | 18 |

Total Minimum Credits for Degree . . . . . 97

[1]A year sequence in Social Science may be substituted.
[2]Students who have completed prior training in typewriting may petition for credit by examination.

## Management Curriculum
(Banking and Finance)

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ACCT 111-112-113 Accounting (or ACCT 211-212-213) | 3-4 | 3-4 | 3-4 |
| BUAD 100 Introduction to Business | 3 | | |
| BUAD 157 Principles of Banking Operation | | 3 | |
| BUAD 164-165 Principles of Business Management | | 3 | 3 |
| ECON 160 Survey of American Economics | 3 | | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| MATH 151-152-153 Introduction to Business Mathematics | 3 | 3 | 3 |
| MKTG 100 Principles of Marketing | | | 3 |
| English or Speech | | | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 17-20 | 16-19 | 16-19 |
| (Second Year) | | | |
| ACCT 244 Business Taxes | | 3 | |
| BUAD 117 Principles of Security Investments | 3 | | |
| BUAD 241-242 Business Law | 3 | 3 | |
| BUAD 243 Business Law (or Business Elective) | | | 3 |
| BUAD 246 Business Finance | | 3 | |
| BUAD 254 Applied Business Statistics | 3 | | |
| DAPR 144 Computer Concepts (or Business Elective) | | 3 | |
| BUAD 266 Financial Management | | | 3 |
| BUAD 276 Personnel Management | | | 3 |
| DAPR 106 Principles of Data Processing | 3 | | |
| ECON 246 Money and Banking | | | 3 |
| ENGL 180 Business English | 3 | | |
| [1]GOVT 180 American Constitutional Government | | 3 | |
| [1]PSYC 128 Human Relations | | | 3 |
| Business Elective | | | 3 |
| Total Credits | 15 | 15 | 18 |

Total Minimum Credits for Degree . . . . . 97

[1]A year sequence in Social Science may be substituted.

## Management Curriculum
(Real Estate)

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ACCT 111-112-113 Accounting (or ACCT 211-212-213) | 3-4 | 3-4 | 3-4 |
| BUAD 100 Introduction to Business | 3 | | |
| BUAD 164-165 Principles of Business Management | | 3 | 3 |
| [1]ECON 160 Survey of American Economics | 3 | | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| MATH 151-152-153 Introduction to Business Mathematics | 3 | 3 | 3 |
| MKTG 100 Principles of Marketing | | | 3 |
| MKTG 164-165 Principles of Real Estate | | 3 | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 17-20 | 16-19 | 16-19 |
| (Second Year) | | | |
| ACCT 244 Business Taxes | | 3 | |
| BUAD 241-242 Business Law | 3 | 3 | |
| BUAD 243 Business Law (or Business Elective) | | | 3 |
| BUAD 246 Business Finance | | 3 | |
| BUAD 254 Applied Business Statistics | 3 | | |
| BUAD 276 Personnel Management | | | 3 |
| DAPR 106 Principles of Data Processing | 3 | | |
| ENGL 180 Business English | 3 | | |
| [1]GOVT 180 American Constitutional Government | | 3 | |
| Marketing Elective | | | 3 |
| MKTG 150 Insurance (or Business Elective) | 3 | | |
| MKTG 268 Property Management (or marketing elective) | | 3 | |
| MKTG 269 Real Estate Finance | | | 3 |
| MKTG 277 Real Estate Law | | 3 | |
| [1]PSYC 128 Human Relations | | | 3 |
| English or Speech | 3 | | |
| Total Credits | 18 | 18 | 15 |

Total Minimum Credits for Degree . . . . . 97

[1]A year sequence in Social Science may be substituted.

## MERCHANDISING

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is a middle management program designed for persons who seek full-time employment in merchandising and related occupations upon completion of the curriculum.

*Occupational Objectives:*

Management technician or trainee
Sales Supervisor or Representative
Purchasing Agent
Other related occupations

*Special Curriculum Admission Guidelines:* Minimum of two units of high school math, one of which must be algebra or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Merchandising Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ACCT 111-112-113 Accounting (or ACCT 211-212-213) | 3-4 | 3-4 | 3-4 |
| BUAD 100 Introduction to Business | 3 | | |
| BUAD 164 Principles of Business Management | | 3 | |
| [1]ECON 160 Survey of American Economics | 3 | | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| MATH 151-152-153 Introduction to Business Math | 3 | 3 | 3 |
| MKTG 100 Principles of Marketing | | | 3 |
| MKTG 136 Retail Organization and Management | | | 3 |
| [2]SECR 111 Typewriting I (or Business Elective) | | 3 | |
| English or Speech | | | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 17-20 | 16-19 | 16-19 |
| (Second Year) | | | |
| ACCT 244 Business Taxes | | 3 | |
| BUAD 241-242 Business Law | 3 | 3 | |
| BUAD 243 Business Law | | | 3 |
| BUAD 254 Applied Business Statistics | 3 | | |
| BUAD 276 Personnel Management | | | 3 |
| DAPR 106 Principles of Data Processing | 3 | | |
| [1]GOVT 180 American Constitutional Government | | | 3 |
| BUAD 246 Business Finance | | 3 | |
| MKTG 109 Salesmanship | 3 | | |
| MKTG 225 Principles of Advertising | 3 | | |
| MKTG 226 Merchandising Buying and Control (or Marketing Elective) | | 3 | |
| [3]MKTG 290 Coordinated Internship | | 1-5 | 1-5 |
| [1]PSYC 128 Human Relations | | | 3 |
| Total Credits | 15 | 13-17 | 13-17 |
| Total Minimum Credits for Degree | | | 97 |

[1]A year sequence in Social Science may be substituted
[2]Students who have completed prior training in typewriting may petition for credit by examination.
[3]Students who have completed sufficient and appropriate occupational experience or who may be unable to participate in the cooperative phase of this curriculum may substitute appropriate courses in the fifth and sixth quarters.

## SECRETARIAL SCIENCE

(Executive, Legal, Medical)

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed to prepare persons for full-time employment upon completion of the community college program. Both persons who are seeking initial employment in an office position and those who are seeking promotion may benefit from this curriculum.

*Occupational Objectives:*

| | |
|---|---|
| Executive Secretary | Administrative |
| Legal Secretary | Assistant |
| Medical Secretary | Related Office |
| Stenographer | Occupations |

*Special Curriculum Admission Guidelines:* Minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Secretarial Science Curriculum

(Executive Secretary)

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ACCT 111 Accounting (or ACCT 211) | | | 3-4 |
| BUAD 100 Introduction to Business | 3 | | |
| BUAD 164 Principles of Business Management | | 3 | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| MATH 151-152 Introduction to Business Math | 3 | 3 | |
| [1]SECR 111-112-113 Typewriting | 3 | 3 | 3 |
| [1]SECR 121-122-123 Shorthand | 4 | 4 | 4 |
| SECR 136 Filing and Records Management | | | 3 |
| English or Speech | | | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 18-20 | 17-19 | 17-20 |
| (Second Year) | | | |
| BUAD 241 Business Law | 3 | | |
| [2]ECON 160 Survey of American Economics | | 3 | |
| ENGL 180 Business English | 3 | | |
| [2]GOVT 180 American Constitutional Government | | | 3 |
| MATH 153 Business Math by Machines | 3 | | |
| [2]PSYC 128 Human Relations | | 3 | |
| SECR 216 Executive Typewriting | 3 | | |
| SECR 217 Skill Building | | | 3 |
| SECR 221-222-223 Transcription | 3 | 3 | 3 |
| SECR 241-242-243 Secretarial Procedures | 3 | 3 | 3 |
| [3]SECR 256 Machine Transcription | | 3 | |
| Elective | | | 3 |
| Total Credits | 18 | 15 | 15 |
| Total Minimum Credits for Degree | | | 97 |

[1]Students who have completed prior training in typewriting and/or shorthand may petition for credit by examination.
[2]A year sequence in Social Science may be substituted
[3]Students must have completed SECR 113 or be enrolled concurrently.

## Secretarial Science Curriculum

(Legal Secretary)

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ACCT 111 Accounting I (or ACCT 211) | | | 3-4 |
| BUAD 100 Introduction to Business | 3 | | |
| BUAD 164 Principles of Business | | 3 | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| MATH 151-152 Introduction to Business Math | 3 | 3 | |
| [1]SECR 111-112-113 Typewriting | 3 | 3 | 3 |
| [1]SECR 121-122-123 Shorthand | 4 | 4 | 4 |
| SECR 136 Filing and Records Management | | | 3 |
| English or Speech | | | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 18-20 | 17-19 | 17-20 |
| (Second Year) | | | |
| BUAD 241-242 Business Law | 3 | 3 | |
| BUAD 243 Business Law III (or Secr 217) | | | 3 |
| [2]ECON 160 Survey of American Economics | 3 | | |
| ENGL 180 Business English | 3 | | |
| [2]GOVT 180 American Constitutional Government | | 3 | |
| [2]PSYC 128 Human Relations | | | 3 |
| SECR 216 Executive Typewriting | 3 | | |
| SECR 221 Transcription | 3 | | |
| SECR 224-225 Legal Transcription (or SECR 222-223) | | 3 | 3 |
| SECR 241 Secretarial Procedures | 3 | | |
| [3]SECR 256 Machine Transcription | | 3 | |
| SECR 264-265 Legal Secretarial Procedures (or SECR 242-243) | | 3 | 3 |
| Elective | | | 3 |
| Total Credits | 18 | 15 | 15 |
| Total Minimum Credits for Degree | | | 97 |

[1]Students who have completed prior training in typewriting and/or shorthand may petition for credit by examination
[2]A year sequence in Social Science may be substituted.
[3]Students must have completed SECR 113 or be enrolled concurrently.

## Secretarial Science Curriculum

(Medical Secretary)

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ACCT 111 Accounting I (or ACCT 211) | | | 3-4 |
| BUAD 100 Introduction to Business | 3 | | |
| BUAD 164 Principles of Business Management | | 3 | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| MATH 151-152 Introduction to Business Math | 3 | 3 | |
| [1]SECR 111-112-113 Typewriting | 3 | 3 | 3 |
| [1]SECR 121-122-123 Shorthand | 4 | 4 | 4 |
| SECR 136 Filing and Records Management | | | 3 |
| English or Speech | | | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 18-20 | 17-19 | 17-20 |
| (Second Year) | | | |
| BIOL 154 Human Anatomy and Physiology (or HLTH 124) | 3-4 | | |
| BUAD 241 Business Law | | 3 | |
| [2]ECON 160 Survey of American Economics | | | 3 |
| ENGL 180 Business English | 3 | | |
| [2]GOVT 180 American Constitutional Government | | | 3 |
| MATH 153 Business Math by Machines | 3 | | |
| [2]PSYC 128 Human Relations | | 3 | |
| SECR 221-222 Transcription | 3 | 3 | 3 |
| SECR 227 Medical Transcription (or SECR 223) | | | 3 |
| SECR 241 Secretarial Procedures | 3 | | |
| [3]SECR 256 Machine Transcription | | 3 | |
| SECR 274-275 Medical Secretarial Procedures (or SECR 242-243) | | 3 | 3 |
| SECR 217 Skill Building | | | 3 |
| Total Credits | 15-16 | 15 | 15 |
| Total Minimum Credits for Degree | | | 97 |

[1]Students who have completed prior training typewriting and/or shorthand may petition for credit by examination
[2]A year sequence in Social Science may be substituted
[3]Students must have completed SECR 113 or be enrolled concurrently.

## TRAFFIC AND TRANSPORTATION MANAGEMENT

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed both for persons who seek full-time employment in transportation upon completion of the community college curriculum and for those already employed who seek promotion.

*Occupational Objectives:*

Traffic Representative
Dispatcher
Rate Analyst
Operational Supervisor
Other related traffic and transportation occupations.

*Special Curriculum Admission Guidelines:* Minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Traffic and Transportation Management Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| ACCT 111-112-113 Accounting (or ACCT 211-212-213) | 3-4 | 3-4 | 3-4 |
| DAPR 106 Principles of DAPR | 3 | | |
| BUAD 164 Principles of Business Management | | 3 | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| [1]MATH 151-152-153 Introduction to Business Math | 3 | 3 | 3 |
| MKTG 100 Principles of Marketing | | | 3 |
| MKTG 131-132-133 Traffic and Transportation | 3 | 3 | 3 |
| English or Speech | | | 3 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 17-20 | 16-19 | 16-19 |
| (Second Year) | | | |
| Business Elective | | | 3 |
| ACCT 244 Business Elective | | 3 | |
| BUAD 254 Applied Business Statistics | 3 | | |
| BUAD 276 Personnel Management (or Business Elective) | | | 3 |
| [1]GOVT 180 American Constitutional Government | | 3 | |
| MKTG 231-232-233 Interstate Commerce Law or BUAD 241-242-243 | 3 | 3 | 3 |
| MKTG 236 Physical Distribution (or Business Elective) | 3 | | |
| Marketing or Accounting Elective | | | 3 |
| [1]PSYC 128 Human Relations | | 3 | |
| ECON 211-212-213 Principles of Economics | 3 | 3 | 3 |
| MKTG 238 Traffic Management | | 3 | |
| MKTG 239 Problems of Transportation | 3 | | |
| Total Credits | 15 | 18 | 15 |

Total Minimum Credits for Degree . . . . . 97

[1]A year sequence in Social Science may be substituted.

## ARCHITECTURAL TECHNOLOGY

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed to develop qualified engineering technicians. Graduates may seek immediate employment or consider opportunities available for transfer to appropriate Bachelor of Technology Programs offered by some four-year universities.

*Occupational Objectives:* Varied job opportunities in architectural offices, with building contractors, and with industries related to architectural technology.

*Special Curriculum Admission Guidelines:* Proficiency in high school English and 2 units of Mathematics (1 unit of Algebra and 1 unit of Geometry or Trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Architectural Engineering Technology Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| ARCH 100 Introduction to Architecture | 3 | | |
| ARCH 111-112-113 Architectural Drafting | 3 | 3 | 3 |
| ARCH 141-142 Materials and Methods of Construction | | 3 | 3 |
| ARCH 160 Introduction to Solar Heating of Buildings | | | 3 |
| ARCH 278 Building Codes, Contract Documents and Professional Office Practice | | 3 | |
| CIVL 140 Construction Planning | 3 | | |
| ENGR 151-152 Mechanics | | 4 | 3 |
| ENGR 154 Mechanic's Laboratory | | | 1 |
| GENL 100 Orientation | 1 | | |
| MATH 118 Introduction to Technical Math | 5 | | |
| MATH 121-122 Engineering Technical Mathematics I-II | | 5 | 5 |
| [1]PSYC 128 Human Relations | 3 | | |
| Total Credits | 18 | 18 | 18 |
| (Second Year) | | | |
| ARCH 211-212-213 Architectural Drafting IV-V-VI | 3 | 3 | 3 |
| ARCH 276 Construction Estimating | | | 3 |
| CIVL 181-182 Surveying I-II | 4 | | 4 |
| CIVL 217 Structural Steel Analysis | | 4 | |
| CIVL 230 Structural Analysis | 3 | | |
| [1]ECON 160 Survey of American Economics | 3 | | |

| | | | |
|---|---|---|---|
| ENGL 111-112 English Composition | 3 | 3 | |
| English or Speech | | | 3 |
| GOVT 180 American Constitutional Government | | 3 | |
| PHYS 111-112 Technical Physics | | 4 | 4 |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 17-19 | 18-20 | 18-20 |
| Total Minimum Credits for Degree . . . . | | . . . . . | 107 |

[1]A year sequence in Social Science may be substituted.

## CHILD DEVELOPMENT EDUCATION

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* This curriculum is designed to enable graduates to qualify as directors, assistant directors, teachers, assistant teachers or as classroom aides in programs for young children. The curriculum has been established to provide competency in areas proposed by the professional child development community: ability to set up a safe and healthy learning environment, skills to advance the physical and intellectual competence of young children and to build positive self-concepts and individual strengths, the ability to organize and sustain positive functioning of children and adults in a group in a learning environment, to coordinate the home and out-of-home child rearing practices and expectations, and to carry out the supplementary responsibilities related to programs for children. In addition, this curriculum will prepare students for national assessment by the Child Development Associate Consortium.

*Occupational Objectives:* Positions in independent child care centers and kindergartens, family day care homes, nursery schools, foster care providers, hospital centers, homemaker services, centers for children with special needs, and residential child care facilities. Furthermore, this program qualifies graduates for positions as elementary school classroom aides.

*Special Curriculum Admission Guidelines:* A personal interview with the Counseling Department and the Child Developmental Education faculty is a part of the admission process. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical report indicating good mental and physical health. The program is open to both male and female applicants. Satisfactory performance on an appropriate test may be required of those applicants whose records indicate academic weakness in English, reading and mathematics.

*Special Curriculum Completion Guidelines:* Students who receive a final grade lower than C in any of the courses in the Child Development Education sequence must be approved by the program faculty to continue the major in Child Development Education prior to repeating the course. Each student is responsible for transportation to and from field sites used for laboratory experience and for liability insurance.

### Child Development Education

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| EDUC 120 Introduction to Early Childhood Education | 3 | | |
| EDUC 121-122 Early Childhood Education I, II | | 3 | 3 |
| EDUC 137 Creative Activities | | | 3 |
| [3]EDUC 189 Nutrition in Human Development | 3 | | |
| [1]EDUC 190 Coordinated Internship | 3 | 4 | 5 |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| HLTH 104 First Aid | | 2 | |
| PSYC 110 Applied Psychology | | 3 | |
| PSYC 231-232-233 Human Growth and Development | 3 | 3 | 3 |
| SPDR 136 Oral Communication | | | 3 |
| Total Credits | 16 | 18 | 17 |
| (Second Year) | | | |
| EDUC 106 Language Arts for Young Children | 3 | | |
| EDUC 175 Parent Education | 3 | | |
| EDUC 186 Child Study | | 3 | |
| EDUC 188 Affective Education in the Classroom | | | 3 |
| EDUC 210 Introduction to Special Education | 3 | | |
| EDUC 287 Management of Child Care Centers | | | 3 |
| [2]EDUC 290 Coordinated Internship | | | 3 |
| MATH 130 Mathematics for Community and Social Services | | 3 | |
| MUSC 109 Music for Children | 3 | | |
| PBSV 150 Introduction to Community and Social Services | | 3 | |
| PHED 153 Swimming | | | 1 |
| [4]SOCI 101-102 Introduction to Sociology I, II | 3 | 3 | |
| SOCI 236 Marriage and Family | | | 3 |
| Electives | | 3 | 3 |
| Total Credits | 15 | 15 | 16 |
| Total Minimum Credits for Degree . . . . . | | | 97 |

[1]Coordinate with Education 120, 121 and 122.
[2]Coordinate with Education 188
[3]Health 156 will fulfill this requirement.
[4]Economics 160 and Government 180 will fulfill this requirement.

## CIVIL ENGINEERING TECHNOLOGY

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed to develop qualified engineering technicians. Graduates may seek immediate employment or consider opportunities available for transfer to appropriate Bachelor of Technology Programs offered by some four-year universities.

*Occupational Objectives:* Varied job opportunities with construction industries and State Highway Departments.

*Special Curriculum Admission Guidelines:* Proficiency in high school English and 2 units of mathematics (1 unit of Algebra and 1 unit of Geometry or Trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

## Civil Engineering Technology Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| CIVL 124-125 Civil Engineering Drafting | | 2 | 2 |
| CIVL 140 Construction Planning | 3 | | |
| DRFT 111 Technical Drafting | 2 | | |
| [1]ECON 160 Survey of American Economics | | 3 | |
| ENGL 111-112 English Composition | 3 | 3 | |
| English or Speech | | | 3 |
| ENGR 151-152 Mechanics I-II | | 4 | 3 |
| ENGR 154 Mechanics Laboratory | | | 1 |
| GENL 100 Orientation | 1 | | |
| [1]GOVT 180 American Constitutional Government | 3 | | |
| MATH 118 Introduction to Technical Mathematics | 5 | | |
| MATH 121-122 Engineering Technical Mathematics I-II | | 5 | 5 |
| PHYS 111 Technical Physics I | | | 4 |
| Health or Physical Education | 1-3 | 1-3 | |
| Total Credits | 18-20 | 18-20 | 18 |
| (Second Year) | | | |
| CIVL 181-182 Surveying | 4 | | 4 |
| CIVL 217 Structural Steel Design | | 4 | |
| CIVL 218 Reinforced Concrete Design | | | 4 |
| CIVL 230 Structural Analysis | 3 | | |
| CIVL 246 Soil Mechanics | | | 3 |
| CIVL 247 Soil Mechanics Laboratory | | | 1 |
| CIVL 254 Civil Material I (Concrete) | | 3 | |
| CIVL 257 Concrete Laboratory | | 1 | |
| CIVL 268 Water & Sewage Systems (or MATH 222) | | | 3-4 |
| CIVL 284 Route Surveying & Highway Design (or MATH 221) | | 4 | |
| ENGR 100 Introduction to Engineering Technology | 2 | | |
| MATH 123 Engineering Technical Mathematics III | 5 | | |
| PHYS 112-113 Technical Physics | 4 | 4 | |
| [1]PSYC 128 Human Relations | | | 3 |
| Health or Physical Education | | 1 | |
| Total Credits | 18 | 17 | 18-19 |
| Total Minimum Credits for Degree | | | 107 |

[1]A year sequence in Social Science may be substituted

## ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The field of Electrical Engineering Technology has experienced revolutionary changes in recent years. The explosive developments in the digital integrated circuit and microprocessor areas are responsible for the bulk of the change. The EET curriculum has responded to these trends through the modification of existing courses and the creation of new courses which present basic concepts of digital logic and their application. The expanded Electrical/Electronics Engineering Technology curriculum has been designed to provide instruction and experiences vital to the understanding and application of analysis techniques in both digital and analog circuitry. The program offers a broad experience in many areas of the Electrical/Electronics field and allows specialization in certain specified options to be chosen by the student.*

*Employment Opportunities:* The curriculum is designed for persons seeking employment in a broad spectrum of Electrical Engineering Technology areas ranging from electronics, computer electronics, and communication systems, to electrical machinery, control systems, and the like. In addition, transfer opportunities exist for those desiring to complete a four-year program at certain institutions offering a baccalaureate degree in Engineering Technology.

*Students desiring a General Electronics Program without specialization may select a six-quarter (two-year) Associate Degree Program available on a part-time evening basis. This program requires all the courses listed below with the exception of those marked with an asterisk. In addition, the student will be required to complete *both* the Electrical Machinery (ELEC 145) and Electronics Communications (ELEC 150) Surveys

## Electrical/Electronic Engineering Technology Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|
| DRFT 111 Technical Drafting I | | | | 2 |
| ELEC 111-112-113 Introduction to Electrical Circuits | 5 | 5 | 3 | |
| ELEC 125 Introduction to Electronics | | | | 5 |
| ELEC 145 Introduction to Electrical Machines (not intended for Machinery & Control Majors) or ELEC 150 Introduction to Electronic Communication Systems (not intended for Communication Majors) | | | | 4 |
| ELEC 199 Supervised Study | | | 2 | |
| ELEC 276 Instruments and Measurements | | | | 4 |
| ENGL 111-112 English Composition | 3 | 3 | | |

| | | | | |
|---|---|---|---|---|
| English or Speech | | | 3 | |
| ENGR 100 Introduction to Engineering | 2 | | | |
| GENL 100 Orientation | 1 | | | |
| MATH 121-122-123 Engineering Technical Mathematics | 5 | 5 | 5 | |
| PHYS 111-112 Technical Physics | | 4 | 4 | |
| Health or Physical Education | 1-3 | 1-3 | 1-3 | |
| Total Credits | 17-19 | 18-20 | 18-20 | 15 |
| (Second Year) | | | | |
| ECON 160 Survey of American Economics | | | 3 | |
| *ELEC 118-119 Electrical Shop | 1 | 1 | | |
| ELEC 201-202-203 Electrical Engineering Technology | 6 | 7 | 6 | |
| *ELEC 211-212-213/Electrical Machines (or *ELEC 241-242-243 Communications) | 4 | 4 | 4 | |
| ELEC 237-239 Digital Logic Circuits | 4 | 3 | | |
| ELEC 250 Introduction to Computer Systems | | | 4 | |
| ELEC 298 Seminar & Project | | | 1 | |
| GOVT 180 American Constitutional Government | 3 | | | |
| PSYC 128 Human Relations | | 3 | | |
| Total Credits | 18 | 18 | 18 | |

Total Minimum Credits for Degree . . . . . 122

## MECHANICAL ENGINEERING TECHNOLOGY

ASSOCIATE IN APPLIED SCIENCE DEGREE

***Purpose:*** The curriculum is designed to develop qualified engineering technicians. Graduates may seek immediate employment or consider opportunities available for transfer to appropriate Bachelor of Technology Programs offered by some four-year universities.

***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. Responsibilities may include estimating, inspecting, and testing engineering equipment; operating, maintaining, and repairing engineering plants; research and development; sales and representation; training and education.

***Special Curriculum Admission Guidelines:*** Proficiency in high school English and 2 units of Mathematics (1 unit of Algebra and 1 unit of Geometry or Trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Mechanical Engineering Technology Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| DRFT 111-112-113 Technical Dratting I-II-III | 2 | 2 | 2 |
| [1]ECON 160 Survey of American Economics | 3 | | |
| ENGL 111-112 English Composition | 3 | 3 | |
| English or Speech | | | 3 |
| ENGR 100 Introduction to Engineering Technology | 2 | | |
| ENGR 151-152 Mechanics I-II | | 4 | 3 |
| ENGR 154 Mechanics Laboratory | | | 1 |
| GENL 100 Orientation | 1 | | |
| MATH 118 Introduction to Technical Math | 5 | | |
| MATH 121-122 Engineering Technical Mathematics I-II | | 5 | 5 |
| MECH 131-132 Machine Laboratory I-II | 2 | 2 | |
| WELD 120 Fundamentals of Welding | | | 2 |
| Health or Physical Education | | 2-3 | 1-3 |
| Total Credits | 18 | 18-19 | 18-20 |
| (Second Year) | | | |
| CIVL 230 Structural Analysis | 3 | | |
| ELEC 214 Electricity | | | 4 |
| [1]GOVT 180 American Constitutional Government | | 3 | |
| MATH 123 Engineering Technical Mathematics III | 5 | | |
| MATH 221 Advanced Engr. Technical Math (or [2]T.E.) | | 3-4 | |
| MATH 222 Advanced Engr. Technical Math (or [2]T.E.) | | | 3-4 |
| MECH 156 Mechanics | 2 | | |
| MECH 237-238 Machine Design I-II | 4 | 4 | |
| MECH 264 Thermodynamics | | 4 | |
| MECH 267 Fluid Mechanics | | | 4 |
| PHYS 111-112-113 Technical Physics | 4 | 4 | 4 |
| [1]PSYC 128 Human Relations | | | 3 |
| Total Credits | 18 | 18-19 | 18-19 |

Total Minimum Credits for Degree . . . . . 108

[1]A year sequence in Social Science may be substituted.
[2]Technical Electives:
CHEM 111-112
CIVL 217
DAPR 106-144
PHYS 113
Others with Departmental Approval.

## DENTAL HYGIENE

ASSOCIATE IN APPLIED SCIENCE DEGREE

***Purpose:*** The curriculum is designed to prepare selected students to serve in a dynamic and growing health service by becoming valuable members of the Dental Health team. At the successful completion of the program, a student will be eligible to take the National Board and State Board Examinations in Dental Hygiene leading to licensure as a Registered Dental Hygienist (R.D.H.).

*Occupational Objectives:*

Private Dental Practice
Group Dental Practice
Dental Specialty Practice
Hospital Dental Service
Government Service
Dental Hygiene Education

*Special Curriculum Admission Guidelines:* The applicant should have completed on the high school level four units of English, one unit of Biology and Chemistry, two units of Social Studies, two units of Mathematics (Algebra I, Algebra II, or Geometry), or the equivalent and submit ACT (American College Test) test scores. Developmental courses may be recommended for students with deficiencies in English and Mathematics. Priority will be given to applicants with high class standing. A personal interview with the Counseling Department and Dental Hygiene faculty is a part of the admission process. Considering the limited available slots, early application is highly advisable. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical and dental report indicating good general health. The program is open to male and female students.

*Special Curriculum Completion Guidelines:* Students who receive a final grade lower than "C" in any of the courses in the Dental Hygiene sequence must obtain permission from the Dental Hygiene Faculty Committee and approval of the Division Chairman to continue the major in Dental Hygiene.

The student will be responsible for transportation to and from agencies utilized for clinical experience, and the purchase of student uniforms and accessories, complete instrument kit and Dental Liability insurance.

*Special Accreditation Status:* The curriculum has been approved by the Council on Dental Education of the American Dental Association.

### Dental Hygiene Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|
| DENT 126 Oral Anatomy | 3 | | | |
| DENT 127 General & Oral Histology | | 3 | | |
| DENT 128 Head and Neck Anatomy | | | 2 | |
| DENT 136 Pharmacology | | | | 2 |
| DENT 140 Introduction to Dental Hygiene | 1 | | | |
| DENT 144-145 Dental Hygiene | | 5 | 5 | |
| DENT 146 Oral Radiology | | | 3 | |
| DENT 150 General and Oral Pathology | | | | 3 |
| DENT 154 Periodontics for Dental Hygiene I | | | | 2 |
| DENT 261 Dental Hygiene III | | | | 6 |
| BIOL 154-155 Human Anatomy and Physiology | 4 | 4 | | |
| BIOL 176 Microbiology | | | 4 | |
| CHEM 101-102-103 General Chemistry | 4 | 4 | 4 | |
| ENGL 111-112 English Composition | 3 | 3 | | |
| [1]GENL 100 Orientation | 1 | | | |
| HLTH 100 Orientation to Allied Health Careers | 1 | | | |
| Total Credits | 17 | 19 | 18 | 13 |
| (Second Year) | | | | |
| DENT 116 Dental Laboratory Materials | | 4 | | |
| DENT 138 Community Dental Hygiene | 4 | | | |
| DENT 139 Dental Assistant for Dental Hygienists | | 2 | | |
| DENT 147 Nutrition | 3 | | | |
| DENT 148 Office Practice and Ethics | | | 2 | |
| DENT 155 Periodontics for Dental Hygiene II | 2 | | | |
| DENT 262-263-264 Dental Hygiene | 5 | 5 | 5 | |
| [2]ECON 160 Survey of American Economics | | 3 | | |
| [2]GOVT 180 American Constitutional Government | | | 3 | |
| HLTH 104 First Aid I | | | 2 | |
| [2]PSYC 110 Principles of Psychology | | 3 | | |
| SOCI 101 Introduction to Sociology | 3 | | | |
| SPDR 137 Public Speaking | | | 3 | |
| Total Credits | 17 | 17 | 15 | |
| Total Minimum Credits for Degree | | | | 116 |

[1]GENL 198, 298 may be substituted
[2]The following courses may be substituted ECON 211-212-213, GOVT 281-282-283, PSYCH 201-202-203, or SOCIO 101-102-103

## MENTAL HEALTH TECHNOLOGY

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed to prepare selected students to qualify as contributing members of the Mental Health/Human Services team. Such workers counsel and guide patients/clients through educational, therapeutic, rehabilitative and recreational treatment activities.

*Occupational Objectives:* Staff positions in community mental health centers, education

and consultation programs, residential programs, halfway houses, institutions for the psychotic, emotionally disturbed retarded and socially incompetent, etc.

*Special Curriculum Admission Guidelines:* 4 units of English, 1 unit of Biology, and 2 units of Social Science at the high school level. Satisfactory performance on an appropriate test may be required for those applicants whose records indicate academic weaknesses in English and reading. A personal interview with the Counseling Department and Mental Health faculty is a part of the admission process. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical report indicating good health. An early application is recommended.

*Special Curriculum Completion Guidelines:* Students who receive a final grade lower than "C" in any of the courses in the mental health sequence must be recommended by the Program Head and approved by the Division Chairman to continue the major in Mental Health Technology prior to repeating the course.

The student will be responsible for transportation to health agencies utilized for clinical experience and the purchase of identification pins and liability insurance.

### Mental Health Technology Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| ENGL 111-112-113 English Composition | 3 | 3 | 3 |
| [1]GENL 100 Orientation | 1 | | |
| HLTH 100 Orientation to Allied Health Careers | 1 | | |
| HLTH 104 First Aid I | 2 | | |
| HMSV 128 Community Resources | | 3 | |
| MENT 101-102-103 Introduction to Mental Health | 3 | 3 | 3 |
| MENT 110 Introduction to Abnormal Psychology | | 3 | |
| MENT 116 Activities Therapies | | | 3 |
| MENT 190 Coordinated Practice | | | 3 |
| [2]NASC 111 Health Science I | 4 | | |
| PSYC 201-202-203 General Psychology | 3 | 3 | 3 |
| Total Credits | 17 | 15 | 18 |
| (Second Year) | | | |
| MENT 221-222-223 Mental Health I, II, III | 3 | 3 | 3 |
| MENT 236 Problems in Adolescence | 3 | | |
| PBSV 258 Social Change Skills | 3 | | |
| MENT 237 Problems in Aging | | 3 | |
| MENT 290 Coordinated Practice I, II, III | 3 | 3 | 4 |
| MENT 298 Seminar and Project | | | 4 |
| SOCI 186-187 Social Problems I, II | 3 | | 3 |
| SOCI 236 Marriage and the Family | | 3 | |
| Elective | | 3 | 3 |
| Total Credits | 15 | 16 | 17 |

Total Minimum Credits for Degree . . . . . 97

[1]GENL 198 or 298 may be taken in lieu of GENL 100 with counselor approval.
[2]A 3-quarter sequence of BIOL 101-102-103 may be taken in lieu of NASC 111.

## NURSING

### ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed to prepare selected students to qualify as contributing members of the health team rendering direct patient care as beginning practitioners in a variety of health service facilities. At the successful completion of the program, students will be eligible to take the State Board examination leading to licensure as a registered nurse (R.N.).

*Occupational Objectives:* Employment opportunities for the Registered Nurse include staff positions in hospitals, nursing homes, health departments, physician's offices, clinics, day care centers and civil service.

*Special Curriculum Admission Guidelines:* The applicant should hold a high school diploma or the equivalent and have completed one unit of high school Biology, Chemistry, and Algebra, or the equivalent. Priority will be given to applicants with high class standing. Qualified students will be admitted as applications are received. Considering the limited available slots, early application is highly advisable. A personal interview with the Counseling Department and Nursing faculty is a part of the admission process. Upon notification of acceptance to the curriculum, applicants are requested to submit medical and dental reports indicating good general health. The program is open to male and female students.

The student will be responsible for transportation to and from agencies utilized for clinical experience and the purchase of student uniforms, accessories, and Student Nursing Liability Insurance.

*Special Curriculum Completion Guidelines:* Students who receive a final grade lower than "C" in any required Nursing or Nursing Science courses must obtain permission from the Program Head and approval of the Division Chairman to continue the major in Nursing prior to repeating the course. Clinical performance is graded as satisfactory or unsatisfactory; a grade of satisfactory each quarter is required for continuing in the program.

Students who have withdrawn from the nursing program for any reason and desire read-

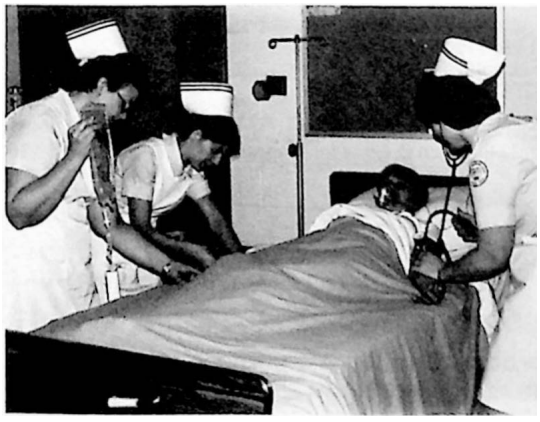
mission must make formal application for consideration.

*Special Accreditation Status:* The curriculum is accredited by the Virginia State Board of Nurse Examiners and the National League for Nursing.

### Nursing Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|
| BIOL 154-155 Anatomy and Physiology | 4 | 4 | | |
| BIOL 176 Microbiology | | | 4 | |
| ENGL 111-112-113 English Composition | 3 | 3 | 3 | |
| GENL 100 Orientation | 1 | | | |
| HLTH 100 Orientation to Allied Health Careers | 1 | | | |
| NURS 111-112-113 Fundamentals of Nursing | 5 | 6 | 8 | |
| [4]NURS 199 Pharmacology | 2 | | | |
| NURS 221 Nursing in Major Health Problems | | | | 8 |
| [4]NURS 199 Nutrition | | | | 2 |
| PSYC 201-202-203 General Psychology | | 3 | 3 | 3 |
| Total Credits | 16 | 16 | 18 | 13 |
| (Second Year) | | | | |
| [1]NURS 244 Medical-Surgical Nursing I | 4 | | | |
| NURS 245 Medical-Surgical Nursing II | | | 4 | |
| NURS 246 Leadership in Nursing | | | 4 | |
| [1]NURS 247 Obstetric Nursing | 4 | | | |
| [1]NURS 248 Pediatric Nursing | | 4 | | |
| [1]NURS 249 Psychiatric Nursing | | 4 | | |
| NURS 299 Research Seminar | | | 2 | |
| [2]SOCI 101-102-103 Introductory Sociology | 3 | 3 | 3 | |
| [3]GOVT 180 American Constitutional Government | | 3 | | |
| [3]ECON 160 Survey of American Economics | 3 | | | |
| Total Credits | 14 | 14 | 13 | |
| Total Minimum Credits for Degree | | | | 104 |

[1]See general course description
[2]SOCI 236 may be substituted for SOCI 103
[3]A year's sequence of SOCIAL SCIENCE may be substituted.
[4]See general usage courses.



## RADIOLOGIC TECHNOLOGY

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is designed to prepare selected students to qualify as contributing members of the allied health team who will care for patients under the supervision of qualified physicians. Upon completion of the curriculum which includes a three-month internship, the student is eligible to write the National Registry Examination leading to certification as a Registered Radiologic Technologist. Successful completion of the program will qualify the student to gain employment as a Radiologic Technologist.

*Special Curriculum Admission Guidelines:* The applicant should have completed two units of high school science (Biology, Chemistry, Physics) and three units of high school mathematics (Algebra I, Algebra II, Geometry), or the equivalent. Developmental courses may be recommended for students with deficiencies in English and Mathematics. Priority will be given to applicants with high class standing. A personal interview with the Counseling Department and Radiologic Technology faculty is a part of the admission process. Considering the limited available slots, early application is highly advisable. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical report indicating good general health. The program is open to male and female students.

The student will be responsible for transportation to and from agencies utilized for clinical experience and the purchase of items such as student uniforms, accessories, and Liability Insurance.

*Special Curriculum Completion Guidelines:* Students who receive a final grade lower than "C" in any of the courses in the Radiologic Technology sequence must be recommended by the Program Head and approved by the Division Chairman to continue the major in Radiologic Technology prior to repeating the course. Selected learning experiences will be provided at the cooperating hospitals within the geographic area served by the college.

*Special Accreditation Status:* The curriculum has been approved by the authority of the Joint Review Committee on Education in Radiologic Technology, Council on Medical Education of the AMA, representing the ACR and the ASRT.

### Radiologic Technology

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd | 4th | 5th |
|---|---|---|---|---|---|
| BIOL 154-155 Human Anatomy and Physiology | 4 | 4 | | | |

| | | | | | |
|---|---|---|---|---|---|
| ENGL 111-112-113 English Composition | | 3 | 3 | 3 | |
| 'GENL 100 Orientation | 1 | | | | |
| HLTH 100 Orientation to Allied Health Careers | 1 | | | | |
| HLTH 124-125 Medical Terminology | 3 | | | | 2 |
| MATH 111-112-113 Technical Mathematics | | 3 | 3 | 3 | |
| RADL 110 Introduction to Radiology, Protection, Patient Care | 3 | | | | |
| RADL 114-115 Principles of Exposure | | | 4 | 4 | |
| RADL 124-125 Radiographic Positioning | | 4 | 4 | | |
| RADL 141-142-143 Elementary Clinical Procedures I-II-III | | 2 | 3 | 3 | |
| RADL 190 Coordinated Practice | | | | | 5 |
| RADL 210 Protection and Patient Safety | | | | | 2 |
| RADL 256 Special Procedures | | | | 3 | |
| RADL 259 Radiographic Film Evaluation | | | | | 3 |
| Total Credits | 12 | 16 | 17 | 16 | 12 |
| (Second Year) | | | | | |
| PHYS 101-102 Introductory Physics | 4 | 4 | | | |
| RADL 216 Radiation Physics | | | 4 | | |
| RADL 226 Radiographic Theory Correlation | | | 3 | | |
| RADL 241-242-243 Advanced Clinical Procedures | 5 | 5 | 5 | | |
| RADL 250 Radiologic Specialties | | 3 | | | |
| RADL 257 Advanced Special Procedures | 3 | | | | |
| RADL 258 Case History Evaluation | | | | 2 | |
| RADL 276 Departmental Administration | | 1 | | | |
| RADL 290 Coordinated Internship | | | | 8 | |
| RADL 298 Supervised Study/ Scientific Paper | 1 | | | | |
| RADL 299 Supervised Study/ Review for Registry | | | | 2 | |
| ²SSE | 3 | 3 | 3 | | |
| Total Credits | 16 | 16 | 15 | 12 | |
| Total Minimum Credits for Degree | | | | | 132 |

'GENL 198, 298 may be substituted
²Three quarters of Social Science may be selected from the following PSYC, 116, 128, 130, 201, 202, 203, GOVT 180, ECON 160, SOCI 101, 102, 103, 186, 187, 236.

## AUTOMOTIVE TECHNOLOGY

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* The curriculum is primarily designed to train persons for full-time employment.

*Occupational Objectives:*

Automotive Diagnostician
Sales and Service
Service Manager
Tune-up Specialist

*Special Curriculum Admission Guidelines:* Proficiency in high school English and mathematics (1 unit of Algebra). Developmental courses may be recommended for students with deficiencies in English and mathematics. The purchase of hand tools and personal safety equipment is the financial responsibility of the individual student.

### Automotive Technology Curriculum

| | Quarter Credit Hours | | | |
|---|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd | 4th |
| AUTO 126 Anti-Pollution Systems | | | | 4 |
| AUTO 131-132-133 Automotive Technology, I, II, III | 6 | 6 | 6 | |
| AUTO 141-142 Applied Math for Auto. Tech. I, II | | 3 | 3 | |
| AUTO 170 Introduction to Diesel Engines | | | | 3 |
| AUTO 180 Introduction to Diesel Powered Vehicles | | | | 2 |
| AUTO 191-192-193 Automotive Systems I, II, III | 4 | 4 | 4 | |
| ENGL 109 Communication in Business & Industry | | 3 | | |
| ENGL 166 College Reading | 3 | | | |
| GENL 100 Orientation | 1 | | | |
| MATH 151-152 Business Math I, II | | | | 6 |
| MECH 131-132 Machine Laboratory I, II | | | 2 | 2 |
| SPDR 137 Public Speaking | | | 3 | |
| WELD 120 Fundamentals of Welding | 2 | | | |
| WELD 122 Arc Welding I | | 2 | | |
| Total Credits | 16 | 18 | 18 | 17 |
| (Second Year) | | | | |
| AUTO 231-232-233 Automotive Technology IV, V, VI | 6 | 6 | 6 | |
| AUTO 236 Automotive Heating & Air Conditioning | | | | 3 |
| AUTO 260 Automotive Accessory Service | | | | 3 |
| AUTO 268 Automotive Alignment | | | | 2 |
| AUTO 287-288 Shop Management I, II | 3 | 3 | | |
| AUTO 291-292-293 Automotive Systems IV, V, VI | 4 | 4 | 4 | |
| AUTO 298 Seminar and Project | | | | 3 |
| ECON 160 Survey of American Economics | | 3 | | |
| ENGL 111-112 English Composition I, II | | | | 6 |
| GOVT 180 American Constitutional Government | 3 | | | |
| HLTH 110 Concepts of Personal & Community Hlth. | | | 3 | |
| PSYC 128 Human Relations | | | 3 | |
| Total Credits | 16 | 16 | 16 | 17 |
| Total Minimum Credits for Degree | | | | 136 |

## ADMINISTRATION OF JUSTICE

ASSOCIATE DEGREE IN APPLIED SCIENCE

*Purpose:* The primary purpose of this curriculum is to prepare the student for effective law enforcement and related careers. In addition,

it provides an academic background for those who may be interested in law, social service, or work with the Federal Government.

Courses will be enriched through the services of experienced persons in police work, jurisprudence, and government at the national, state, and local levels. The curriculum is also supported by broad general education courses.

*Occupational Objectives:*

State and Local Law Enforcement
Federal Law Enforcement
Forest Service
Correctional Vocations
Commercial/Industrial Security

Potential applicants must meet the physical or related occupation requisites of each employer.

*Educational Objectives:*

This curriculum is designed for maximum transferability to four-year institutions which have ADJU Baccalaureate Degree Programs.

*Special Curriculum Admission Guidelines:* Applicants must meet the general requirements for admission to the college. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Administration of Justice Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ADJU 100 Introduction to Law Enforcement | 3 | | |
| ADJU 114-115 Police Organization I-II | | 3 | 3 |
| ADJU 126 Juvenile Delinquency | | 3 | |
| ADJU 231-232 Criminal Law, Evidence, and Procedures | 3 | 3 | |
| ADJU 240 Constitutional Law | | | 3 |
| ENGL 111-112-113 English Composition I-II-III | 3 | 3 | 3 |
| GENL 100 Orientation | 1 | | |
| GOVT 281-282-283 U.S. Government | 3 | 3 | 3 |
| SOCI 101-102-103 Introduction to Sociology | 3 | 3 | 3 |
| [1]Elective | | | 3 |
| Total Credits | 16 | 18 | 18 |
| (Second Year) | | | |
| ADJU 276 Industrial and Commercial Security | 3 | | |
| ADJU 120 Corrections | | 3 | |
| Lab Science | 4 | 4 | 4 |
| ADJU 176 Criminology | 3 | | |
| ADJU 228 Police in the Community | 3 | | |
| ADJU 246-247 Criminal Investigation | | 3 | 3 |
| HLTH 110 Personal Community Health | 3 | | |
| PSYC 128 Human Relations | 3 | | |
| SPDR 137 Public Speaking | | | 3 |
| *Elective | | 3 | 3 |
| Total Credits | 16 | 16 | 16 |
| Total Minimum Credits for Degree | | | 100 |

[1]Department Approval Required.

## RADIO AND TELEVISION PRODUCTION TECHNOLOGY

ASSOCIATE IN APPLIED SCIENCE DEGREE

*Purpose:* With the growth of commercial and educational broadcasting in Virginia, the need for personnel trained in radio and television is expanding. The curriculum is designed primarily for persons seeking employment in radio and television upon graduation.

*Occupational Objectives:*

Advertising Agency Assistant
Radio Program Producer
Script and Continuity Writer
Television Director/Producer
Television Studio Technician

*Special Curriculum Admission Guidelines:* Proficiency in high school English. It is recommended that applicants have a personal interview with the broadcasting faculty to discuss their educational goals and occupational objectives. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Radio and Television Production Technology Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| ARTS 183 Introduction to Photography | | | 3 |
| BCST 110 Introduction to Radio/Television | 3 | | |
| BCST 111-112-113 Radio/TV Production | 4 | 4 | 4 |
| BCST 134-135 Speech for Radio/TV | | 3 | 3 |
| BCST 138 TV Studio Art | | 3 | |
| [1]ECON 160 Survey of American Economics | | 3 | |
| ENGL 111-112-113 English Composition | 3 | 3 | 3 |
| GENL 100 Orientation | 1 | | |
| [1]GOVT 180 American Constitutional Government | | | 3 |
| SECR 111 Typewriting (or approved elective) | 3 | | |
| SPDR 141, Voice & Diction I | 3 | | |
| Health or Physical Education | 1-3 | 1-3 | 1-3 |
| Total Credits | 18-20 | 17-19 | 17-19 |
| (Second Year) | | | |
| BCST 214-215 Technical Problems of Radio/TV | | 3 | 3 |
| BCST 216 Radio/TV Management and Operation | 3 | | |
| BCST 217 Radio/TV News | | | 3 |
| BCST 226 Writing for Radio/TV | 3 | | |

| | | | |
|---|---|---|---|
| BCST 236 Broadcast Advertising and Sales | | 3 | |
| BCST 257 Social Problems in American Broadcasting | | | 3 |
| BCST 267 Film Production (or elective) | | 3 | |
| BCST 281-282-283 Advanced Radio/TV Production | 5 | 5 | 5 |
| BCST 298 Seminar and Project (or BCST 290/299) | | | 2 |
| BUAD 100 Introduction to Business (or approved elective) | 3 | | |
| ENGL 121 Journalism (or approved elective) | 3 | | |
| PSYC 128 Human Relations | | 3 | |
| Total Credits | 17 | 17 | 16 |
| Total Minimum Credits for Degree | | | 102 |

[1]A year sequence in Social Science may be substituted.

## AUTOMOTIVE ANALYSIS AND REPAIR

(DIPLOMA)

*Purpose:* The curriculum is primarily designed to train persons for full-time employment. A majority of the courses are transferable to the Associate Degree program.

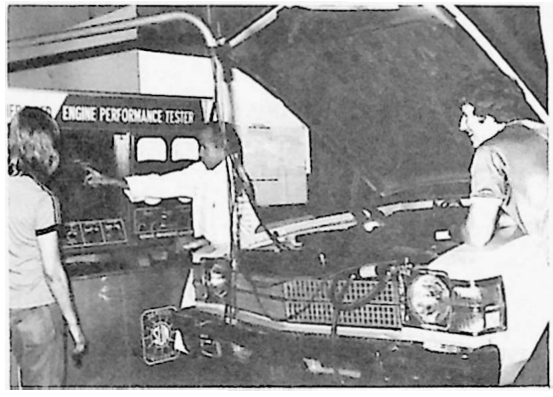
*Occupational Objectives:*

Automotive Troubleshooting and Repair
Sales and Service
Tune-up Specialist

*Special Curriculum Admission Guidelines:* Proficiency in high school English and general mathematics. Developmental courses may be recommended for students with deficiencies in English and mathematics. The purchase of hand tools and personal safety equipment is the financial responsibility of the individual student.

### Automotive Analysis and Repair

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| AUTO 131-132-133 Automotive Technology I, II, III | 6 | 6 | 6 |
| AUTO 141-142 Applied Math for Automotive Technology I, II | | 3 | 3 |
| AUTO 191-192-193 Automotive Systems I, II, III | 4 | 4 | 4 |
| ENGL 109 Communication in Business & Industry | | 3 | |
| ENGL 166 College Reading | 3 | | |
| GENL 100 Orientation | 1 | | |
| MECH 131 Machine Laboratory I | | | 2 |
| ENGL or SPDR | | | 3 |
| WELD 120 Fundamentals of Welding | 2 | | |
| WELD 122 Arc Welding I | | 2 | |
| Total Credits | 16 | 18 | 18 |
| (Second Year) | | | |
| AUTO 231-232-233 Automotive Technology IV, V, VI | 6 | 6 | 6 |
| AUTO 287-288 Shop Management I, II | 3 | 3 | |
| AUTO 291-292-293 Automotive Systems IV, V, VI | 4 | 4 | 4 |
| ECON 160 Survey of American Economics | | 3 | |
| GOVT 180 American Constitutional Government | 3 | | |
| HLTH 110 Concepts of Personal & Community Health | | | 3 |
| PSYC 128 Human Relations | | | 3 |
| Total Credits | 16 | 16 | 16 |
| Total Minimum Credits for Degree | | | 102 |




## ELECTRONIC SERVICING

(DIPLOMA)

*Purpose:* This curriculum is designed to meet present and future needs for trained electronic service personnel in and around the Roanoke area. Full-time employment may be sought immediately upon completion of this program.

*Occupational Objectives:* Electronics home entertainment servicing including Color TV, Radio, Hi-Fi, and FM stereo. Industrial electronic repair and maintenance MATV/CATV installer.

*Special Curriculum Admission Guidelines:* Proficiency in high school English and general Mathematics. Developmental courses may be recommended for students with deficiencies in English and Mathematics.

### Electronic Servicing Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| BUAD 174 Small Business Management | 3 | | |
| ELEC 11-12 Electricity | 4 | 4 | |
| ELEC 40 Electronics I | | | 7 |
| ELEC 118-119 Electrical Shop | 1 | 1 | |
| ENGL 44 Developmental Reading | 3 | | |
| ENGL 100 Occupational English | | 3 | |
| MATH 11-12 Elements of Mathematics | 3 | 3 | |
| RDTV 74-75 Radio/TV Electronics | | 4 | 4 |
| Total Credits | 14 | 15 | 11 |

| (Second Year) | | | |
|---|---|---|---|
| ELEC 27 Pulse and Digital Circuits | | 4 | |
| ELEC 68 Electronics II | 6 | | |
| RDTV 51-52-53 Advanced Servicing Techniques | 5 | 7 | 9 |
| RDTV 80 C.E.T. License Preparation | | | 3 |
| Total Credits | 11 | 11 | 12 |

Additional required courses that may be taken any quarter:

| | |
|---|---|
| ECON 160 Survey of American Economics | 3 |
| GENL 100 Orientation | 1 |
| GOVT 180 American Constitutional Government | 3 |
| PSYC 128 Human Relations | 3 |
| | 10 |

Total Minimum Credits for Diploma . . . . . 84

## [1]AIR CONDITIONING AND REFRIGERATION

(CERTIFICATE)

*Purpose:* The curriculum is primarily designed to train persons for full-time employment.

*Occupational Objectives:*

Service Technician
Installation Technician

*Special Curriculum Admission Guidelines:* Proficiency in high school English and general mathematics. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Air Conditioning and Refrigeration Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| AIRC 11-12-13 Air Conditioning | 3 | 3 | 3 |
| ELEC 11-12 Electricity | | 4 | 4 |
| MATH 41 Air Conditioning Mathematics | 4 | | |
| Total Credits | 7 | 7 | 7 |
| (Second Year) | | | |
| AIRC 14-15-16 Air Conditioning | 3 | 3 | 3 |
| ELEC 17 Electronic Controls | | | 4 |
| ELEC 74-75 Electrical Power and Control Systems | 4 | 4 | |
| Total Credits | 7 | 7 | 7 |

Additional required courses that may be taken any quarter:

| | |
|---|---|
| English or Speech Elective | 3 |
| [2]ECON 160 Survey of American Economics | 3 |
| [2]GOVT 180 American Constitutional Government | 3 |
| [2]PSYC 128 Human Relations | 3 |
| | 12 |

Total Minimum Credits for Certificate . . . . . 54

[1]Requires part-time enrollment over a two-year period.
[2]A year sequence in Social Science may be substituted.

## [1]ARCHITECTURAL DRAFTING

(CERTIFICATE)

*Purpose:* The curriculum is primarily designed to train persons for full-time employment.

*Occupational Objectives:*

Architectural Aide
Architectural Draftsman

*Special Curriculum Admission Guidelines:* Proficiency in high school English and general mathematics. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### [1]Architectural Drafting Curriculum

| | Quarter Credit Hours | | |
|---|---|---|---|
| (First Year) | 1st | 2nd | 3rd |
| ARCH 111-112-113 Architectural Drafting | 3 | 3 | 3 |
| MATH 31-32-34 Algebra (or advanced sequence) | 3-5 | 3-5 | 3-5 |
| Total Credits | 6-8 | 6-8 | 6-8 |
| (Second Year) | | | |
| ARCH 211-212-213 Architectural Drafting | 3 | 3 | 3 |
| Technical Elective | 3-4 | 3-4 | 3-4 |
| Total Credits | 6-7 | 6-7 | 6-7 |

Additional required courses that may be taken any quarter:

| | |
|---|---|
| English or Speech Elective | 3 |
| [2]ECON 160 Survey of American Economics | 3 |
| [2]GOVT 180 American Constitutional Government | 3 |
| [2]PSYC 128 Human Relations | 3 |
| | 12 |

Total Minimum Credits for Certificate . . . . . 48

[1]Requires part-time enrollment over a two-year period.
[2]A year sequence in Social Science may be substituted.

## [1]AUTOMOTIVE MECHANICS

(CERTIFICATE)

*Purpose:* The curriculum is primarily designed to train persons for full-time employment.

*Occupational Objectives:*

Automotive Mechanic
Sales and Service

*Special Curriculum Admission Guidelines:* Proficiency in oral and written communication skills and general mathematics. The purchase of hand tools and personal safety equipment is the financial responsibility of the individual student.

### [1]Automotive Mechanics Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| AUTO 111 Automotive Engines | | 4 | |
| AUTO 121 Automotive Fuel Systems | 4 | | |
| AUTO 136 Automotive Lubrication and Cooling Systems | | | 3 |
| AUTO 287-288 Shop Management | | 3 | 3 |
| WELD 120 Fundamentals of Welding | 2 | | |
| Total Credits | 6 | 7 | 6 |
| (Second Year) | | | |
| AUTO 238 Automotive Air Conditioning | 3 | | |
| AUTO 241 Automotive Electricity | 4 | | |
| AUTO 254 Automotive Transmissions | | | 4 |
| AUTO 284 Automotive Service Procedures & Tune-up | | 3 | |
| AUTO 265 Automotive Braking Systems | | 3 | |
| MECH 131 Machine Laboratory | | | 2 |
| Total Credits | 7 | 6 | 6 |

Additional required courses that may be taken any quarter:

| | |
|---|---|
| English or Speech Elective | 3 |
| [2]ECON 160 Survey of American Economics | 3 |
| [2]GOVT 180 American Constitutional Government | 3 |
| [2]PSYC 128 Human Relations | 3 |
| | 12 |

Total Minimum Credits for Certificate . . . . . 50

[1]Requires part-time enrollment over a two-year period.
[2]A year sequence in Social Science may be substituted.

## CHILD DEVELOPMENT AIDE

(CERTIFICATE)

*Purpose:* The curriculum is designed to introduce interested persons, including parents, to the field of Early Childhood Education and to provide opportunities for individuals presently working in this field or allied professions to improve the knowledge and skills necessary to foster growth in young children — intellectual, social, physical, emotional and creative. Also, this curriculum has been established to provide competencies in the areas proposed by the Child Development Associate Consortium.

*Occupational Objectives:* Positions in day care centers, nursery schools, playground programs, foster homes, hospital playrooms, family day care facilities, home-training programs, and other facilities offering services for pre-school children.

*Special Curriculum Admission Guidelines:* Evidence that the applicant possesses the intellectual, emotional, and physical capacities and the interest and aptitude necessary for relating successfully to young children. Developmental courses may be recommended for students with deficiencies in English and mathematics. The program is open to both male and female applicants. Applicants are required to have an interview with the Early Childhood Education faculty prior to entering this program. Each student is responsible for transportation to and from field sites used for laboratory experience, and for liability insurance.

**Students considering advanced work in Child Development Education are advised to consult the catalog listing Child Development Education, A.A.S. Degree and/or Pre-Teacher Education.**

### Child Development Aide Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| [2]ECON 160 Survey of American Economics | | 3 | |
| EDUC 106 Language Arts for Pre-School | | 3 | |
| EDUC 120 Introduction Early Childhood Education | 3 | | |
| EDUC 121-122 Childhood Education I, II | | 3 | 3 |
| EDUC 137 Creative Activities for Children | 3 | | |
| [1]EDUC 186 Child Study (Optional) | | | 3 |
| EDUC 190 Coordinated Internship | 3-5 | 3-5 | 3-5 |
| [3]EDUC 199 Supervised Study | | | |
| ENGL 111 English Composition | 3 | | |
| [2]GOVT 180 American Constitutional Government | | | 3 |
| HLTH 104 First Aid | | | 2 |
| [4]EDUC 189 Nutrition and Human Development | | | 3 |
| PSYC 110 Principles of Applied Psychology | | 3 | |
| PSYC 130 Child Growth and Development | 3 | | |
| PBSV 150 Introduction to Community and Social Service | | 3 | |
| Total Credits | 15-17 | 15-18 | 15-17 |

Total Minimum Credits for Certificate . . . . . 47

[1]Prerequisite to EDUC 186 Child Study is PSYC 130
[2]A year sequence in Social Science may be substituted.
[3]Credit may be granted for EDUC 199 Supervised Study under the direction of the Child Development faculty.
[4]Health 156 will fulfill this requirement.

## CLERK TYPIST

(CERTIFICATE)

*Purpose:* The curriculum is primarily designed to train persons for full-time employment following graduation.

*Occupational Objectives:*

| | |
|---|---|
| Typist | Receptionist |
| File Clerk | Related Office Work |

*Special Curriculum Admission Guidelines:* Applicant must meet the general requirements for admission to the College. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Clerk-Typist Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| BUAD 100 Introduction to Business | 3 | | |
| BUAD 108 Business Machines (or MATH 153) | | | 2-3 |
| DAPR Elective (or BUAD/ SECR elective) | | | 3 |
| [1]ECON 160 Survey of American Economics | | 3 | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| [1]GOVT 180 American Constitutional Government | 3 | | |
| MATH 50 Business Math I (or MATH 151) | 3 | | |
| [1]PSYC 128 Human Relations | | 3 | |
| [2]SECR 111-112-113 Typewriting | 3 | 3 | 3 |
| SECR 136 Filing & Records Management | | | 3 |
| [3]SECR 138 Office Record-keeping | | 3 | |
| [4]SECR 139 Clerical Procedures | | | 3 |
| [4]SECR 157 Machine Transcription | | | 3 |
| SPDR 137 Public Speaking | | 3 | |
| Total Credits | 16 | 18 | 17-18 |

Total Minimum Credits for Certificate . . . . . 51

[1]A year sequence in Social Science may be substituted.
[2]Students who have completed prior training in typewriting may petition for credit by examination.
[3]Student is required to have Math 50 or MATH 151 as prerequisite.
[4]Student must be enrolled in or have completed SECR 113.

## DENTAL ASSISTANT

(CERTIFICATE)

***Purpose:*** The Certificate Degree in Dental Assistant curriculum is designed to prepare selected students to serve in a dynamic and growing health service by becoming valuable members of the Dental Health Team allowing for an in-depth study of expanded functions in keeping with the dental laws of Virginia.

At the successful completion of the program, a student will be eligible to take the National Certifying examination leading to a Certified Dental Assistant (C.D.A.).

***Occupational Objectives:***

Private Dental Practice
Hospital Dental Service
Group Dental Service
Government Service
Dental Specialty Practice
Dental Assisting Education

***Special Curriculum Admission Guidelines:*** The applicant should have completed on the high school level four units of English, one unit of Laboratory Science (preferably Biology), two units of Social Studies, one unit of mathematics. Developmental courses may be recommended for students with deficiencies in English and Mathematics. Priority will be given to applicants with high class standing. A personal interview with the Counseling Department and Dental Assistant faculty is a part of the admission process. Considering the limited available slots, early application is highly advisable. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical and dental report indicating good general health. The program is open to male and female students.

Students majoring in Dental Assisting are admitted annually. Classes begin in June; therefore, early application is desirable.

***Special Curriculum Completion Guidelines:*** Students who receive a final grade lower than "C" in any of the courses in the Dental Assisting Program sequence must obtain permission from the Dental Assistant Faculty Committee and approval of the Division Chairman to continue in the major of Dental Assisting.

The student will be responsible for transportation to health agencies utilized for clinical practice and the purchase of uniforms, accessories and Dental Liability Insurance. Students accepted into the program must achieve a final grade of "C" or higher in DENT 190 and DENT 176.

***Special Accreditation Status:*** The curriculum has been approved by the Commission on Dental Education of the American Dental Association.

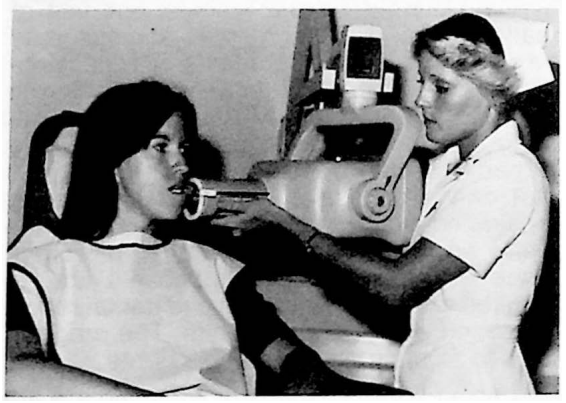
## Dental Assistant Curriculum

| | Quarter Credit Hours 1st | 2nd | 3rd | 4th | 5th |
|---|---|---|---|---|---|
| DENT 100 Introduction to Dental Auxiliaries | 3 | | | | |
| DENT 101-102-103 Dental Science I, II, III | 4 | 4 | 4 | | |
| DENT 110 Introduction to Dental Materials | | 4 | | | |
| DENT 111-112 Clinical Procedures I, II | | 4 | 4 | | |
| DENT 120 Interpersonal Relations | | | | 2 | |
| DENT 121-122 Chairside Assisting I, II | | | 4 | 4 | |
| DENT 176 Advanced Clinical Procedures | | | | | 3 |
| DENT 190 Coordinated Practice | | | | | 5 |
| DENT 198 Seminar and Project | | | | | 3 |
| CHEM 05 Developmental Chemistry for Health Sciences | 4 | | | | |
| [1]ECON 160 Survey of American Economics | | | | 3 | |
| ENGL 111 English Composition | 3 | | | | |
| [2]GENL 100 Orientation | 1 | | | | |
| [1]GOVT 180 American Constitutional Government | | | 3 | | |
| HLTH 100 Orientation to Allied Health Careers | 1 | | | | |
| HLTH 110 Concepts of Personal and Community Health | | 3 | | | |
| [1]PSYC 128 Human Relations | | | | 3 | |
| SECR 111 Typewriting | | | | 3 | |
| SECR 138 Office Recordkeeping | | | | | 3 |
| SECR 139 Clerical Procedures | | | | | 3 |
| SPDR 137 Public Speaking | | 3 | | | |
| Total Credits | 16 | 18 | 15 | 15 | 17 |

Total Minimum Credits for Certificate 81

[1]The following *series* of courses may be taken in lieu of ECON 160, GOVT 180, & PSYC 128 ECON 211-212-213, GOVT 281-282-283, PSYC 201-202-203, or SOCI 101-102-103

[2]GENL 198 or 298 may be taken in lieu of GENL 100 with counselor approval.



## EDUCATIONAL ASSISTANT

(CERTIFICATE)

*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

*Admission Guidelines:* In addition to admissions guidelines 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.

*Special Curriculum Completion Guidelines:* 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 Curriculum

| | Quarter Credit Hours 1st | 2nd | 3rd | 4th |
|---|---|---|---|---|
| GENL 100 Orientation | 1 | | | |
| ENGL 111 English Composition | 3 | | | |
| HLTH 110 Personal & Community Health | 3 | | | |
| SOCI 106 General Sociology | 3 | | | |
| EDUC 120 Introduction to Early Childhood Education | 3 | | | |
| EDUC 140 Modern Math Concepts | 3 | | | |
| ENGL 112 English Composition | | 3 | | |
| ECON 160 Survey of American Economics | | 3 | | |
| ELECTIVE Art or Music | | 3 | | |
| EDUC 117 Introduction to Reading Methods | | 3 | | |
| EDUC 137 Creative Activities for Children | | 3 | | |
| SPDR 137 Public Speaking | | | 3 | |
| PSYC 128 Human Relations | | | 3 | |
| EDUC 150 Modern Science Concepts | | | 3 | |
| EDUC 136 Materials & Equipment for Aides | | | 3 | |
| EDUC 161 Education Techniques I (Practicum) | | | 3 | |
| ENGL 146 Literature for Children | | | | 3 |
| PSYC 130 Child Growth & Development | | | | 3 |
| EDUC 162 Educational Techniques II (Practicum) | | | | 3 |
| ELECTIVE Art or Music | | | | 3 |
| Total Credits | 16 | 15 | 15 | 12 |

Total Minimum Credits for Certificate . . . . . 58

## MEDICAL TRANSCRIPTIONIST

(CERTIFICATE)

*Purpose:* The curriculum is designed to prepare selected students to qualify as contributing members of the health-care team.

*Occupational Objectives:* Medical transcriptionists are employed in departments of Medical Records, Radiology and Pathology in hospitals and other health-care facilities. Employment in a physician's office may include medical transcription as well as general office work.

*Special Curriculum Admission Guidelines:* The applicant should have completed four units of high school English, one unit of high school Laboratory Science (preferably Biology), two units of Social Studies, one unit of high school mathematics. Developmental courses may be recommended for students with deficiencies in English and Mathematics. Priority will be given to applicants with high class standing. A personal interview with the Counseling Department and Medical Transcriptionist faculty is part of the admission process. Considering the limited available slots, early application is highly advisable. Upon notification of acceptance to the curriculum, applicants are requested to submit a medical report indicating good health. The student will be responsible for transportation to and from agencies utilized for clinical experience. The program is open to both male and female students.

*Special Curriculum Completion Guidelines:* Students who receive a final grade lower than "C" in any of the courses in the Medical Transcriptionist sequence must be recommended by the instructor and approved by the Division Chairman to continue in the major.

### Medical Transcriptionist Curriculum

| | Quarter Credit Hours | | | |
|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th |
| GENL 100 Orientation | 1 | | | |
| HLTH 124 Medical Terminology I | 3 | | | |
| HLTH 125 Medical Terminology II | | 2 | | |
| ENGL 111-112-113 English Composition | 3 | 3 | 3 | |
| GOVT 180 American Constitutional Government | | | 3 | |
| NASC 111-112 Health Science | 4 | 4 | | |
| SECR 111-112-113 Typewriting | 3 | 3 | 3 | |
| SECR 136 Filing and Records Management | 3 | | | |
| SECR 157 Machine Transcription | | | 3 | |
| SECR 139 Clerical Procedures | | | | 3 |
| SECR 159 Machine Transcription — Medical | | | | 3 |
| MDRS 190 Coordinated Practice | | | 3 | 8 |
| ECON 160 Survey of American Economics | | 3 | | |
| Total Credits | 17 | 16 | 15 | 14 |

Total Minimum Credits for Certificate . . . . . 61

## RESPIRATORY THERAPY TECHNICIAN

(CERTIFICATE)

*Purpose:* The Respiratory Therapy Technician curriculum is designed to prepare selected students to serve as contributing members of a specialized health team concerned with the treatment, management, and care of patients with breathing abnormalities. The classroom and clinical instruction will include the administration of gas therapy, humidity therapy, aerosol therapy, and cardiopulmonary resuscitation.

*Occupational Objectives:* Employment opportunities are available in hospitals, clinics, educational institutions, private physician's offices, and public health agencies.

*Special Curriculum Admission Guidelines:* The applicant should hold a high school diploma or the equivalent and have completed one unit each of general biology and general chemistry, as well as two units of mathematics including algebra. Developmental courses may be recommended for students with deficiencies in English and mathematics.

Priority will be given to applicants with high class standing. A personal interview with the Counseling Department and the Respiratory Therapy Technician faculty is part of the admission process.

Upon notification of acceptance to the curriculum, applicants are requested to submit medical and dental reports indicating good general health.

The program is open to both male and female students.

*Special Curriculum Completion Guidelines:* Students who receive a final grade lower than "C" in any of the courses in the Respiratory Therapy Technician program sequence must obtain permission from the Respiratory Therapy faculty and approval from the Division Chairman to continue the major of Respiratory Therapy Technician.

The ***student will*** be responsible for transportation to and from agencies utilized for clinical experience. The student is also responsible for the purchase of uniforms, accessories and student Respiratory Technician Liability Insurance.

Upon satisfactory completion of the four-quarter program, the graduate will be awarded the certificate in Respiratory Therapy Technology.

### Respiratory Therapy Technician Curriculum

| | Quarter Credit Hours | | | |
|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th |
| BIOL 154-155 Anatomy and Physiology | 4 | 4 | | |

| | | | | |
|---|---|---|---|---|
| ENGL 111 English Composition I | 3 | | | |
| GENL 100 Orientation | 1 | | | |
| HLTH 100 Orientation to Allied Health Careers | 1 | | | |
| MATH 111 Technical Mathematics I | 3 | | | |
| PSYC 128 Human Relations | | | | 3 |
| RPTH 117 Pathology for Respiratory Therapy | | | | 3 |
| RPTH 118 Cardio-Pulmonary Physiology | | | 3 | |
| RPTH 121-122-123 Respiratory Care Skills I-II-III | 5 | 5 | 5 | |
| RPTH 138 Cardio-Pulmonary Assessment | | | | 3 |
| RPTH 156 Integrated Sciences for Respiratory Therapy | | 5 | | |
| RPTH 157 Pharmacology for Respiratory Therapy | | | 5 | |
| RPTH 158 Basic Business and Leadership Principles for Respiratory Therapy Technician | | | | 3 |
| RPTH 190 Coordinated Practice | | 4 | 4 | |
| RPTH 290 Coordinated Practice | | | | 4 |
| Total Credits | 17 | 18 | 17 | 16 |

Total Minimum Credits for Certificate . . . . . 68

## ENGINEERING/TECHNICAL ASSISTANT

(CERTIFICATE)

*Purpose:* The curriculum is designed to provide an opportunity for the student to specialize in specific engineering/technical areas.

*Occupational Objectives:* Graduates may consider a wide array of job opportunities in industry or receive a maximum of transfer credit and continue their education in a similar associate degree level curriculum offered by the college.

*Special Curriculum Admission Guidelines:* Proficiency in high school English and general Mathematics. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Engineering/Technical Assistant Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| DRFT 111-112-113 Technical Drafting (or Technical Electives)[2] | 2-3 | 2-3 | 2-3 |
| [1]ECON 160 Survey of American Economics | 3 | | |
| ENGL 111-112 English Composition | 3 | 3 | |
| English or Speech | | | 3 |
| ENGR 100 Introduction to Engineering Technology | | | 2 |
| [1]GOVT 180 American Constitutional Government | | 3 | |
| MATH 31-32-34 Algebra (or advanced sequence) | 3-5 | 3-5 | 3-5 |
| [1]PSYC 128 Human Relations | | | 3 |
| [2]Technical Electives | 3-4 | 3-4 | 3-4 |
| Total Credits | 14-18 | 14-18 | 16-20 |

Total Minimum Credits for Certificate . . . . . 44

[1]A year sequence in Social Science may be substituted.
[2]Departmental Approval required for Technical Electives.

## FOOD SERVICE MANAGEMENT

(CERTIFICATE)

*Purpose:* The curriculum is primarily designed to train persons for full-time employment. Courses included in the overall curriculum may be transferred to the Associate in Applied Science Degree program in Hotel, Restaurant and Institutional Management.

*Occupational Objectives:* Management trainee positions with the hospitality industry.

*Special Curriculum Admission Guidelines:* Proficiency in oral and written communication skills and one unit of algebra. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Food Service Management Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| BUAD 100 Human Relations and Leadership Training | | | 3 |
| BUAD 164-165 Principles of Business Management | | 3 | 3 |
| ECON 160 Survey of American Economics | 3 | | |
| GOVT 180 American Constitutional Government | | 3 | |
| HLTH 110 Concepts of Personal & Community Health | 3 | | |
| HRIM 100 Introduction to Hotel/Restaurant Management | 3 | | |
| HRIM 266 Food Purchasing | | | 3 |
| HRIM 124-125 Principles of Food Preparation | 4 | 4 | |
| HRIM 140 Principles of Baking | | | 4 |
| HRIM 236 Sanitation | | 3 | |
| MATH 151-152 Introduction to Business Mathematics | 3 | 3 | |
| English or Speech | | | 3 |
| Total Credits | 16 | 16 | 16 |

Total Minimum Credits for Certificate . . . . . 48

## LEGAL ASSISTANT

(CERTIFICATE)

*Purpose:* The one-year Legal Assistant Certificate course of study is to provide learning in legal procedures and assistance to the legal profession.

*Occupational Objectives:*

1. Assist lawyers in routine daily matters.
2. Assist lawyers in legal research.

*Special Curriculum Admission Guidelines:* Applicant must meet the general requirements for admission to the College.

*Special Curriculum Completion Guidelines:* This curriculum requires the student to take required courses needed to assist the legal profession.

For more information about required courses and individual classes, please contact the Office of Continuing Education.

## SAVINGS AND LOAN

(CERTIFICATE)

*Purpose:* The Certificate Degree in Savings and Loan Administration curriculum is designed to prepare selected students to serve in a dynamic and growing financial field.

*Occupational Objectives:*

Management Training
Supervision
Real Estate Finance

*Admission Requirements:* In addition to the general requirements for admission to the College, those interested in the certificate program for Savings and Loan should either be or express a desire to be employed in a Savings and Loan Association.

For more information about required courses and individual classes, please contact the Office of Continuing Education.

## STENOGRAPHIC

(CERTIFICATE)

*Purpose:* The curriculum is designed to provide training in the art and skills of clerical and stenographic practice.

*Occupational Objectives:*

Stenographer
Typist
File Clerk
General Office Work

*Special Curriculum Admission Guidelines:* Applicants must meet the general requirements for admission to the College. Developmental courses may be recommended for students with deficiencies in English and mathematics.

### Stenographic Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| BUAD 100 Introduction to Business | 3 | | |
| [1]BUAD 108 Business Machines (or MATH 153) | | | 2-3 |
| [2]ECON 160 Survey of American Economics | | 3 | |
| ENGL 111-112 English Composition | 3 | 3 | |
| GENL 100 Orientation | 1 | | |
| [2]GOVT 180 American Constitutional Government | | | 3 |
| MATH 50 Business Mathematics I (or MATH 151) | 3 | | |
| [2]PSYC 128 Human Relations | | 3 | |
| [3]SECR 111-112-113 Typewriting | 3 | 3 | 3 |
| [3]SECR 121-122-123 Shorthand | 4 | 4 | 4 |
| SECR 136 Filing and Records Management | | 3 | |
| SECR 139 Clerical Office Procedures | | | 3 |
| SECR 157 Machine Transcription | | | 3 |
| Total Credits | 17 | 19 | 18-19 |

Total Minimum Credits for Certificate ..... 54

[1]Student is required to have MATH 50 or MATH 151 as prerequisite
[2]A year sequence in Social Science may be substituted
[3]Students who have completed prior training in typewriting and/or shorthand may petition for credit by examination.

## WELDING

(CERTIFICATE)

*Purpose:* The curriculum is primarily designed to upgrade or initially train persons for full-time employment.

*Occupational Objectives:*

Arc, Gas, Mig and Tig Welding
Welding Supervisors
Welding Inspector
Sales and Service Industry

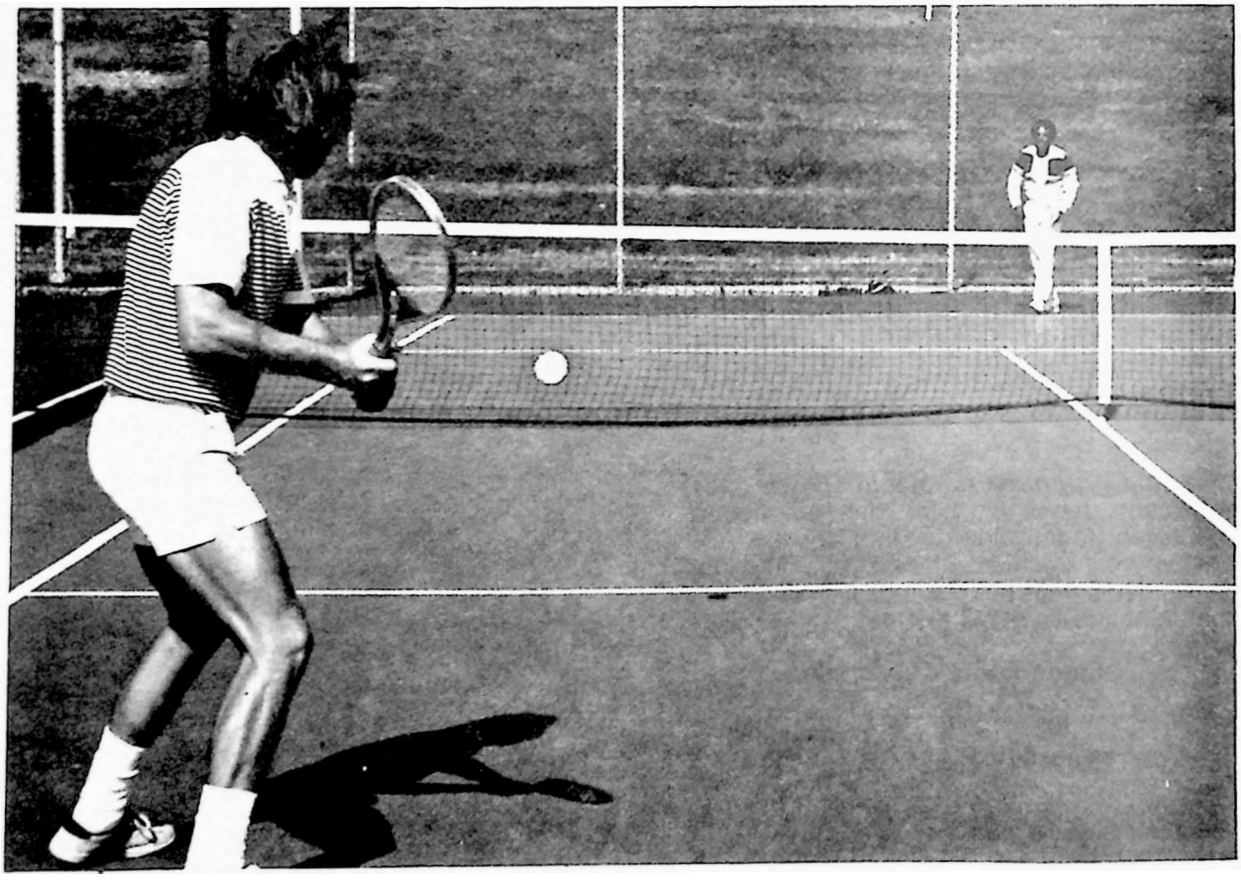
*Special Curriculum Admission Guidelines:* Proficiency in oral and written communication skills and general Mathematics. Students with deficiencies will require developmental studies. The purchase of personal safety clothing is the financial responsibility of the individual student.

### Welding Curriculum

| (First Year) | Quarter Credit Hours 1st | 2nd | 3rd |
|---|---|---|---|
| DRFT 171-172 Blueprint Reading | 2 | 2 | |
| INDT 176 Industrial Safety | | | 2 |
| WELD 120 Fundamentals of Welding | 2 | | |
| WELD 121 Oxyacetylene Welding & Cutting | | 2 | |
| WELD 122 Arc Welding I | | | 2 |
| Total Credits | 4 | 4 | 4 |
| (Second Year) | | | |
| MATH 11-12 Elements of Mathematics | | 3 | 3 |
| WELD 123 Arc Welding II | 2 | | |
| WELD 124-125 Inert Gas Welding | | 2 | 2 |
| WELD 136 Welding Metallurgy | 3 | | |
| Total Credits | 5 | 5 | 5 |

Additional required courses that may be taken any quarter:

| | |
|---|---|
| English Elective | 3-5 |
| ECON 160 Survey of American Economics | 3 |
| ELEC 11 Electricity | 4 |
| GOVT 180 American Constitutional Government | 3 |
| INDT 111 Materials & Processes of Industry | 3 |
| MECH 131 Machine Laboratory | 2 |
| Total Credits | 18-20 |
| Total Minimum Requirements for Certificate | 45 |



PART V

# DESCRIPTIONS OF COURSES

## CONTINUING EDUCATION AND COMMUNITY SERVICES PROGRAMS

In order to provide the widest possible diversification of educational opportunity, Virginia Western Community College schedules credit and noncredit courses and programs to meet educational and training needs outside the realm of traditional college studies. These include classes, institutes, forums, workshops, lectures, and courses to provide: (1) individual cultural enrichment; (2) individual job skill improvement; (3) hobby and leisure time activity training; (4) service to commerce and industry in upgrading employee skills; (5) special services focused on societal and community development.

State general fund tax dollars are not used to support noncredit community service programs.

## GENERAL COURSE INFORMATION

### Course Numbers

Courses numbered 01-09 are courses for Developmental Studies. The credits earned in these courses are not applicable toward associate degree program; however, upon approval of the Dean of Instruction, some developmental courses may provide credit applicable to basic occupational diploma or certificate programs. Students may reregister for these courses in subsequent quarters as necessary until the course objectives are completed.

Courses numbered 10-99 are basic occupational courses for diploma and certificate programs. The credits earned in these courses are applicable toward diploma and certificate programs but are not applicable toward an associate degree.

Courses numbered 100-199 are freshman courses applicable toward an associate degree, and/or certificate and diploma programs.

Courses numbered 200-299 are sophomore courses applicable toward an associate degree, and/or certificate and diploma programs.

### Course Credits

The credit for each course is indicated 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 class each week (including laboratory, shop, supervised study, 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 "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, as listed in the course description, each student also must spend some time on out-of-class assignments under his own direction. Usually each credit hour per course requires an average of three hours of in-class and out-of-class study each week.

### Course Prerequisites

If any prerequisites are required before enrolling in a course, these prerequisites 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 in the sequence. When corequisites are required for a course, 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 Dean of Instruction and instructional department.

## ACCOUNTING

ACCT 114-115 APPLIED ACCOUNTING I-II (3 cr.) (3 cr.) — Practical accounting as applied to retail stores, professional individuals in firms, and to personal service occupations; accounting forms and practical accounting procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

ACCT 197 — **See General Usage Courses** Pg. 80.

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 227 MANAGERIAL ACCOUNTING (3 cr.) — Prerequisite ACCT 262. Preparation, analysis, and interpretation of accounting and financial data for managerial purposes. Lecture 3 hours per week.

ACCT 229 AUDITING (3 cr.) — Prerequisite 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 231-232-233 COST ACCOUNTING I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite 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 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 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 261-262-263 INTERMEDIATE ACCOUNTING I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite ACCT 211-212-213. Extensive analysis of the principle elements of accounting systems and statements. Lecture 3 hours per week.

ACCT 297 — **General Usage Courses** Page 80.

## ADMINISTRATION OF JUSTICE

ADJU 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.

ADJU 110 PATROL ADMINISTRATION (3 cr.) — The theories, history, and development of police patrol. Methods and techniques of the various types of patrol and their importance to the overall police function. The responsibilities of patrol officers and supervisors in identifying police hazards, preventing crime, providing police services, establishing sound public relations; practical exercises. Lecture 3 hours per week.

ADJU 114-115 POLICE ORGANIZATION AND ADMINISTRATION I-II (3 cr.) (3 cr.) — Prerequisite ADJU 100. Police functioning at the administrative level. The organization and management of line operations, staff and auxiliary services, including investigative, juvenile, and vice units. The organization and management of personnel, internal control, planning and research, and housing and material functions. Lecture 3 hours per week.

ADJU 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 disturbed persons. Lecture 3 hours per week.

ADJU 120 INTRODUCTION TO CORRECTIONS (3 cr) — 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.

ADJU 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 as related to the juvenile problems. Lecture 3 hours per week.

ADJU 129 TREATMENT OF THE OFFENDER (3 cr.) — The theory, practice and problems in the fields of probation and parole as well as an institutional and community treatment of juvenile and adult offenders. Lecture 3 hours per week.

ADJU 134-135 CRIMINAL LAW I-II (3 cr.) (3 cr.) — Major crimes; their classification, elements of proof, intent, conspiracy, responsibility, parties, and defenses. Emphasis on the common law and Virginia adaptation. Lecture 3 hours per week.

ADJU 140 INTRODUCTION TO SECURITY ADMINISTRATION (3 cr.) — The historical, philosophical, and legal basis of security. The role of security in a modern society. A survey of the administrative personnel and physical aspects of the security field. Lecture 3 hours per week.

ADJU 146 SPECIAL AND CURRENT SECURITY PROBLEMS (3 cr.) — An analysis of special problem areas such as security education and training, community relations, white-collar crime, drug abuse, theft control, shoplifting, document control, subversion and sabotage, protection of classified information, control of proprietary information and business espionage, labor problems, civil disturbances, natural and man-made disasters. Lecture 3 hours per week.

ADJU 164 HUMAN RELATIONS IN LAW ENFORCEMENT SUPERVISION I (3 cr.) — Prerequisites ADJU 100 and ADJU 110. The art of supervising personnel through the utilization of motivation, important morale factors, methods of developing effective policies and procedures of discipline, and effective ways of employing discipline toward positive results. Lecture 3 hours per week.

ADJU 166 POLICE COMMUNICATIONS 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.

ADJU 171-172-173 FORENSIC SCIENCE I-II-III (4 cr.) (4 cr.) (4 cr.) — Fundamentals of forensic science. Fundamental characteristics of criminal laboratory analysis; fingerprinting, drug identification, crime scene detection, photography, blood, semen, neutron activation analysis. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ADJU 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.

ADJU 218 NARCOTICS AND DANGEROUS DRUGS (3 cr.) — History and development of Narcotics and Dangerous Drug traffic in the United States; classification and identification; symptoms and effects; magnitude and cost; legislative controls; laboratory and field testing; investigative methods and procedures; and rehabilitation efforts. Lecture 3 hours per week.

ADJU 228 LAW ENFORCEMENT AND THE COMMUNITY (3 cr.) — The current efforts undertaken by the police to achieve an effective working relationship with the community; police image, crisis areas, public and police attitudes, and community relations activities. Lecture 3 hours per week.

ADJU 231-232 CRIMINAL LAW, EVIDENCE, AND PROCEDURES I-II (3 cr.) (3 cr.) — 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 from one year of Criminal Law. Lecture 3 hours per week.

ADJU 240 CONSTITUTIONAL LAW FOR POLICE (3 cr.) — A survey of the background and application of Constitutional provisions, both State and Federal, pertinent to the functions of law enforcement officers. Includes such topical areas as speech; press and assembly; arrest and detention; search and seizure; interrogations and confessions; self-incrimination and assistance of counsel; double jeopardy; speedy and fair trial; humane punishment; and civil rights. Lecture 3 hours per week.

ADJU 246 PRINCIPLES OF CRIMINAL INVESTIGATION (3 cr.) — Conduct at the crime scene; collection and handling of evidence; interviewing and interrogation; ob-

taining statements, admissions, and confessions: testifying in court, practical exercises. Lecture 3 hours per week.

ADJU 247 ADVANCED CRIMINAL INVESTIGATION (3 cr.) — Prerequisite ADJU 246. Continued study of the investigative process; introduction to scientific aids and examination; application of investigative techniques to specific offenses; practical exercises. Lecture 3 hours per week.

ADJU 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. Lecture 3 hours per week.

ADJU 286 PATTERNS OF INMATE BEHAVIOR (3 cr.) — A study into the varying patterns of inmate behavior; methods and procedures of managing such behavior; implementation of programs to favorably change some behavior, signs of the developing of particular behavior patterns; the interpretation of certain behavior. Lecture 3 hours per week.

ADJU 287 ELEMENTARY PRINCIPLES OF PROBATION AND PAROLE (3 cr.) — Prerequisite ADJU 120. Probation and Parole as methods for treating offenders; history; organization and administration; eligibility; selection; revocation and termination; procedures and techniques; trends. Lecture 3 hours per week.

ADJU 288 PROGRESSIVE AND INVOCATIVE PROGRAMS IN CORRECTIONS (3 cr.) — A comparative study between past, present, and proposed programs in corrections. Emphasis will be placed on the most current and productive correctional programs proposed, or in use. Lecture 3 hours per week.

ADJU 289 CORRECTIONAL COUNSELING (3 cr.) — The principles and processes of counseling in correctional facilities, and other related fields. Major aspects of counseling theory and principles along with practical application of same. Lecture 3 hours per week.

ADJU 290 — **See General Usage Courses** Page 80.

ADJU 298 — **See General Usage Courses** Page 80.

## AIR CONDITIONING AND REFRIGERATION

AIRC 11 AIR CONDITIONING I (3 cr.) — Designed to introduce and explain basic principles of refrigeration and systems. Deals with the composition and state of matter, liquid vapor, equilibrium, pressure, density, pressure-volume-temperature relationship. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AIRC 12 AIR CONDITIONING II (3 cr.) — The law of gases, temperature scales, heat work, power, energy, heat transfer and elementary refrigeration systems. Included is a thorough study of types of systems used in refrigeration. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AIRC 13 AIR CONDITIONING III (3 cr.) — The theory and application of compressors, condensors, evaporators, expansion valves and capillary tubes used in refrigeration systems. Freezing process of foods and refrigeration load calculators are included. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AIRC 14 AIR CONDITIONING IV (3 cr.) — Study of properties of air temperature, relative humidity, specific heat, condensation, evaporation, psychometrics, basic parts of systems, functions, problems, principles of operation, air-cooling, water cooling, load calculation, and estimating procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AIRC 15-16 AIR CONDITIONING V-VI (3 cr.) (3 cr.) — Psychometric properties of air, heat, lead and gain calculation, heated and chilled water systems, duct design, pipe sizing, air distribution, and air comfort requirements. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

## ARCHITECTURAL TECHNOLOGY

ARCH 100 INTRODUCTION TO ARCHITECTURE (3 cr.) — An intensive course outlining the history and impact of architecture. Emphasis on the dynamics and social aspects of architecture and society. Lecture 3 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 the use of drafting equipment, lettering, freehand orthographic and pictorial sketching, geometric construction, and orthographic drawing. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 112 ARCHITECTURAL DRAFTING II (3 cr) — Prerequisite ARCH 111 or equivalent. An introduction to complex one- and two-point perspectives, basic techniques of shade and shadow construction in orthographic drawings, development of construction details using appropriate materials, indications and symbols, study of model construction, and drafting techniques with pen and ink. 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 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.) — Designed to introduce the materials used in erection of structures, the physical properties and the architecture and 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 relationships 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 160 INTRODUCTION TO SOLAR HEATING OF BUILDINGS (3 cr.) — A survey class of the principles and consideration involved in the design and planning of solar heated buildings. An overview of active and passive systems, their development, applications and operation. Lecture 3 hours per week.

ARCH 167 SOLAR ENERGY SYSTEM DESIGN (3 cr.) — Practical design of solar hydronic and air systems for space heating and domestic hot water heating. Primary emphasis on residential heating systems. Includes discussions on collector types, storage systems, system controls, solar cooling and integrated systems, and economic considerations. Lecture 3 hours per week.

ARCH 197 — **See General Usage Courses** Page 80.

ARCH 211 ARCHITECTURAL DRAFTING IV (3 cr.) — Prerequisite ARCH 113. Preparation of structural plans, elevation, wall sections, and details for building construction with emphasis on structural components. Appropriate details and drawings necessary for construction. 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. Preparation of plans and details for building construction with emphasis on 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 including structural components, mechanical equipment, and millwork drawings. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

ARCH 276 CONSTRUCTION ESTIMATING (3 cr.) — Interpretation of working drawings for a project; preparation of material and labor quantity surveys for plans and specifications; approximate and detailed estimates of cost, and bid and contract procedures. Detailed inspection of the construction by comparing the finished work to the specifications. Lecture 3 hours per week.

ARCH 278 BUILDING CODES, CONTRACT DOCUMENTS AND PROFESSIONAL OFFICE PRACTICES (3 cr.) — The professional role of the architectural technician with regard to clients and employer. Building codes and their effect in relation to specifications and drawings. The purpose and writing of specifications with their legal and practical application to working drawings. Contract documents analyzed for client-architect contractor responsibilities, duties and mutual protection. Lecture 3 hours per week.

ARCH 290, 298 — **See General Usage Courses** on page 80.

ARCH 297 — **See General Usage Courses** page 80.

## ARTS

ARTS 110 ART APPRECIATION (3 cr.) — A survey of art from prehistoric times to the present day. Architectural styles, sculpture, and painting by lecture and slide illustrations. Lecture 3 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 beginning with prehistoric art and following the main stream of western civilization to the present. Lecture 3 hours per week.

ARTS 121-122-123 THEORY AND PRACTICE OF DRAWING I-II-III (3 cr.) (3 cr.) (3 cr.) — Representational and nonrepresentational drawings in charcoal, wash, pencil, and varied combinations of media. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 151-152 FUNDAMENTALS OF DESIGN I-II (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 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 166-167 FUNDAMENTALS OF LETTERING I-II (3 cr.) (3 cr.) — Calligraphy as an introduction to script and the constructed letter; creative, freehand, and mechanical lettering; other forms of letters used in today's graphic layout and design. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 197 — **See General Usage Courses** page 80.

ARTS 231-232-233 THEORY AND PRACTICE OF PAINTING I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite ARTS 123. Abstract and representational painting in watercolor, oil, and tempera with emphasis on design, color composition and value. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 241-242-243 THEORY AND PRACTICE OF SCULPTURE I-II-III (3 cr.) (3 cr.) (3 cr.) — The fundamental processes in the creation of form by work with various materials such as clay, plaster, wood, stone, and metal. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

ARTS 261-262-263 ADVERTISING DESIGN I-II-III (3 cr.) (3 cr.) (3 cr.) — A study of the principles of visual communications as applied to advertising design in newspaper, magazine, direct mail advertising, house organs, etc. Analysis of the influence on layout by contemporary art. Lecture 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 123 or divisional permission. Introductory course of materials and methods in the following fields: fashion, product, interior, furniture, editorial illustration, introduction to cartooning. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 271-272-273 GRAPHIC TECHNIQUES I-II-III (3 cr.) (3 cr.) (3 cr.) — 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 274 INTRODUCTION TO ART PRINTMAKING (3 cr.) — A lecture workshop designed to introduce the student or print collector to printmaking from an historical and technical point of view from early wood block through the more contemporary modes of intaglio printing. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 275-276 ART PRINTMAKING WORKSHOP I-II (3 cr.) (3 cr.) — The full range of art printmaking; beginning with wood block and progressing to seriograph, photo silk screen intaglio and lithography. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 297 — **See General Usage Courses** on page 80.

ARTS 298 — **See General Usage Courses** on page 80.

## AUTOMOTIVE TECHNOLOGY

AUTO 106 AUTO MECHANICS FOR THE LAYMAN (2 cr.) — A brief study of the automobile with emphasis on operation and maintenance. Topics include tires, brakes, cooling, lubrication, ignition, fuel system, and suspension. Lecture 1 hour, Laboratory 2 hours, Total 3 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 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.) — Prerequisite AUTO 122. 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 131-132-133 AUTOMOTIVE TECHNOLOGY I-II-III (6 cr.) (6 cr.) (6 cr.) — A study of the operation, construction, repair and servicing of the major components

of the automobile. Topics include laboratory and shop safety, use of tools and equipment, overhaul techniques and maintenance procedures. Lecture 4 hours, Laboratory 6 hours, Total 10 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 141-142 APPLIED MATHEMATICS FOR AUTOMOTIVE TECHNICIANS I-II (3 cr.) (3 cr.) — Includes a review of arithmetic skills, conversion of units, consumer mathematics, solution of linear algebraic expressions, and the solving of applied problems in torque, horsepower, piston displacement, etc. Lecture 3 hours per week.

AUTO 170 INTRODUCTION TO DIESEL ENGINE (3 cr.) — A study of the modern diesel engine including its construction, fuel system, lubrication, cooling, induction, exhaust systems, maintenance, minor adjustment and repair, and tune-up procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AUTO 180 INTRODUCTION TO DIESEL POWERED VEHICLES (2 cr.) — A survey of diesel powered vehicles, their uses, characteristics, advantages, and complexity; and of the various systems that comprise the overall vehicle. The student will be able to recognize and identify all the major components of the vehicle and have an understanding of their purpose and interrelationship. Includes the fundamentals of routine preventive maintenance. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

AUTO 191-192-193 AUTOMOTIVE SYSTEMS I-II-III (4 cr.) (4 cr.) (4 cr.) — The fundamental systems of the automobile including the lubrication, cooling, fuel and basic ignition systems are covered with emphasis on theory of operation, inspection, adjustments, and repair procedures. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

AUTO 197 — **See General Usage Courses** on page 80.

AUTO 199 — **See General Usage Courses** on page 80.

AUTO 231-232-233 AUTOMOTIVE TECHNOLOGY IV-V-VI (6 cr.) (6 cr.) (6 cr.) — Prerequisites AUTO 131-132-133. An advanced study of the more complicated major components of the automobile. The use of the modern electronic and mechanical diagnostic procedures is used in the testing and evaluation of repair problems. Estimation of repair costs and performance checks are conducted. Lecture 3 hours, Laboratory 9 hours, Total 12 hours per week.

AUTO 236 AUTOMOTIVE HEATING AND AIR CONDITIONING (3 cr.) — A study of separate and combined automotive heaters and air conditioners including direct and vacuum operated controls, basic principles of refrigeration, adjustment, general servicing, and charging of air conditioning systems. Lecture 2 hours, Laboratory 3 hours, Total 5 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 applied to the automotive electrical system. Includes the storage battery, generators, alternators, regulators, starters, lighting systems, instruments and gauges. Troubleshooting through use of modern test equipment. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 254-255 AUTOMATIC TRANSMISSIONS I-II (4 cr.) (4 cr.) — A study of the several types of automatic transmissions, fluid couplings, converters, and their principles of operation; includes adjustment, servicing, and repair. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 260 AUTOMOTIVE ACCESSORY SERVICE (3 cr.) — The operating principles, adjustment, and servicing of selected automotive accessories. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

AUTO 265 AUTOMOTIVE BRAKING SYSTEMS (3 cr.) — Operating, design, construction, repair, and servicing of braking systems. Uses of tools and test equipment, evaluation of test results, estimation of repair cost for power, standard and disc brakes. Lecture 2 hours, Laboratory 3 hours, Total 5 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 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 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 290 — **See General Usage Courses** on page 80.

AUTO 291-292-293 AUTOMOTIVE SYSTEMS IV-V-VI (4 cr.) (4 cr.) (4 cr.) — Prerequisites AUTO 191-192-193. An advanced study of the systems of the automobile. Topics include the brake system, engine and chassis electrical systems, and other systems with emphasis on theory of operation and practice in troubleshooting. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

AUTO 298 — **See General Usage Courses** page 80.

## BIOLOGY

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 114-115 GENERAL BOTANY I-II (4 cr.) (4 cr.) — Prerequisite BIOL 101 (not open to students who have completed BIOL 102 and 103). A study of the seedless plants, algae, fungi, mosses and liverworts, and ferns and their "allies" with emphasis on life cycles, morphology and taxonomy. A study of the seed plants, conifers and flowering plants with emphasis on anatomy, morphology, taxonomy, and evolution; principles of genetics, ecology, and physiology are considered. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 124-125 GENERAL ZOOLOGY I-II (4 cr.) (4 cr.) — Prerequisite BIOL 101 (not open to students who have completed BIOL 102 and 103). Introduction to the invertebrates and vertebrates, presenting basic biological principles, and emphasizing evolutionary relationships, life histories, and economic importances. Cellular structure and physiology are considered. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 154-155 HUMAN ANATOMY AND PHYSIOLOGY I-II (4 cr.) (4 cr.) — Structure and functioning of the normal human body. 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, 199 — **See General Usage Courses** on page 80.

BIOL 214 INTRODUCTION TO NONVASCULAR PLANTS (4 cr.) — Prerequisites BIOL 103 or equivalent (not open to students having had BIOL 114). 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 (not open to students having had BIOL 114). Designed to cover the higher plants beginning with those that have vascular tissue, and including flowering and nonflowering plants. Studies of major taxonomic groups — their morphology, life cycles, ecology, physiology, economic importance. Sight recognition and collection may be included. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 216 PLANT LIFE IN VIRGINIA (3 cr.) — The field identification and ecological relationships of the native plants of Virginia: the identification of shrubs, vines, weeds, wildlife flowers, ferns and mushrooms. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

BIOL 220 INTRODUCTORY VERTEBRATE ZOOLOGY (4 cr.) — Prerequisite BIOL 103 or equivalent (not open to students having had BIOL 124). Fundamentals of vertebrate anatomy, physiology, embryology, classification and evolution. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 226 INTRODUCTORY INVERTEBRATE ZOOLOGY (4 cr.) — Prerequisite BIOL 103 or the equivalent (not open to students having had BIOL 124). The biology of invertebrate animals with special reference to structure, embryology, function, ecology, classification, and evolution. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 228 ANIMAL LIFE OF VIRGINIA (3 cr.) — Field identification and ecological relationships of the native animal life of Virginia: the identification of amphibians, reptiles, mammals and birds. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

BIOL 251-252-253 HUMAN ANATOMY AND PHYSIOLOGY I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisites BIOL 103 and one year of college chemistry, or divisional permission. Consideration of basic biological principles as revealed by anatomical and physiological studies. An integrated study of the systems of the human body including gross and microscopic structures and their physiology. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BIOL 256 INTRODUCTORY GENETICS (5 cr.) — Prerequisite BIOL 103 or equivalent, or departmental permission. History and development of the science of genetics, with emphasis on Mendelian concepts, their modification, and application to human problems. Lecture 4 hours, Laboratory 3 hours, Total 7 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.) — Prerequisites BIOL 103 and one year of college chemistry or divisional permission. Introduction to microbiology, morphology and activities of microorganisms. Control of microorganisms, infection, immunity and other antibody reactions; study of infections and infectious diseases. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

BIOL 276 REGIONAL FLORA (3 cr.) — Family characteristics of vascular plants including principal phylogeny and classifications based principally on local flora. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BIOL 298, 299 — **See General Usage Courses** on page 80.

## BROADCASTING

BCST 110 INTRODUCTION TO RADIO/TV (3 cr.) — An historical overview of broadcasting; pioneer radio to television. The forces that have shaped broadcasting and its influence on society. Lecture 3 hours per week.

BCST 111-112-113 INTRODUCTION TO RADIO/TV I-II-III (4 cr.) (4 cr.) (4 cr.) — An introduction to the field of radio and television communications including an historical overview of the field. Introduction to the organization and principles of radio and television production and operation from commercial and noncommercial point of view. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

BCST 134-135 SPEECH FOR RADIO/TV I-II (3 cr.) (3 cr.) — Prerequisites BCST 112 and SPDR 137. Broadcast announcing including technical problems, techniques and modes of articulatory expression in varied broadcast situations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BCST 138-139 TV STUDIO ART I-II (3 cr.) (3 cr.) — Designed for the prospective producer-director; the design and use of graphics, scenery and props, the use of color, special effects and animation. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BCST 197 — **See General Usage Courses** page 80.

BCST 214-215 TECHNICAL PROBLEMS OF RADIO/TV I-II (3 cr.) (3 cr.) — Prerequisite BCST 113. A study of radio and television technical problems. Equipment operating characteristics including transmission, the audio board, camera, audio and video tape recording, editing and splicing; special purpose equipment such as reverb units and special effects; sound control, effect of color intensity, chroma and hue, FCC license requirements. Lecture 3 hours per week.

BCST 216 RADIO/TV STATION MANAGEMENT AND OPERATION (3 cr.) — Prerequisite BCST 113. Broadcast management responsibility; simulated decision making; the roles of government, public interest and programming in radio and television management and operation. Lecture 3 hours per week.

BCST 217 RADIO/TV NEWS (3 cr.)—Prerequisite BCST 226. The principles and techniques of news organization; to provide experience in writing, editing and reporting news; and to develop an understanding of broadcast ethics and responsible news in a free society. Lecture 3 hours per week.

BCST 226 WRITING FOR RADIO/TV (3 cr.) — Prerequisites BCST 113 and ENGL 112. The written communications process; writing and planning of continuity for radio and television; documentary writing. Lecture 3 hours per week.

BCST 236 BROADCAST ADVERTISING & SALES (3 cr.) — Prerequisites BCST 113 and BCST 216. The role of advertising in broadcasting today. Emphasis on the structure of sales departments, rating systems, rate cards and the purpose of time brokers on network levels. Concentration also on the structure of advertising agencies and their relationship with broadcast installations. Lecture 3 hours per week.

BCST 257 SOCIAL PROBLEMS IN AMERICAN BROADCASTING (3 cr.) — Prerequisite BCST 113. The dominant issues in contemporary broadcasting including the role of pressure groups, violence and the mass media, the influence of advertising, censorship, and broadcasting's enormous potential. Lecture 3 hours per week.

BCST 267 FILM PRODUCTION (3 cr.) — The study of

form and structure of film-making, including interrelationship of work and image, major problems and techniques of elementary filmmaking. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

BCST 281-282-283 ADVANCED RADIO/TV PRODUCTION I-II-III (5 cr.) (5 cr.) (5 cr.) — Prerequisite BCST 113. Advanced radio and television program production and direction: production environment and organization; producer-director responsibilities and techniques; practical exercises in student production and direction. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

BCST 290, 298, 299 — **See General Usage Courses** on page 80.

BCST 297 — **See General Usage Courses** page 80.

## 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 108 BUSINESS MACHINES (2 cr.) — A course to develop proficiency in the use of office machines such as calculator. Lecture 1 hour, Laboratory 2 hours, Total 3 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 114 PRINCIPLES OF SUPERVISION I (3 cr.) — Fundamentals of supervision including responsibilities of the supervisor, factors relating to his work and that of his subordinates, aspects of job leadership and effective human relations as related to efficient supervision. Lecture 3 hours per week.

BUAD 115 PRINCIPLES OF SUPERVISION II (3 cr.) — Prerequisite BUAD 114. Types of supervisory functions including job management, work improvement, training and orientation of employees, evaluation of employee performance, communications, and the handling of various relationships among and between employees and management. Lecture 3 hours per week.

BUAD 117 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 118 REAL ESTATE LAW — SAVINGS AND LOAN (3 cr.) — This course is designed to familiarize those working in Savings and Loan Associations with the legal aspects involved in real estate transactions. Involved is a study of the history of real estate law, terminology, mortgages, land development, zoning and building ordinances, taxes, and landlord-tenant relationships. Lecture 3 hours per week.

BUAD 119 REAL ESTATE LAW II — SAVINGS AND LOAN (3 cr.) — Prerequisite BUAD 118. Designed to familiarize those working in Savings and Loan Associations with legal aspects involved in real estate transactions. History of real estate law, terminology, mortgages, land development, zoning and building ordinances, taxes, and landlord-tenant relationships. Lecture 3 hours per week.

BUAD 157 PRINCIPLES OF BANK OPERATIONS (3 cr.) — The economic importance of banks, the receiving functions, processing of cash items, bookkeeping operations, posting systems, paying teller operations, collection services, legal relationship with depositors, characteristics of negotiable instruments, the savings and time deposit function, management of bank funds, loans and investments, general bank accounting, account analysis and service charges, internal controls, international financial services, trust services, safe deposit services, growth of the American banking system, the Federal Reserve System, government supervision, banking and public service. Lecture 3 hours per week.

BUAD 164 PRINCIPLES OF BUSINESS MANAGEMENT I (3 cr.) — 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 166 MANAGEMENT PRINCIPLES SEMINAR (3 cr.) — Topics include management of personal time, contributions of the individual manager, management planning, effective decisions, and staffing for strength. Also included will be problem cases for practical applications. Lecture 3 hours per week.

BUAD 174-175 SMALL BUSINESS MANAGEMENT I-II (3 cr.) (3 cr.) — A study of management problems which 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 relationships, case studies involving actual business situations. Lecture 3 hours per week.

BUAD 176 ADMINISTRATIVE OFFICE MANAGEMENT (3 cr.) — Prerequisite BUAD 164. Principles of office management. The study of office organization and layout; work flow, office procedures, standards, personnel and supervision, equipment; centralized services; and current office management trends. Lecture 3 hours per week.

BUAD 177 PRINCIPLES OF SCHOOL ORGANIZATION AND MANAGEMENT (3 cr.) — Basic office management skills and systems designed to teach the educational secretary how to function more effectively as an office assistant. Emphasis is on decision making and priority setting within an educational frame of reference. Directs the individual toward job enrichment and challenge by developing initiative and confidence. Lecture 3 hours per week.

BUAD 197 — **See General Usage Courses** page 80.

BUAD 236 SAVINGS AND TIME DEPOSIT BANKING (3 cr.) — Traces the historical development of savings institutions and an understanding of the basic economic functions of the savings process. Review of the economics of the savings process in order to clarify important differences between financial savings by individuals or organizations and real savings that appear as capital formation. Different types of financial savings are reviewed in order to describe the system of financial flows of income to capital investment. Lecture 3 hours per week.

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 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, partnership, corporations, property, and the Uniform Commercial Code. Lecture 3 hours per week.

BUAD 246 BUSINESS FINANCE (3 cr.) — Prerequisite ACCT 211-212-213. Problems involved in the acquisition and use of funds necessary to the conduct of business. Sources and instruments of capital and finance, financial organizations, and financing of operations and adjustment. Lecture 3 hours per week.

BUAD 251 BUSINESS STATISTICS I (3 cr.) — Prerequisite MATH 183 or MATH 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, 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 barometric 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.) — Prerequisite MATH 152. 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 257 HOME MORTGAGE LENDING (3 cr.) — A picture of the mortgage market is presented; the acquisition of a mortgage portfolio, mortgage plans and procedures, mortgage loan processing and servicing, and the obligations of the mortgage loan officer in overall portfolio management. Lecture 3 hours per week.

BUAD 258 INSTALLMENT CREDIT (3 cr.) — The techniques of installment lending including establishment of credit, obtaining and checking information, servicing the loan, and collecting amounts due. Lecture 3 hours per week.

BUAD 266 FINANCIAL MANAGEMENT (3 cr.) — Prerequisite BUAD 246. A basic course in Financial Management that includes the study of Capital Budgeting, Working Capital Management, Cost of Capital, and Long Run Financing. Both theoretical and applied techniques will be studied from the viewpoint of the supplier and user of funds. 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 287 PUBLIC RELATIONS IN MANAGEMENT (3 cr.) — A survey of public relations as a management responsibility. Includes philosophy and techniques of public relations; application to employee, public customer, and stockholder relations; lecture, demonstrations, and problem cases for practical application. Lecture 3 hours per week.

BUAD 288 COMMUNICATIONS IN MANAGEMENT (3 cr.) — Functions of communication in management. Methods of communicating purposefully with emphasis on gathering, organizing and transmitting facts and ideas. Review of basic techniques of effective oral and written communications. Lecture 3 hours per week.

BUAD 289 PRACTICES AND PHILOSOPHIES OF MANAGEMENT (3 cr.) — Provides an opportunity to develop an understanding of appropriate attitudes related to human situations so that the individual may become a more useful and responsible member of an organization and prepare for positions of greater administrative responsibility. Analysis and discussion of cases to develop the ability to think and act responsibly. Consideration of principles; philosophies and ethical values to broaden the scope and growth of the administrator. Management development deals with men, motivation, and morale designed for managers, foremen, supervisors, and department heads. Lecture 3 hours per week.

BUAD 297 — **See General Usage Courses** page 80.

BUAD 298, 299 — **See General Usage Courses** on page 80.

## CHEMISTRY

CHEM 05 DEVELOPMENTAL CHEMISTRY FOR HEALTH SCIENCE (1-5 Variable cr.) — A developmental course introducing the basic principles of inorganic and organic chemistry with emphasis on application in the health sciences. Basic mathematics and an introduction to the metric system will be covered. Students may reregister for this course in subsequent quarters until course objectives are met. Variable lecture hours per week.

CHEM 50 HEALTH SCIENCE CHEMISTRY (4 cr.) — Introduction to the basic principles of organic and inorganic chemistry with emphasis on application in the health sciences. A nontransfer course intended to provide a basic background in chemistry. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 101-102-103 GENERAL CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.) — This is a beginning course for the nonscience 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 110 HORTICULTURAL CHEMISTRY (4 cr.) — Introduction to chemical principles, inorganic and organic structural chemistry and the theory and practice of pH. The role of the chemical elements including trace elements in plant growth. Chemicals used such as fungicides, insecticides, fertilizers, and growth regulators. Chemical nomenclature, pH and other general and specific measurements will be practiced. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 111-112-113 GENERAL INORGANIC CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.) — Fundamental principles and laws underlying chemical action with special emphasis on the nonmetals, their compounds, theories and problems. Laboratory for the first two quarters deals with the nonmetallic elements and their compounds. The last quarter deals with the theories of qualitative analysis. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 114-115 GENERAL INORGANIC CHEMISTRY I-II (6 cr.) (6 cr.) — Two quarter sequence covering CHEM 111-112-113. Lecture 4 hours, Laboratory 5 hours, Total 9 hours per week.

CHEM 197 — **See General Usage Courses** page 80.

CHEM 198, 199 — **See General Usage Courses** on page 80.

CHEM 241-242-243 ORGANIC CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite CHEM 103 or 113, or

equivalent. The fundamentals of organic chemistry. The structure, physical properties, synthesis, and typical reactions of the various series of aliphatic, alicyclic and aromatic compounds with attention to reaction mechanisms. Representative carbon compounds are synthesized with emphasis on basic laboratory techniques. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CHEM 297 — **See General Usage Courses** page 80.

CHEM 298, 299 — **See General Usage Courses** on page 80.

## CIVIL ENGINEERING TECHNOLOGY

CIVL 124 CIVIL ENGINEERING DRAFTING I (2 cr.) — Prerequisite DRFT 111 or equivalent. Introduction to terminology and drafting procedures related to structural steel, reinforced concrete, and timber detailing. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

CIVL 125 CIVIL ENGINEERING DRAFTING II (2 cr.) — Drafting problems relating to highways and surveys. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

CIVL 140 CONSTRUCTION PLANNING (3 cr.) — Introduction to civil engineering construction and the principles and economics of construction planning. Lecture 3 hours per week.

CIVL 181-182 SURVEYING I-II (4 cr.)(4 cr.) — Prerequisite Algebra, Plane Geometry, Basic Trigonometry, or MATH 118. Introduction to surveying, chaining and pacing, direct and profile leveling, measurements of angles, transit-tape traversing, traverse analysis, calculation of areas, adjustment of instruments. Basic and 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 — **See General Usage Courses** page 80.

CIVL 201 SUBURBAN DEVELOPMENT I (3 cr.) — Corequisite CIVL 182 or 284. Preparation of preliminary plans, subdivision computations and preparation of record plats for residential areas. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

CIVL 202 SUBURBAN DEVELOPMENT II (3 cr.) — Corequisite CIVL 201 or equivalent. Calculating flow quantities, design of sanitary sewer laterals, street grades and storm sewer as are pertinent to Virginia "3-B" Land Surveyor Registration Laws. Preparation of plans and profiles. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

CIVL 203 SUBURBAN DEVELOPMENT III (3 cr.) — Prerequisite CIVL 202. Preparation of residential development plans and commercial site plans. Flood plain studies. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

CIVL 217 STRUCTURAL STEEL DESIGN (4 cr.) — Prerequisite ENGR 152 or equivalent. Design, investigation, and detailing of basic structural steel members of steel frame structures. Lecture 4 hours per week.

CIVL 218 REINFORCED CONCRETE DESIGN (4 cr.) — Prerequisite ENGR 152 or equivalent. Design, investigation and detailing of reinforced concrete structural members used in the construction of concrete framed structures. Lecture 4 hours per week.

CIVL 230 STRUCTURAL ANALYSIS (3 cr.) — Prerequisite ENGR 152 or equivalent. Analysis of statically determinate and indeterminate structures based on both the principles of statics and geometric conditions. Lecture 3 hours per week.

CIVL 246 SOIL MECHANICS (3 cr.) — Soil and its relationship to engineering construction. Includes soil weight-volume relationships, stress, shear and strain, bearing capacity, sampling procedures, consolidation, settlement, slope stability, with introduction to retaining walls, piles, underground conduits, and earthdams. Lecture 3 hours per week.

CIVL 247 SOIL MECHANICS LABORATORY (1 cr.) — Corequisite CIVL 246 or equivalent. Practical soil sampling, classification by Unified Soil Classification System and by ASTM and AASHO specifications for classifying soils. Laboratory testing of soils to predict engineering performance. Laboratory 3 hours per week.

CIVL 254 CIVIL MATERIALS I (CONCRETE) (3 cr.) — Properties of portland cement concrete, methods of mix design, use and placement of concrete. Lecture 3 hours per week.

CIVL 257 CONCRETE LABORATORY (1 cr.) — Corequisite CIVL 254. Mixing, curing, testing and quality control of concrete. Laboratory 3 hours per week.

CIVL 268 WATER AND SEWAGE SYSTEMS (3 cr.) — Sources, collection methods, treatment and distribution of water and collection, treatment and disposal of sewage. Field trips to local water and sewage treatment plants. Lecture 3 hours per week.

CIVL 269 SOIL EROSION AND SEDIMENT CONTROL PLANNING (3 cr.) — Provide technical training in Erosion and Sediment Control Planning and Design to engineers, architects, planners and others who will be responsible for the implementation of the Erosion and Sediment Control Program in accordance with the Virginia Law and the Virginia Erosion and Sediment Control Handbook. Lecture 3 hours per week.

CIVL 284 ROUTE SURVEYING AND HIGHWAY DESIGN (4 cr.) — Prerequisite CIVL 181. Principles of route surveying, simple, compound and transition curves; grades and vertical curves; earthwork and haul quantities. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

CIVL 290, 297, 298 — **See General Usage Courses** on page 80.

## DATA PROCESSING

DAPR 106 PRINCIPLES OF DATA PROCESSING (3 cr.) — Prerequisite one year of high school algebra. An introduction to methods, techniques, and systems of manual, mechanical, and electronic data processing. History and development of punch card data processing, and electronic or automatic data processing. Lecture 3 hours per week.

DAPR 130 INTRODUCTION TO COMPUTER OPERATIONS (3 cr.) — Prerequisite DAPR 144 or equivalent. Study of computer operation environment and hardware. Includes types of computer and peripheral equipment, operator use of data files, program libraries, utility routines, console use in controlling computer system manually, correcting errors, determining status of machine circuits and registers, and procedures for using input and output devices. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DAPR 138 COMPUTER OPERATION ARCHITECTURE (3 cr.) — Prerequisite DAPR 130. 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 input/output. Lecture 3 hours per week.

DAPR 144 COMPUTER PROGRAMMING (COMPUTER CONCEPTS I) (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. 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, 198 — **See General Usage Courses** page 80.

DAPR 236e DATA PROCESSING MANAGEMENT (3 cr.) — Prerequisite DAPR 106 or equivalent. Survey of ADPe management, covering staff and operating functions; ADP planning, analysis of requirements, system selection, contractual considerations, 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 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 debugging and core-dump reading will be given major emphasis. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

DAPR 281 SYSTEMS ANALYSIS I (3 cr.) — Prerequisite DAPR 256 and 130. A study of the overall computer based systems analysis and design process; information problems of business organization and the interrelationships offunctions; nature of business problem isolation and definition; initial phase of systems analysis and evaluation. Lecture 3 hours per week.

DAPR 282 SYSTEMS ANALYSIS II (3 cr.) — Prerequisite DAPR 281 and 138. The systems design and implementation phases relating to initial automation; upgrading or revision of business data processing systems; system documentation including summaries for management schedules and cost analysis; equipment selection, acquisition and detailed review of pre- and post-installation considerations. Lecture 3 hours per week.

DAPR 283 SYSTEMS ANALYSIS III (3 cr.) — Prerequisite DAPR 282. A comparison of presently available hardwareand software systems from major vendors; comparative study of features and capabilities; data processing modes and selection of criteria; study of techniques such as Pert, Decision and Logic Tables; simulation and their importance. Lecture 3 hours per week.

DAPR 297, 298, 299 — **See General Usage Courses** on page 80.

## DENTAL

DENT 100 INTRODUCTION FOR 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 educational opportunities. Introduction to dental instruments and equipment. 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, and 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 100, 110, 101-102 or corequisite. Principles and procedures related to radiology, dental instruments and equipment; role of the dental assistant in general and specialty practice, and expanded duties limited to dental assistants. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

DENT 116 DENTAL LABORATORY MATERIALS (4 cr.) — A study of the chemical composition, physical properties, and uses of metallic and nonmetallic dental materials, denture and tooth resins, porcelain, waxes and duplicating materials. The laboratory exercises are designed to illustrate the properties and uses of the materials studied including their inherent limitations. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

DENT 120 INTERPERSONAL RELATIONS (2 cr.) — Understanding of self, achieving effective interaction with the patient, and understanding the dynamics of the health professional-patient relationship. Lecture 2 hours, Laboratory 0, Total 2 hours per week.

DENT 121-122 CHAIRSIDE ASSISTING I-II (4 cr.) (4 cr.) — Prerequisites DENT 100, 110, 101-102 or corequisite. The proper procedures of reception and preparation of the patient; care of 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, and expanded duties limited to dental assistants. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

DENT 126 ORAL ANATOMY (3 cr.) — The study of the anatomy, structure, morphology and function of the oral structures including primary and permanent dentition. Laboratory procedures to include identification eruption sequence, reproduction of tooth form through drawings, study of skulls, principles of occlusion and root anatomy with correlation of tooth form and position to intra-oral arch. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DENT 127 GENERAL AND ORAL HISTOLOGY (3 cr.) — The study of the minute structure of the tissues of the body with particular reference to the teeth and the supporting tissues. Morphology of different tissues, early embryonic development, histologic features of the structures of the oral cavity. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DENT 128 HEAD AND NECK ANATOMY (2 cr.) — A detailed study of the anatomy and physiology of the structures of the head and neck. Lecture 2 hours per week.

DENT 136 PHARMACOLOGY (2 cr.) — The chemical therapeutic agents used in dentistry, including their preparation, effectiveness, and specific applications. Lecture 2 hours per week.

DENT 138 COMMUNITY DENTAL HEALTH (4 cr.) — In-

troduction of the dental hygienist to community health problems, public health, and related institutions. An opportunity will be provided for student teaching in dental education at various grade levels in area public schools. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

DENT 139 DENTAL ASSISTING (2 cr.) — Dental Hygiene students will receive instruction in phases of chairside assisting as members of the dental health team. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

DENT 140 INTRODUCTION TO DENTAL HYGIENE (1 cr.) — Introduction to the dental hygiene profession through seminar and laboratory. A review of the role of the dental hygienist in dentistry; dental history, ethics, and professional organizations. Students will be oriented in the basic skills of dental hygiene prevention and nomenclature appropriate to the dental profession. Lecture 0 hours, Laboratory 2 hours, Total 2 hours per week.

DENT 144 DENTAL HYGIENE I (5 cr.) — The introduction to clinical knowledge and skills for the performance of dental hygiene services, and medical and dental emergencies, basic skill components, lab manikins, and patient practice. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

DENT 145 DENTAL HYGIENE II (5 cr.) — Prerequisite DENT 144. Clinical performance of dental hygiene services; includes the use and techniques of dental radiology. Lecture 2 hours, Laboratory 9-12 hours, Total 11-14 hours per week.

DENT 146 ORAL RADIOGRAPHIC TECHNIQUES (3 cr.) — A study of the nature, physical behavior, biological effects, methods of control, safety precautions, and techniques for exposing, processing and mounting x-rays. Laboratory procedures will include the application of these techniques. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

DENT 147 NUTRITION (3 cr.) — Study of nutrition as it relates to dentistry and general health. The principles of nutrition as applied to the clinical practice of dental hygiene. Lecture 3 hours per week.

DENT 148 OFFICE PRACTICE AND ETHICS (2 cr.) — The principles of dental ethics and economics as they relate to the dental hygienist. The course will also include a study of jurisprudence and office procedures. Lecture 2 hours per week.

DENT 150 GENERAL AND ORAL PATHOLOGY (3 cr.) — Introduction to general pathology with consideration of the common diseases affecting the human body. Particular emphasis is given to the study of pathological conditions of the mouth, teeth and their supporting structures. Lecture 3 hours per week.

DENT 154-155 PERIODONTICS FOR DENTAL HYGIENE I-II (2 cr.) (2 cr.) — Introduction of periodontics to the dental hygienist — anatomy and physiology, periodontal pathology and clinical determination of cases. Techniques in prevention and management of periodontics and special patient problems. Lecture 2 hours per week.

DENT 176 ADVANCED CLINICAL PROCEDURES (3 cr.) — Prerequisites DENT 111-112 and DENT 122. Supervised clinical training in direct patient-care functions beyond the scope of traditional chairside assisting. Practical application of the dental assistant treatment procedures authorized in the Dental Laws of Virginia. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

DENT 190, 199 — **See General Usage Courses** on page 80.

DENT 261 DENTAL HYGIENE III (6 cr.) — Lecture to include oral surgery, anesthesia, endodontics, and seminars. Laboratory — dental prophylaxis and oral hygiene preventive procedures to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, and plaque controls. Lecture 2 hours, Laboratory 12-15 hours, Total 14-17 hours per week.

DENT 262 DENTAL HYGIENE IV (5 cr.) — Lecture to include oral diagnosis, orthodontics and seminar. Laboratory — dental prophylaxis and oral hygiene preventive procedures to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lecture 1 hour, Laboratory 12-15 hours, Total 13-16 hours per week.

DENT 263 DENTAL HYGIENE V (5 cr.) — Lecture to include pedodontics and seminars. Laboratory dental prophylaxis and oral hygiene preventive procedure to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lecture 1 hour, Laboratory 12-15 hours, Total 13-16 hours per week.

DENT 264 DENTAL HYGIENE VI (5 cr.) — Lecture to include dental research and seminars. Laboratory — dental prophylaxis and oral hygiene preventive procedures to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lecture 1 hour, Laboratory 12-15 hours, Total 13-16 hours per week.

## DRAFTING

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 158 ELECTRICAL-ELECTRONICS DRAFTING (2 cr.) — Applications of drafting procedures with emphasis on working and functional drawings and direct applications to electrical and electronic components and circuits. Lecture 1 hour, Laboratory 3 hours, Total 4 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, simplified drafting procedures. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

## ECONOMICS

ECON 160 SURVEY OF AMERICAN ECONOMICS (3 cr.) — A survey of the history, principles and policies of the American economic system. Some comparison with alternative economic systems. Lecture 3 hours per week.

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 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 3 hours per week.

ECON 214-215 PRINCIPLES OF ECONOMICS I-II (5 cr.) (4 cr.) — Two quarter sequence covering ECON 211-212-213. 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 246 MONEY AND BANKING (3 cr.) — A review of the history of American banking institutions; banking theories, principles and practices; emphasis is placed on relationship of finances to business structure, operations and organization; present-day financial structures, agents, problems and institutions are examined in depth. Lecture 3 hours per week.

ECON 256 CONTEMPORARY ECONOMIC PROBLEMS (3 cr.) — Prerequisite ECON 160 or 211. An intense study of the major economic problems facing society today. Emphasis will be placed on both proper analysis of economic problems and formulation of corrective policy. The course will further endeavor to develop the student's critical faculties by exposure to the divergent opinions of eminent economists and open classroom debate and discussion. Lecture 3 hours per week.

ECON 298, 299 — **See General Usage Courses** on page 80.

## EDUCATION

EDUC 106 LANGUAGE ARTS FOR YOUNG CHILDREN (3 cr.) — The techniques and methods for encouraging the development of language skills in the young child. Improvement of vocabulary, speech and discussion stimulation will be emphasized. Surveys the best prose and verse, examines techniques of storytelling, and stresses use of audio-visual materials. Lecture 3 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 120 INTRODUCTION TO EARLY CHILDHOOD EDUCATION (3 cr.) — Corequisite EDUC 190. Introduction to early childhood development through activities and experiences in prekindergarten, kindergarten and primary programs; classroom organization and procedures, use of classroom time and materials, approaches to education for young children, and curricular procedures. Lecture 3 hours per week.

EDUC 121-122 CHILDHOOD EDUCATION I-II (3 cr.) (3 cr.) — Corequisite EDUC 190. Designed to focus attention on the easily observable characteristics of children from birth through the adolescent period. The lessons will outline the characteristics in several categories: general, relations with adults, intellectual skills, physical growth, and relations with children in their own age group. Lecture 3 hours per week.

EDUC 126 LEARNING DISABILITIES (3 cr.) — Designed for early childhood and primary grades personnel and primarily concerned with idenlification, assessment, and amelioration of specific learning problems from a preventive rather than remedial standpoint. Includes a survey of both indepth and informal assessment procedures and devices, with application to "matching" differential diagnosis with specific instructional materials and strategies. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 129 THE PRACTICE OF CHILD CARE (3 cr.) — An overview of the various aspects involved with the operation of child care institutions as applied to those who are employed in the actual practice and to those who may be seeking employment in the field. Topics including early childhood development; developing positive behavioral patterns; materials resources and activities; administrative aspects of operation; nutrition and health for the preschool child; encouraging parent involvement; and the emergency situations and obligations are usually examined. Course is normally structured as series of seminars with various experts providing leadership for each topic studied. Lecture 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 aids; how to select slides and develop materials 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.) — 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 156 FUNDAMENTALS OF SCHOOL LAW (3 cr.) — An introduction to Virginia public school law as it pertains to the educational secretary. Lecture 3 hours per week.

EDUC 157 HISTORY AND PHILOSOPHY OF EDUCATION FOR SCHOOL SECRETARIES (3 cr.) — Designed to acquaint the educational secretary with the history and philosophy of education in America. Current issues and their implication for social change are discussed in this course. Lecture 3 hours per week.

EDUC 161-162-163-164 EDUCATIONAL TECHNIQUES I-II-III-IV (3 cr.) (3 cr.) (3 cr.) (3 cr.) — Prerequisite EDUC 121. Designed to provide instructional assistants with the supervised practical experience necessary for effective assistance to the classroom teacher. Includes supervised experience with children at selective schools, child care centers and other institutions of learning to give prospective instructional assistants opportunities to observe, participate and evaluate the interaction of teachers, instructional assistants and children. Lecture will include preparation and practicum experiences for reviews and evaluation of those experiences. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 175 PARENT EDUCATION II (3 cr.) — Advanced topics in parenting with special emphasis on group and individual concerns. Topics will be centered on preschool and elementary age children. A family case study

will be required, and techniques of working with parent groups will be demonstrated. Lecture 3 hours per week.

EDUC 186 CHILD STUDY (3 cr.) — Prerequisite PSYC 130. An advanced course in child development including methods of child study, theories of child development, implications for direct work with children, and a case study of an individual child. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

EDUC 188 EFFECTIVE EDUCATION IN THE CLASSROOM (3 cr.) — A lecture/discussion/experientially based course, designed to teach the basic human relations skills needed to function as an effective teacher. The focus will be on communication skills and instructional strategies that have high probability for facilitating human potential in the classroom. Students will learn a new method for resolving conflict, a new model for consulting with parents and other skills needed to foster the mental health of both students and teachers and permit both to grow and actualize themselves. Lecture 3 hours per week.

EDUC 189 NUTRITION AND HUMAN DEVELOPMENT (3 cr.) — Food requirements and feeding of infants, children and adults throughout the life cycle. Hygiene and childhood diseases will be discussed as related to nutrition. Special emphasis will be placed on the development of food habits and current concerns in foods and nutrition. Lecture 3 hours per week.

EDUC 190 COORDINATED PRACTICE IN CHILD DEVELOPMENT EDUCATION (1-5 cr.) — To be corequisite with EDUC 120, 121, 122.

EDUC 198 SEMINAR AND PROJECT IN CHILD DEVELOPMENT EDUCATION (1-5 cr.)

EDUC 199 SUPERVISED STUDY (1-5 cr.)

EDUC 210 INTRODUCTION TO SPECIAL EDUCATION (3 cr.) — Prerequisites PSYC 130 and EDUC 121. A brief overview of the history of special education. The role and responsibilities of the paraprofessional in special education. Emphasis will be on working with educationally and neurologically handicapped. Lecture 3 hours per week.

EDUC 246 EDUCATION LAW (3 cr.) — The application of rules of law to the operation of the public schools in Virginia. Legal aspects of the principal instruments of school activities, rights and liabilities of school employees, legal aspects of negotiable instruments and securities. Lecture 3 hours per week.

EDUC 260 SURVEY OF MENTAL RETARDATION (3 cr.) — Designed to acquaint the student on how to deal effectively with such problems as early identification, parental and family adjustment, education, and school adjustment. Includes coverage of agencies and organizations providing assistance to the retarded and designates procedures and methods that can be implemented in working with language and arithmetical concepts, motor training, and the building of pre-vocational skills. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

EDUC 286 ADVANCED CHILD STUDY (4 cr.) — Prerequisite PSYC 130 or 231. An advanced course in child development including methods of child study, theories of child development, implications for direct work with children, and a case study of an individual child. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

EDUC 287 MANAGEMENT OF CHILD CARE CENTERS (3 cr.) — Prerequisite EDUC 120. Budgeting and managing a child care center. Communication with and observation of local child care centers and participation in one professional conference or workshop will be required. Lecture 3 hours per week.

See also the description of other courses in the curriculum listed under sociology, psychology, health, mental health, mathematics, etc.

## ELECTRICITY AND ELECTRONICS

ELEC 11-12-13 ELECTRICITY I-II-III (4 cr.) (4 cr.) (4 cr.) — Principles of electricity covering resistance, current, and voltage in both AC and DC circuits. Lecture 4 hours per week.

ELEC 17 ELECTRONIC CONTROLS (4 cr.) — Prerequisite ELEC 75. Applied air conditioning technology; fundamental devices and circuits, basic electronic instrumentation control devices and circuits; experiments to develop testing and trouble shooting techniques. Lecture 4 hours per week.

ELEC 21-22-23 ELECTRONICS I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite ELEC 12 or equivalent. Introduction to vacuum tube, semiconductor principles and circuitry. Lecture 4 hours per week.

ELEC 27 PULSE CIRCUITS (4 cr.) — Review of networks, transient analysis, linear and nonlinear waveshaping. Pulse circuit use in counting, delays, synchronization, frequency division, logic and comparator circuits as applied to time, pulse and digital systems, circuit and systems analysis. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 31-32 ELECTRICITY I-II (7 cr.) (7 cr.) — The theories and laws of the flow of electricity, magnetism, inductance, capacitance, and fundamentals of direct and alternating currents. Practical application by the use of test and measuring equipment, circuitry, electrical apparatus, and rotating machinery. Lecture 3 hours, Laboratory 12 hours, Total 15 hours per week.

ELEC 40 ELECTRONICS (7 cr.) — Prerequisite ELEC 31-32. Use of vacuum tubes and solid state devices in electronic circuits. Practical application through test/measuring instruments and building applicable electronic circuitry. Lecture 3 hours, Laboratory 12 hours, Total 15 hours per week.

ELEC 68 ELECTRONICS (6 cr.) — The design concepts of untuned voltage and power amplifiers; special amplifying circuits, audio distribution, and audio devices with correlated laboratory. Lecture 3 hours, Laboratory 8 hours, Total 11 hours per week.

ELEC 74 ELECTRICAL POWER (4 cr.) — Prerequisite ELEC 12 or equivalent. Circuit elements, direct current circuits and motors, single and three-phase circuits and motors, power distribution systems and protective devices. Lecture 4 hours per week.

ELEC 75 ELECTRICAL AND CONTROL SYSTEMS (4 cr.) — Prerequisite ELEC 74. Trouble shooting and servicing electrical controls, electric motors, motor controls, motor starters, relays, overloads, instruments and control circuits. Lecture 4 hours per week.

ELEC 111-112 INTRODUCTION TO ELECTRICAL CIRCUITS I-II (5 cr.) (5 cr.) — Corequisites ENGR 100, MATH 121-122 respectively. The study of resistance, magnetism, inductance, capacitance, and the transient state. An introduction to circuit theorems as applied to direct current circuits. Electrical circuits employing complex algebra, equivalent circuit theorems and modern techniques for the solution of complex circuit problems. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

ELEC 113 INTERMEDIATE ELECTRICAL CIRCUITS (3 cr.) — Prerequisite ELEC 112. Corequisite MATH 123. Continuation of ELEC 112 with emphasis in application of circuit theorems to AC networks. Both single and polyphase circuits are studied with treatment to both active and passive circuit elements. Lecture 3 hours per week.

ELEC 118-119 INTRODUCTION TO ELECTRICAL SHOP I-II (1 cr.) (1 cr.) — Use of hand tools commonly found in the electrical and electronics industry. A variety of projects requiring fabrication of electrical-mechanical equipment are developed, tested and reports written. Laboratory 3 hours per week.

ELEC 125 INTRODUCTION TO ELECTRONICS (5 cr.) — Prerequisite ELEC 113. The theory, properties, and application of vacuum tube and solid state devices. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

ELEC 141-142 REVIEW FOR FCC RADIO TELEPHONE LICENSE I-II (3 cr.) (3 cr.) — Requirements for the second class and the first class examinations. Lecture 3 hours per week.

ELEC 145 INTRODUCTION TO ELECTRICAL MACHINES (4 cr.) — Prerequisite ELEC 113 or equivalent. Construction, theory of operation, and application of direct and alternating current machinery and transformer. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 150 INTRODUCTION TO COMMUNICATION SYSTEMS (4 cr.) — Prerequisite ELEC 113. An introduction to the techniques, application, design principles and regulation of digital and analog communication systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 197 — **See General Usage Courses** page 80.

ELEC 201-202-203 ELECTRICAL ENGINEERING TECHNOLOGY I-II-III (6 cr.) (7 cr.) (6 cr.) — Prerequisite ELEC 125 and MATH 123. The concepts of electron and solid-state physics, application of vacuum, gas, and semiconductor diodes and triodes to electronic circuits. Advanced seminconductor theory; amplifier operating characteristics and design considerations; laboratory experiments demonstrate the application to various circuits. Application of principles to complex electronic systems; laboratory experiments demonstrate the operating characteristics of single-stage circuits. Lecture 5 hours, Laboratory 3-6-3 hours, Total 8-11-8 hours per week.

ELEC 211 ELECTRICAL MACHINES (4 cr.) — Prerequisite ELEC 125. Construction, theory operation and application of direct current machinery. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 212 ELECTRICAL MACHINES AND INDUSTRIAL CONTROLS (4 cr.) — Prerequisite ELEC 211. Construction, theory of operation, characteristics, and application of alternator, synchronous motors, induction motors, and fractional horsepower motors. Introduction to the principles of industrial control, circuit diagram functions and symbols to "traditional" motor control, the principles of operation and application of the devices used for control and protection. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 213 ADVANCED INDUSTRIAL CONTROLS (4 cr.) — Prerequisite ELEC 212. A survey of principles and "building blocks" of industrial controls. Analyzing involved control circuits, principles of operation and application of special electro-magnetic and electronic devices, feedback circuits, and static control including devices, logic symbols, and Boolean algebra. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 214 ELECTRICITY (4 cr.) — Prerequisites MATH 122 and PHYS 112. A course for non-electrical students covering direct and alternating current theory with some introduction to electrical machines. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 237 DIGITAL LOGIC CIRCUITS (4 cr.) — Prequisite ELEC 125. A comprehensive course in the design and use of digital logic circuits using standard integrated circuits and the functional block approach. Emphasis on the characteristics and use of TTL, ECL, and COS/MOS ICs to design encoders, decoders, counters, and registers. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 239 DIGITAL LOGIC CIRCUITS II (3 cr.) —Prerequisites ELEC 237 or equivalent. Continuation of ELEC 237, with hardware applications in computer systems. The 8080 based microprocessor is studied, with emphasis on interfacing it to the "outside world." Its application in data acquisition and as a system controller is studied. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

ELEC 241-242-243 COMMUNICATIONS I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisites ELEC 125 and MATH 123. The study of modulation and power in modulated waves, sinusoidal oscillations and oscillators. RF amplifiers and detectors, and AM receivers. The study of transmitters and receivers; FM receivers, RF power amplification, AM, SSB, and FM transmitters, and an introduction to transmission lines and antennas, measurements, microwave frequencies; introduction to radar and television systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 248 MICROWAVE TECHNIQUES (3 cr.) — Prerequisite ELEC 125. Microwave techniques to introduce the special requirements when using very high frequency equipment as klystrons, cavity resonators, slotted lines and waveguide type transmission devices. Lecture 3 hours per week.

ELEC 250 INTRODUCTION TO COMPUTERS (4 cr.) — Prerequisite ELEC 125. The concepts and features of electronic computers; fundamentals of internal operations, number systems, digital circuits, Boolean algebra, basic logical design techniques, analysis in input-output devices, control and arithmetic units, memory units and limited programming. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

ELEC 276 INSTRUMENTS AND MEASUREMENTS (4 cr.) — Prerequisite ELEC 113 or equivalent. Corequisite ELEC 125. A study of circuits used in electronic measurements and application of these circuits in testing instruments such as oscilloscopes, vacuum tube voltmeters, and bridges; 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 297, 298, 299 — **See General Usage Courses** on page 80.

## ENGINEERING

ENGR 100 INTRODUCTION TO ENGINEERING TECHNOLOGY (2 cr.) — Corequisite MATH 111, 112, or 161. Professional fields of engineering technology; work of the engineering technologist, requirements of training and character, professional ethics, and division of industrial practice and competition, engineering problems with calculator and computer applications. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

ENGR 104 INTRODUCTION TO ENGINEERING (3 cr.) — Introduction to professional fields of engineering; historical background; professional ethics and responsibilities of engineers. Application of hand calculator to engineering problem solving. Basic Graphic Techniques and U.S. customary and S.I units and their conversions. Lecture 3 hours per week.

ENGR 105 INTRODUCTION TO ENGINEERING METHODS (3 cr.) — Prerequisite ENGR 104. Introduction to the digital computer. Use of Scientific language, programming engineering problems. Lecture 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, study of vector geometry, 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 122. 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 140 STATICS OF PARTICLES AND RIGID BODIES (3 cr.) — Prerequisite MATH 142. Review of vector algebra. Vector treatment of concept of force, mass, space, and time. Units of measurement (including both U.S. customary and S.I. units). Equilibrium of discrete force systems; centroids, dry friction; and distributive forces. Truss and simple frame analysis. Lecture 3 hours per week.

ENGR 151 MECHANICS I (STATICS) (4 cr.) — Corequisite MATH 121. Principles of statics; resultants and equilibrium of force systems; trusses and frames; structures containing three-force members; centroids; moments of inertia; dry friction. 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 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 — **See General Usage Courses** page 80.

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 241 MECHANICS OF PARTICLES (3 cr.) — Prerequisite ENGR 140. Vector treatment of planar and three-dimensional kinematics and kinetics of particles; relative motion, Newton's laws, work and energy, impulse and momentum, vibration or particles. Lecture 3 hours per week.

ENGR 242 DYNAMICS OF RIGID BODIES (3 cr.) — Prerequisite ENGR 241. Corequisite MATH 242. Vector treatment using index notation of planar and three-dimensional kinematics and kinetics of rigid bodies; mass moments of inertia, Newton's laws, work and energy, impulse and momentum, vibration applied to rigid bodies. Lecture 3 hours per week.

ENGR 243 MECHANICS OF DEFORMABLE SOLIDS (5 cr.) — Prerequisite or corequisite MATH 242. Structural mechanics applied to trusses, frames; introductory mechanics of continuous media; concepts of stress, strain, stress-strain relations; stress and deformation due to longitudinal loads, torsion, and bending; eccentric loads on short posts. Euler column theory. Lecture 5 hours per week.

ENGR 297 — **See General Usage Courses** page 80.

## 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 curricula. Emphasis on individual 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 reregister 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 reregister for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

ENGL 44 DEVELOPMENTAL READING (3 cr.) — A course designed with the use of modern techniques, equipment and materials to increase the student's comprehension and skills in reading. Training in effective listening and study is also provided. Laboratory techniques are used at all sessions. Lecture 3 hours per week.

ENGL 100 OCCUPATIONAL ENGLISH (3 cr.) — Develops basic, practical English skills in oral and written communication. The emphases are basic organization principles, approaches to media analysis, job-related vocabulary building, listening, writing, and speaking skills. Practical skills as handling customer complaints, writing various types of letters, preparation for a job interview are included. This course is intended for certificate students. Lecture 3 hours per week.

ENGL 109 COMMUNICATION IN BUSINESS AND INDUSTRY (3 cr.) — Functions of communications in business and industry. Methods for communicating effectively in business and industry with emphasis on gathering, organizing, and transmitting information. Review of basic techniques of effective oral and written communications. Lecture 3 hours per week.

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. Lecture 3 hours per week.

ENGL 137 TECHNICAL WRITING (3 cr.) — Prerequisite ENGL 112 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 146 LITERATURE FOR CHILDREN (3 cr.) — Surveys the history of children's literature, recognizes learning theory and developmental factors influencing reading and reading interests, and utilizes bibliographic tools in selecting books and materials for children. Emphasizes extensive reading and examination of books for recreational interests and educational needs of children. Lecture 3 hours per week.

ENGL 166 COLLEGE READING (3 cr.) — A course designed to facilitate college reading improvement in a variety of areas including rate of comprehension, vocabulary, study skills, and help in alleviating special problems in reading. Using modern equipment, materials, and techniques, the student will pursue a course of study set up between him and the instructor based on his needs, abilities, and goals as ascertained by test results and diagnostic interviews. Lecture 3 hours per week.

ENGL 180 FUNDAMENTALS OF BUSINESS ENGLISH (3 cr.) — Prerequisite ENGL 112. 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. Lecture 3 hours per week.

ENGL 199 — **See General Usage Courses** on page 80.

ENGL 228 CREATIVE WRITING I (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 234 CREATIVE WRITING II (3 cr.) — Prerequisite ENGL 228. A continuation of Creative Writing (ENGL 228) including experiments in novel, short story, and playwriting. Lecture 3 hours per week.

ENGL 248 THE MODERN SHORT STORY (3 cr.) — A study of the short story as a literary form. Emphasis on appreciation and interpretation of selected stories. Lecture 3 hours per week.

ENGL 251-252-253 SURVEY OF AMERICAN LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite ENGL 113 or departmental 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 261-262-263 SURVEY OF ENGLISH LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite ENGL 113 or departmental 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 299 — **See General Usage Courses** on page 80.

## FRENCH

FREN 101-102-103 INTRODUCTORY FRENCH I-II-III (4 cr.) (4 cr.) (4 cr.) — The understanding, speaking, reading and writing of French with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

FREN 107 CONVERSATION IN FRENCH (3 cr.) — Prerequisite FREN 103. Practice in speaking French, stressing correctness of structure, pronunciation, fluency, and the vocabulary of everyday situations. Lecture 3 hours per week.

FREN 121-122-123 CONVERSATIONAL FRENCH I-II-III (3 cr.) (3 cr.) (3 cr.) — An introductory course with major emphasis on oral communication, conversational communication and cultural mores and customs. Sufficient attention given to practical aspects of reading and writing. An activity-oriented course. Lecture 3 hours per week.

FREN 199 — **See General Usage Courses** on page 80.

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 understanding, speaking, reading, and writing of French. French used in the classroom. Lecture 3 hours, Laboratory 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.

FREN 299 — **See General Usage Courses** on page 80.

## GENERAL STUDIES COURSES

GENL 100 ORIENTATION (1 cr.) — Orientation is a course designed to aid Virginia Western students in their personal, social, and academic adjustment to the college community. Orientation is an exploratory course with major emphasis placed on self-awareness, career awareness, individual goal setting, and career decision making.

GENL 106 PERSONAL DEVELOPMENT FOR WOMEN (2 cr.) — Personal Career Development for Mature Women is a counseling course designed specifically to meet the psychological and educational adjustment needs of the mature female college student. The course is an exploratory course seeking to aid the student in defining and resolving situational and personal factors which may impede intellectual and personal growth and development. Major emphasis is placed on self-exploration, career exploration, decision making and the development of a career self-identity.

GENL 108 CAREER DEVELOPMENT (3 cr.) — Career Development is a course designed to assist students in understanding themselves, their values, interest and aptitudes as these personal characteristics relate to career choice and the world of work. A major component of the course is career exploration and the application of decision-making skills to career choice.

GENL 198 STUDY SKILLS (3 cr.) — Study Skills is a course designed to aid the student in clarifying attitudes toward education as they apply to future goals, assist the student in understanding expectations of educators, and assist the student in becoming aware of and defining barriers which prevent successful study habits and skills. Study Skills will also assist the student in planning strategies to overcome nonproductive study habits, and assist the student in implementing positive study behavior.

GENL 298 PERSONAL DEVELOPMENT (2 cr.) — Personal Development is a counseling course in student life skills. The dynamics and contents of the course seek to integrate human relations training, problem solving skills, decision making, and goal setting. Major emphasis is placed on assisting the students toward a better understanding of themselves and their educational experience in preparation for adult roles in society. Emphasis is placed on examining personal and environmental factors which limit or enhance one's personal development. Emphasis is also placed on the acquisition of more effective communication skills for personal learning and development.

GENL 299 JOB ENTRY TECHNIQUES (1 cr.) — Job Entry Techniques is a course designed to give the student experience in resume writing, preparation of applications, letters of application, and in successfully preparing for and completing a job interview. The course places major emphasis on the development of desirable work attitudes and habits.

## GENERAL USAGE COURSES

(Insert Appropriate Prefix) 90, 190, 290 COORDINATED PRACTICE IN (Insert Appropriate Discipline) (1-5 cr.) — Supervised practice in selected health agencies coordinated by the College. Credit/Practice Ratio maximum 1:5 hours. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 90, 190, 290 COORDINATED INTERNSHIP IN (Insert Appropriate Discipline) (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. Variable hours.

(Insert Appropriate Prefix) 97, 197, 297 COOPERATIVE EDUCATION IN (Insert Appropriate Discipline) (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 not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 98, 198, 298 SEMINAR AND PROJECT IN (Insert Appropriate Discipline) (1-5 cr.) —

Completion of a project or research report related to the student's occupation and a study of approaches to the selection and pursuit of career opportunities in the field. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 99, 199, 299 SUPERVISED STUDY IN (Insert Appropriate Discipline) (1-5 cr.) — Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

## GEOGRAPHY

GEOG 240 PHYSICAL GEOGRAPHY (3 cr.) — A study of the major elements of the natural environment such as land forms, weather and climate, native vegetation, and soils: including their origins and distribution patterns. Provides a framework for understanding interrelationships of man and his physical setting in today's world. (college transfer) NO PREREQUISITE.

GEOG 250 CULTURAL GEOGRAPHY (3 cr.) — A study of human interrelationships and cultural diversity: the distribution of lands, peoples, and cultures. Considers the complex forces responsible for events in the world today. (college transfer) NO PREREQUISITE.

GEOG 260 ECONOMIC GEOGRAPHY (3 cr.) — A study of the production, movement, exchange, and consumption of goods and services and of the world distribution patterns of these activities. Stresses the physical setting and its limitations on the current, complex economic situation of the world we live in. (college transfer) NO PREREQUISITE.

## 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 104-105 GENERAL GEOLOGY I-II (6 cr.) (6 cr.) — Two quarter sequence covering GEOL 101-102-103. Lecture 4-5 hours, Laboratory 6-3 hours, Total 10-8 hours per week.

GEOL 198, 199 — **See General Usage Courses** on page 80.

## GERMAN

GERM 101-102-103 INTRODUCTORY GERMAN I-II-III (4 cr.) (4 cr.) (4 cr.) — The understanding, speaking, reading, and writing of German with emphasis on manipulation of the structure of the language. Lecture 3 hours per week, Laboratory 2 hours, Total 5 hours per week.

GERM 107-108-109 CONVERSATIONAL GERMAN I-II-III (3 cr.) (3 cr.) (3 cr.) — Three quarter sequence built around German Language films, textbook, and taped recordings. Basic Conversational German as currently spoken. Includes use of language lab by individual students. Lecture 3 hours per week.

GERM 199 — **See General Usage Courses** on page 80.

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 299 — **See General Usage Courses** on page 80.

## GOVERNMENT

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 level. Lecture 3 hours per week.

GOVT 256 INTRODUCTION TO INTERNATIONAL POLITICS (3 cr.) — A study of principles and factors, affecting current international politics to promote an understanding of nation's behavior with one another. Lecture 3 hours per week.

GOVT 257 CONTEMPORARY INTERNATIONAL PROBLEMS (3 cr.) — Analysis of selected contemporary issues illustrating basic problems in international relations. Some representative topics are the Middle East, Southeast Asia, East-West conflict, the rise of nationalism, and the quest for peace. Lecture 3 hours per week.

GOVT 258 CONTEMPORARY NATIONAL PROBLEMS (3 cr.) — Prerequisite GOVT 281 or permission of instructor. Selected issues illustrating basic problems in public affairs in the United States in such areas as national, state, and local politics, governmental theory and civil rights. Lecture 3 hours per week. (Note: This would be a parallel to GOVT 257, in the area of domestic problems.)

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. Lecture 3 hours per week.

GOVT 284-285 UNITED STATES GOVERNMENT I-II (5 cr.) (4 cr.) — Two quarter sequence covering GOVT 281-282-283. Lecture 5-4 hours per week.

GOVT 298, 299 — **See General Usage Courses** on page 80.

## HEALTH

HLTH 100 ORIENTATION TO ALLIED HEALTH 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 principle 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 109 INTRODUCTION TO SCHOOL FIRST AID, HEALTH AND SAFETY (1 cr.) — Designed to acquaint the educational secretary with the essential elements of first aid, health and safety with emphasis on recognizing the extent and nature of sicknesses, injuries, and health problems. Lecture 1 hour 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 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 130 HEALTH EDUCATION (2 cr.) — A course for nonhealth majors designed to study health from the individual's mental, social and physical well-being, and to study the principles, techniques, methods, and procedures relating to health practices. Lecture 2 hours, Laboratory 1 hour, Total 3 hours per week.

HLTH 140 INTRODUCTION TO DRUG USE AND ABUSE (3 cr.) — An introductory survey of the drugs

used and abused in contemporary society, with emphasis upon sociological, physiological and psychological effects of drugs. Lecture 3 hours per week.

HLTH 156 CHILD HEALTH AND NUTRITION (3 cr.) — Understanding the physical needs of the pre-school child and the methods by which these are met. Emphasis upon health routines, hygiene, nutrition, feeding and clothing habits, childhood diseases, and safety as related to health growth and development. Lecture 3 hours per week.

## HISTORY

HIST 101-102-103 HISTORY OF WESTERN CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.) — The development of western civilization from ancient times to the present. The last two quarters deal with a survey of the period since the close of the Reformation. Lecture 3 hours per week.

HIST 111-112-113 UNITED STATES 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. Lecture 3 hours per week.

HIST 114-115 AMERICAN HISTORY I-II (5 cr.) (4 cr.) — Two quarter sequence covering HIST 111-112-113. Lecture 5-4 hours per week.

HIST 160 WOMEN IN HISTORY (3 cr.) — A survey of the role of women and attitudes toward women in the Western World, with emphasis on women in American history. An inquiry into the origins of these attitudes will be followed by a survey of the role of women in various societies. Finally, the contemporary women's movement will be examined in the light of historical perspective. Lecture 3 hours per week.

HIST 187-188-189 BLACK HISTORY I-II-III (3 cr.) (3 cr.) (3 cr.) — A survey of the history of the Afro-American, 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, 199 — **See General Usage Courses** on page 80.

HIST 206 AMERICAN HISTORY SINCE WORLD WAR II (3 cr.) — An in-depth investigation of modern history from 1945 to the present with special emphasis on American involvement in international affairs. Lecture 3 hours per week.

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 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. Lecture 3 hours per week.

HIST 261-262-263 HISTORY OF ENGLAND I-II-III (3 cr.) (3 cr.) (3 cr.) — The history of England from Roman times to the present. The first quarter encompasses the period from Roman and Anglo-Saxon times through the Wars of the Roses; the second quarter from 1485-1783; and the third quarter, from 1783 to the present. Lecture 3 hours per week.

HIST 298, 299 — **See General Usage Courses** page 80.

## 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, greenhouses, 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 105 FLOWER GARDENING (3 cr.) — Basic home gardening techniques for growing of perennials, annuals, bulbs, and home propagation. Lecture 3 hours per week.

HORT 106 FUNDAMENTALS OF HORTICULTURE (3 cr.) — A general study of plant growth and development, horticultural principles and practices, horticultural crops with emphasis on ornamental crops. Lecture 3 hours per week.

HORT 107 PLANT PROPAGATION (3 cr.) — Principles and applied practices of sexual and asexual methods of commercial and home propagation of horticultural plants. Skill-oriented emphasis placed on propagation techniques using seed, cutting, grafting, budding, layering, and division. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 108 GARDENING AND LAWN CARE FOR THE HOMEOWNER I (3 cr.) — Landscape planning, the fundamental chemistry of fertilization, soil treatment, pruning, and plant growth and development for the homeowner, gardener and professional nurseryman. Lecture 3 hours per week.

HORT 110 TOOLS AND EQUIPMENT (3 cr.) — Prerequisite HORT 100. The tools and equipment currently in use in horticulture. Emphasis on the more complicated power-operated equipment including spreaders, sprayers, saws, and tractors. Safety, good maintenance and minor repair stressed. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

HORT 120 SOILS (4 cr.) — Prerequisites CHEM 110 and HORT 100. Theoretical and practical knowledge of soils in terms of horticultural activity. Includes soil identification, properties, analysis, fertilizers, sterilization, mixtures, and safety measures involving equipment used in soil work. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HORT 126 LANDSCAPE CONSTRUCTION AND MAINTENANCE (3 cr.) — Development of skills and competencies in practical application of landscape design theory. Construction, planing, and maintenance of a class landscaping project required. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

HORT 130 ENVIRONMENTAL FACTORS IN PLANT GROWTH (3 cr.) — Environmental factors which affect plant growth including rainfall, humidity, wind, temperatures, sunlight, irrigation, heating, and shading methods. The relationship of day length and flowering, supplemental lighting and darkening systems, dormancy and methods of inducing and breeding dormancy. Lecture 3 hours per week.

HORT 146 HORTICULTURAL BOTANY (4 cr.) — An elementary study of the principles of botany with application in commercial horticulture, considers fundamental aspects of taxonomy, anatomy, reproduction, morphology, physiology, and genetics of plants. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

HORT 156 GREENHOUSE CROP PRODUCTION (3 cr.) — Examines commercial practices related to production of major floricultural crops. Consideration of production requirements, environmental control and management, and cultural techniques affecting production of pot plants and cut flowers. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 158 VEGETABLE PRODUCTION (2 cr.) — A study of principles and practices of home and commercial vegetable production; examines crops of major economic importance in regard to classification, culture, soil preparation, cultivation, weed control, crop rotation, in-

sect and disease control, marketing, and storage. Lecture 2 hours per week.

HORT 216 HORTICULTURAL ENTOMOLOGY (4 cr.) — A study of the major insect pests which attack horticultural crops. Considers insect identification as well as appropriate control practices, methods and materials. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

HORT 217 HORTICULTURAL PLANT PATHOLOGY (3 cr.) — A study of the major diseases which attack horticultural crops. Considers methods for accurate identification and diagnosis of disease problems and appropriate control measures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 220 NURSERY MANAGEMENT (3 cr.) — The aspects of nursery work including plant growing, planting, transplanting, balling, burlaping, business methods in the nursery, buying and stocking the nursery and merchandising in this specialized area. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 230 GREENHOUSE MANAGEMENT (3 cr.) — The phases of greenhouse activity including seedbed preparation, plant selection, and utilizing the materials presented in prerequisite courses as they apply to growing under glass; business and selling practice peculiar to this phase of the industry. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 240 TURF GREEN MANAGMENT (3 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 relationship 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 2 hours, Total 4 hours per week.

HORT 250 LANDSCAPE PLANNING (2 cr.) — Prerequisite HORT 100. The basic symbols used in landscape plans. Drafting and blueprint 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, lawns, shrubs, ground cover, and foundation plantings. Laboratory 4 hours, Total 4 hours per week.

HORT 256 WOODY PLANTS (3 cr.) — Identification, culture, and uses of woody plants used in landscaping. Includes deciduous and evergreen, wild and cultivated shrubs and trees. Laboratory 6 hours per week.

HORT 257 HERBACEOUS PLANTS (3 cr.) — Identification, culture and uses of annuals, biennials, and perennials used in landscaping. Laboratory 6 hours per week.

HORT 260 FLOWER SHOP MANAGEMENT (3 cr.) — The art of floral design as to form, style, and composition. Considers location, management, and operation of a flower shop, and the arrangement of flowers for home, church, hotels, and public buildings. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 266 HOUSE AND CONSERVATORY PLANTS (3 cr.) — Identification, culture, and propagation of pot and conservatory plants. Considers the environmental problems unique to the growth of indoor plants and their use in indoor landscaping. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

HORT 270 FLORAL DESIGN AND ARRANGING (2 cr.) — A practical introduction to floral design. Student practice in the basic methods of design and in producing arrangements. Laboratory 4 hours per week.

HORT 276 FLORAL DESIGN AND ARRANGING (2 cr.) — Prerequisite HORT 270. A continuation of floral design and arranging with emphasis on acquisition of basic skills related to floral designs created by retail florists. Students will design and create wreaths, baskets, sprays, wedding flowers and corsages in the laboratory. Laboratory 4 hours per week.

HORT 290, 298, 299 — **See General Usage Courses** on page 80.

## HOTEL, RESTAURANT & INSTITUTIONAL MANAGEMENT

HRIM 100 INTRODUCTION TO HOTEL/RESTAURANT MANAGEMENT (3 cr.) — A survey of the history, organization, opportunities, and problems of the hospitality industry. Includes departmental functions, personnel practices, credit procedures, security routines, and typical job requirements. Emphasis will be on current trends and developments in the industry. Lecture 3 hours per week.

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 176 CAFETERIA RECORD KEEPING (3 cr.) — Cash register operations and lunch count, bank deposits and daily record of cash and expenditures; keeping state and federal records (sl 12 and sl 13), monthly reports, perpetual inventories of equipment and food purchasing and receiving records, personnel and payroll systems. Lecture 3 hours per week.

HRIM 197 — **See General Usage Courses** page 80.

HRIM 221-222-223 QUANTITY FOOD PREPARATION I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisites HRIM 124-125. Principles, standards and practices of cooking and baking applied in large quantity food production. Lecture 3 hours, Laboratory 3 hours, Total 6 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 FOOD AND BEVERAGE COST CONTROL I (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 control. 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 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. Lecture 3 hours per week.

HRIM 297, 298 — **See General Usage Courses** page 80.

## HUMAN SERVICES

HMSV 110 INTRODUCTION TO DEVELOPMENTAL DISABILITIES (3 cr.) — Survey of developmental disabling conditions; implications for treatment. Specific content will focus on mental retardation, epilepsy, cerebral palsy, and autistic behavior patterns. Lecture 3 hours per week.

HMSV 211 ALCOHOL/DRUG ABUSE REHABILITATION PROGRAMS I (3 cr.) — A comprehensive course designed to provide knowledge, skills, and insight for working with drug and alcohol abuse programs. The course will emphasize personal growth, goal and value assessment, development of "helping relationships" and counseling for individual and group needs. Students will be provided opportunities for field experience in treatment centers. Lecture 3 hours per week.

HMSV 128 COMMUNITY RESOURCES AND SERVICES (3 cr.) — A study of federal, state, and local agencies, their functions, limitations and interrelationships. Emphasis is placed on determining stated purpose of an agency as related to delivery of human services, and procedures for referrals, team-building, and regional cooperation. Lecture 1 hour, Laboratory 5 hours, Total 6 hours per week.

## 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, and Modern. Lecture 3 hours per week.

## INDUSTRIAL

INDT 111-112 MATERIAL AND PROCESSES OF INDUSTRY I-II (3 cr.) (3 cr.) — The materials and processes of modern industry from the drafting and design point of view. The physical properties of industrial materials such as ferrous and nonferrous metals, woods, plastics and clay products in terms of design application, processing and fabrication methods. Cutting, cold forming, hot working, welding, foundry and chipless manufacturing processes employed in contemporary industry; the science of precision measurement as applied to inspection practices. 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 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 in industry. Lecture 3 hours per week.

INDT 176 PRINCIPLES OF 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. Lecture 2 hours per week.

## LEGAL ADMINISTRATION

LEGL 110 AN OVERVIEW OF THE LEGAL PROCESS (3 cr.) — A review of the processes of basic American law as legal decisions are made by the judicial, legislative and administrative agencies. An overview of the American judicial system, the sources of law, and the general relationship between the federal and state court system. Lecture 3 hours per week.

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 134 DOMESTIC RELATIONS (3 cr.) — Elements of valid marriage, grounds for divorce and annulment; separation, defenses, custody, support, alimony, tax consequences; out-of-state divorces and validity; jurisdiction and service. Review and analysis of separation and custody agreements, documents in divorce proceedings, change of name proceedings and adoptions. Lecture 3 hours per week.

LEGL 136 LAW OFFICE MANAGEMENT (3 cr.) — Management principles and systems applicable to law firms, including record keeping, accounting, filing, work processing, timekeeping, billing, administrative services, purchasing and procurement of supplies and equipment; maintaining effective relationships between legal assistants, attorneys, clients, and secretarial staff; computer applications to legal systems; effective employment and supervision of lay personnel, legal ethics related to law office management. Lecture 3 hours per week.

LEGL 226 TRIAL PRACTICE (3 cr.) — Includes a thorough study of the court systems; federal, state and local. The student will be introduced to legal drafting, and will examine the commencement and trial of cases in detail, including drafting of the various pleadings, motions, and other matters, which are ordinary components of civil action. Lecture 3 hours per week.

LEGL 234-235 ESTATE PLANNING I-II (3 cr.) (3 cr.) — An introduction to various devices used to plan estates, including wills, revocable and irrevocable trusts, joint ownership, powers of appointment, life insurance and the like. Students consider the utility of various plans, in the light of different property arrangements, family situations, and estate objectives of typical decedents. Lecture 3 hours per week.

LEGL 240 CORPORATE LAW (3 cr.) — The fundamental principles of corporate law including capitalization, articles of incorporation, by-laws, tax returns, reports, financial statements and minutes, officers, employment contracts and special problems. Lecture 3 hours per week.

LEGL 244 REAL ESTATE ABSTRACTING I (3 cr.) — The study of abstracting titles to real estate, recordation of instruments affecting land, use and mechanics of general indices, anatomy and composition of recorded documents for purposes of abstracting, search and mechanics of the title examination, description of land, priority of liens, liens imposed by localities, titles through wills, descent and chancery suits, and adverse possession. Review of legal consequences of bankruptcy, warranties, covenants, restrictions, dower-curtesy, easements and riparian rights as it affects titles to land. Lecture 3 hours per week.

LEGL 245 REAL ESTATE ABSTRACTING II (3 cr.) —

Application of general principles with special emphasis on selected problems through field trips to various Clerks' Offices for visual inspection of recorded public records. Lecture 3 hours per week.

LEGL 246 LAW OF INCOME TAXATION (3 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.

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 258 ADMINISTRATION OF DECEDENT'S ESTATES (3 cr.) — The course is designed to teach students how to administer an estate efficiently. It includes instruction on substantive areas of law, as well as instruction on preparation of forms and provides samples for the efficient administration of decedent's estates. Lecture 3 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 131-132-133 TRAFFIC AND TRANSPORTATION I-II-III (3 cr.) (3 cr.) (3 cr.) — The requirements for traffic managers and others concerned with such fields as railroading, trucking, and air travel. The course outlines the development of transportation, transportation regulations, tariffs and rates, and the regulations and applications of traffic management. Lecture 3 hours per week.

MKTG 136 RETAIL ORGANIZATION & MANAGEMENT (3 cr.) — The organization of business 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 157 PRINCIPLES OF CASUALTY INSURANCE AND SURETY BONDING (3 cr.) — Prerequisite MKTG 150 or equivalent. Automobile liability insurance and policy terms, workmen's compensation and employer's liability, comprehensive liability, professional and personal liability, fidelity and surety bonds, theft coverages, miscellaneous casualty coverages, multiple-line trends and coverages, health insurance. 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 examinations 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 197 — **See General Usage Courses** page 80.

MKTG 208 BANK PUBLIC RELATIONS AND MARKETING (3 cr.) — The basis of public relations, both internal and external; the why, what, and how of public relations and marketing. An overview in terms of what everyone in banking should know about the essentials of bank public relations and marketing. Lecture 3 hours per week.

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 225 PRINCIPLES OF ADVERTISING (3 cr.) — Study of the functions, principles, and techniques of advertising, including the role of advertising in the marketing system. 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 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 231-232-233 INTERSTATE COMMERCE LAW I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite MKTG 133 or equivalent. A study of transportation law including the Interstate Commerce Act. First quarter devoted to constitutional issues, nature of interstate commerce, franchises, and combinations of carriers. Second quarter devoted to finance, rates, and services. Third quarter concerned with procedure, loss and damage, and related statutes. Lecture 3 hours per week.

MKTG 236 PHYSICAL DISTRIBUTION (3 cr.) — Business firm's functions and activities in the evaluation, purchase, and direction of transportation services provided by various transportation media; selection of transportation media, private transportation and management of equipment, order processing, supply scheduling, inventory control and customer service in developing a total system approach to marketing logistics. Lecture 3 hours per week.

MKTG 238 TRAFFIC MANAGEMENT (3 cr.) — Prerequisite MKTG 131. The purpose, function, and operation of traffic management; the differences in various areas of traffic; and the relationship to other business operations. Lecture 3 hours per week.

MKTG 239 PROBLEMS IN TRANSPORTATION (3 cr.) — Prerequisite MKTG 231. Preparation and presentation of cases as Interstate Commerce Commission practitioner and witness; drafting of pleadings; briefs, and petitions, submission of testimony and exhibits in written and oral form with experience on the witness stand. 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, sales-

man 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 evaluations; method 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.) — Prerequisite MKTG 165. 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 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 subdivision, economic values and real estate evaluation, real estate cycles and business fluctuations, residence market trends, rural property and special purpose property trends. Lecture 3 hours per week.

MKTG 279 REAL ESTATE INVESTMENT (3 cr.) — An examination of Real Estate Investment with emphasis on tax shelters, limited partnerships, syndications, exchanges and modern techniques of mortgage equity requirements and depreciation guidelines. Lecture 3 hours per week.

MKTG 297, 298, 299 — **See General Usage Courses** on page 80.

## MATHEMATICS

MATH 05 BASIC ARITHMETIC (3 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. Lecture 3 hours per week.

MATH 06 BASIC ALGEBRA (3 cr.) — A developmental course in algebra, designed to develop the mathematical proficiency necessary for entrance into certain curricula programs. The course reviews elementary principles and concepts in algebra, and it provides training in how to solve word problems. Lecture 3 hours per week.

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 ALGEBRA I-II (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. Lecture 5 hours per week.

MATH 35 PLANE GEOMETRY (2 cr.) — Axioms, definition, propositions formulas for areas of various plane figures, and formulas for the volumes of various solid figures. Lecture 2 hours, Laboratory 1 hour, Total 3 hours per week.

MATH 41 AIR CONDITIONING MATHEMATICS I (4 cr.) — Fractions, decimals, sign of operation, equations, Ohm's Law, subtraction, multiplication, and division of signed numbers, work and power problems. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

MATH 50 BUSINESS MATHEMATICS (3 cr.) — Review of the fundamentals of mathematics related to business activities. Emphasis on the use of percents, discounts, interest, depreciation, insurance calculations, and other practical business problems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MATH 99 — **See General Usage Courses** on page 80.

MATH 111-112-113 TECHNICAL MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite satisfactory score on appropriate mathematics proficiency examinations and one unit of high school algebra and one unit of high school geometry or equivalent. Designed for the technical student. Slide rule, review of geometry, dimensional analysis, analytical geometry of the straightline, basic sketching, numerical trigonometry, introduction to analytical trigonometry, and an introduction to calculus to emphasize those techniques useful to the engineering student. Lecture 3 hours per week.

MATH 118-119 INTRODUCTION TO TECHNICAL MATHEMATICS I-II (5 cr.) (5 cr.) — Applications of arithmetic, algebra, geometry and trigonometry to technical problems. Lecture 5 hours per week.

MATH 121-122-123 ENGINEERING TECHNICAL MATHEMATICS I-II-III (5 cr.) (5 cr.) (5 cr.) — Prerequisite MATH 118 or three units of high school mathematics other than general mathematics, or 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 130 MATHEMATICS FOR COMMUNITY AND SOCIAL SERVICES (4 cr.) — Intended for students enrolled in the Community and Social Services curriculum and related areas. Includes a review of arithmetic skills, an introduction to basic algebra, consumer mathematics, interpretation of graphs and tables, and elementary statistics. Lecture 4 hours per week.

MATH 141-142-143 INTRODUCTORY MATHEMATICAL ANALYSIS I-II-III (5 cr.) (5 cr.) (5 cr.) — Prerequisites are a satisfactory score on appropriate mathematics proficiency examination or 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 application. Lecture 5 hours per week.

MATH 150 INTRODUCTION TO COMPUTER MATHEMATICS (3 cr.) — An introduction to the computer with an emphasis on fundamental skills needed in mathematics, business, and science. Students will be required to utilize the Basic Language to solve problems from different disciplines. Not for data processing or engineering majors.

MATH 151-152-153 INTRODUCTION TO 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, markup, payroll, sales, property and other taxes, simple and compound interest, bank discounts, interest, investments and annuities. Lecture 3 hours per week.

MATH 154-155-158 MODERN MATHEMATICS FOR ELEMENTARY TEACHERS I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisites ALGEBRA I and GEOMETRY or satisfactory score on math placement test or MATH 31. This course is designed for elementary education majors. The first two courses include: logic and logical reasoning, history of early number systems, development of the real number system and its subsystems, work in bases other than base 10, mathematical applications involving operations with sets, inductive and deductive reasoning, essentials of geometry and algebra, generalizations and patterns in mathematics. The third course includes: elementary probability, elementary statistics, and selected topics from geometry and algebra. 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 examinations or three units of high school mathematics including two units of algebra and one unit of geometry or MATH 32. A modern unified course in algebra, trigonometry, analytic geometry, and calculus for students other than those in physics or 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, business administration, or engineering. Prerequisite Algebra I and either Algebra II or Geometry or a satisfactory score on appropriate mathematics proficiency examinations or MATH 31. The first two quarters will include sets, the logic of algebra, the real number system, algebraic and transcendental functions, relations and graphs. The third quarter will include permutations, combinations, probability and elementary statistics. Lecture 3 hours per week.

MATH 198, 199 — **See General Usage Courses** page 80.

MATH 202 INTRODUCTION TO MATRIX ALGEBRA (4 cr.) — Prerequisite MATH 163, 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 221-222 ADVANCED ENGINEERING TECHNICAL MATHEMATICS I-II (4 cr.) (4 cr.) — Prerequisite MATH 123. Differential and integral calculus with emphasis on applied problems in the appropriate technological fields. Lecture 4 hours per week.

MATH 241-242-243 ADVANCED MATHEMATICAL ANALYSIS I-II-III (4 cr.) (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 fo exponential, logarithmic, and trigonometric functions; sequences and series; solid analytic geometry; multiple integrals; and introduction to differential equations. Lecture 3 hours per week.

MATH 281-282-283 STATISTICS I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite MATH 162 or MATH 183 or departmental approval. Introduction to the fundamental ideas of statistics, including a brief treatment of elementary probability, descriptive statistics, distributions, problems of sampling, normal distributions, measures of central tendency, sampling variance, confidence intervals, estimation, testing of hypotheses, regression, correlation, and analyses of variance. Lecture 3 hours per week.

MATH 298, 299 — **See General Usage Courses** on page 80.

## MECHANICAL

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.) — Continued study of practical and industrial applications and set up, inspection tools, gauges, tapers, gear cutting, square threads and fits. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 156 MECHANISMS (2 cr.) — The purpose and actions of cams, gear trains, levers, and other mechanical devices used to transmit control. A study of motions of linkages, velocities and acceleration of points within a link mechanism; layout method for designing cams and gear train. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

MECH 197 — **See General Usage Courses** page 80.

MECH 237-238 MACHINE DESIGN I-II (4 cr.) (4 cr.) — Prerequisite ENGR 152 and MATH 123. The analytical design of bearings, clutches, couplings, brakes, springs, gearing systems, and power shafting. Emphasis on methods of constructing machine parts and specifications of materials and manufacturing processes. Lecture 4 hours per week.

MECH 264 THERMODYNAMICS I (4 cr.) — Prerequisite MATH 123. Characteristics of gases; applied study of gas cycles and combustion processes. Lecture 4 hours.

MECH 265 THERMODYNAMICS II (4 cr.) — Prerequisite MECH 264. Advanced thermodynamics with emphasis on applications relating to internal combustion engines, steam cycles and refrigeration systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 267 FLUID MECHANICS (4 cr.) — Prerequisite ENGR 151. Properties of fluids and fluid flow, Bernoulli's Theorem, measuring devices, viscosity and dimensional analysis. Emphasis on pumps, piping, and fluid motors. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

MECH 297, 298 — **See General Usage Courses** on page 80.

## MEDICAL RECORDS

MDRS 190 COORDINATED PRACTICE — Supervised training in Medical Records, Pathology and Radiology departments in hospitals.

## MENTAL HEALTH

MENT 101-102-103 INTRODUCTION TO MENTAL HEALTH I-II-III (3 cr.) (3 cr.) (3 cr.) — An examination of the concepts of mental health and mental illness. A study of the basic factors involved in any behavior and the quantitative relationship of mental health to mental illness. Laboratory includes observation and practice in various helping agencies. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

MENT 110 INTRODUCTION TO ABNORMAL PSYCHOLOGY (3 cr.) — An introductory study of the symptoms, causes and treatment of mental deficiency, neurosis, psychosis and character disorders, with specific relationship to the work of the mental health technologist. Lecture 3 hours per week.

MENT 116 ACTIVITIES THERAPIES (3 cr.) — Prerequisite MENT 103. The use of recreation, art, crafts and music as therapeutic tools with the emotionally disturbed and mentally retarded. Planning social programs and

special events for the needs of the individuat and consistent with his overall treatment plan and/or social goals, current laws affecting activities, use of volunteers and use and care for audio-visual media. Laboratory will include participation in games, crafts, and other activities that could be used with various age groups and persons presenting particular problems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

MENT 190 — Prerequisite HLTH 104 — **See General Usage Courses** on page 80.

MENT 221-222-223 MENTAL HEALTH I-II-III (3 cr.) (3 cr.) (3ecr.) — Principles and methods of interviewing, observing, recording, summarizing, and communicating human reactions (including both verbal and nonverbal communication) and the underlying rationale for various methods. Includes a study of psychotherapy, group skills (group dynamics, role playing, leadership of group activities, other teaching skills), behavioral modification and related therapies, use of milieu, family therapies, hospital treatment, drug therapies, community resources, mental health professions, coordination of treatment programs and participation in development of treatment programs. Special emphasis is placed on therapeutic use of everyday experiences in development of therapeutic relationships. Lecture 3 hours per week.

MENT 236 PROBLEMS IN ADOLESCENCE (3 cr.) — Prerequisite MENT 101, PSYC 130. An examination of the problems associated with adolescence with an in-depth look at personality, environmental, and developmental factors. Specific intervention strategies will be covered with emphasis on theory, rationale, and techniques appropriate for this age group. A review of contemporary intervention will be incorporated with a look toward the future needs of this group. Lecture 3 hours per week.

MENT 237 PROBLEMS IN AGING (3 cr.) — Prerequisites MENT 101, BIOL 154 and 155 An examination of the problems associated with the aging process with an in-depth look at personality changes and reaction to internal and external stress. Specific intervention strategies will be covered which attempt to rehabilitate and facilitate the adjustment of the aging client. Emphasis will be placed on rationale and technique as well as review of psychological problems associated with such factors as organic and general physical deterioration, metabolic disturbance and social isolation. Lecture 3 hours per week.

MENT 290 COORDINATED PRACTICE IN MENTAL HEALTH TECHOLOGY I-II-III (3 cr.) (3 cr.) (4 cr.) — Supervised practice in selected health agencies coordinated by the College. Variable hours.

MENT 298 SEMINAR AND PROJECT IN MENTAL HEALTH TECHNOLOGY (4 cr.) — Completion of a project or research report related to the student's occupation and a study of approaches to the selection and pursuit of career opportunities in the field. Variable hours.

## MUSIC

### Theory and Composition

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 movement 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, and triads and chords. Development of ability to sing at sight and write from dictation melodies in all keys, clefts, 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 131-132-133 CLASS VOICE I-II-III (2 cr.) (2 cr.) (2 cr.) — An introduction to the many aspects of singing from the physical act through the aesthetic experience. The course is designed for the average singer who desires vocal improvement, and for the voice major as an addition to and extension of skills and knowledge necessary for his artistic development. Lecture 1 hour, Laboratory 2 hours. Total 3 hours per week.

MUSC 141-142-143 CLASS PIANO I-II-III (2 cr.) (2 cr.) (2 cr.) — Instruction in keyboard fundamentals. Standard repertoire. Designed to give the student the necessary proficiency to meet the basic keyboard requirements of a non-piano major in Music, and for the student who desires improvement in the keyboard techniques Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

MUSC 211-212-213 ADVANCED MUSIC THEORY I-II-III (4 cr.) (4 cre) (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 2e hours, Total 5 hours per week.

### History and Literature

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 knowledge in music and related cultural activities. Aural comprehension of music through listening to compositions from the various historical periods while noting the changes in musical elements in each period. Lecture 3 hours per week.

MUSC 238 CHORUS (1 cr.)

MUSC 148 ORCHESTRA (1 cr.) — Students may receive credit for orchestra through participation in the Roanoke Symphony or Roanoke Youth Symphony.

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 249 BAND (1 cr.)

## NATURAL SCIENCE

NASC 100 SURVEY OF SCIENCE (4 cr.) — A general survey course designed to familiarize the student with the principles of the biological and physical sciences. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

NASC 111 HEALTH SCIENCE I (4 cr.) — Human anatomy and physiology, microbiology, pathology and bacteriology; study of organ tissues, body systems and function, chemistry as it relates to physiology, physics principles as applied to health science. Lecture 3 hours. Laboratory 3 hours, Total 6 hours per week.

NASC 125 CONSERVATION OF NATURAL RESOURCES: Man and the Environment (3 cr.) — A study of the natural resources of Earth in the broadest sense: the components of man's physical and biological environment. The importance of rational use of air, water, living space, food supply, energy and minerals is considered in relation to man's future in Earth's ecosystem. NO PREREQUISITE.

NASC 154-155 ASTRONOMY I-II (3 cre) (3 cr.) — The history of astronomy and the development of astronomical thought leading to the birth of modern astronomy and its most recent developments. Particular stress will be placed on astronomical instruments and measuring techniques, along with an examination of the solar system with emphasis on the Earth, moon and adjacent planets, the Milky Way galaxy and extragalactic objects. 154 — Lecture 3 hours per week; 155 — Lecture 2 hours per week, 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, Clinical 3 hours, Total 12 hours per week.

NURS 112 FUNDAMENTALS OF NURSING II (6 cr.) — Prerequisite NURS 111. Continuation of NURS 111. Lecture 3 hours, Clinical 9 hours, Total 12 hours per week.

NURS 113 FUNDAMENTALS OF NURSING III (8 cr.) — Prerequisites NURS 111-112, BIOL 154-155. Continuation of NURS 112. Lecture 4 hours, Clinical 12 hours, Total 16 hours per week.

NURS 199 PHARMACOLOGY (2 cr.) SUPERVISED STUDY IN PHARMACOLOGY. Assignment of problems for independent study incorporating previous instruction and supervised by the instructor. May be repeated for credit. Variable hours.

NURS 221 NURSING IN MAJOR HEALTH PROBLEMS (8 cr.) — Prerequisites NURS 111-112-113, BIOL 154-155-176. 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 U.S. Lecture 4 hours, Clinical 12, Total 16 hours per week.

NURS 244-245 MEDICAL SURGICAL NURSING I, II (4 cr.) (4 cr.) — Prerequisites NURS 221, BIOL 154-155-176. Designed to develop nursing skills in caring for critically ill patients. Emphasis placed on cardiovascular, respiratory, renal and nervous systems. Nursing care of patients with major surgical conditions is also included. Related clinical experience in cooperating health agencies. Lecture 2 hours, Clinical 6 hours. Total 8 hours per week.

NURS 246 LEADERSHIP IN NURSING (4 cr.) — Prerequisites NURS 221, BIOL 154-155-176. Focuses on beginning management and organizational skills as related to nursing. Emphasis is placed on group dynamics, resolution of conflicts and leadership styles. Related experience in cooperating health agencies. Lecture 2 hours, Clinical 6 hours, Total 8 hours per week.

NURS 247 OBSTETRICAL NURSING (4 cr.) — Prerequisites NURS 221, BIOL 154-155-176. Designed to develop nursing skills in caring for mothers in the antepartum, intrapartum and postpartum periods, as well as care of the newborn infant. Related clinical experience in cooperating health agencies. Lecture 2 hours, Clinical 6 hours, Total 8 hours per week.

NURS 248 PEDIATRIC NURSING (4 cr.) — Prerequisites NURS 221, BIOL 154-155-176. Designed to develop nursing skills in caring for both well and ill children in a variety of settings. Emphasis is placed on theories of growth and development and the family as a unit. Related clinical experience in cooperating health agencies Lecture 2 hours, Clinical 6 hours, Total 8 hours per week.

NURS 249 PSYCHIATRIC NURSING (4 cr.) — Prerequisites NURS 221, BIOL 154-155-176. Designed to develop nursing skills in caring for patients with emotional illnesses. The course content explores various treatment models, diagnostic categories and rehabilitative measures. Related clinical experience in cooperating health agencies. Lecture 2 hours, Clinical 6 hours, Total 8 hours per week.

NURS 299 — **See General Usage Courses** on page 80.

## 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.

## PHOTOGRAPHY

PHTG 101 PHOTOGRAPHY I (3 cr.) — Principles of photography and fundamental techniques of the camera in relation to the expressive possibilities in visual communication and design. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

PHTG 201-202-203 ADVANCED PHOTOGRAPHY I-II-III (3 cr.) (3 cr.) (3 cr.) — Prerequisite PHTG 101. 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.

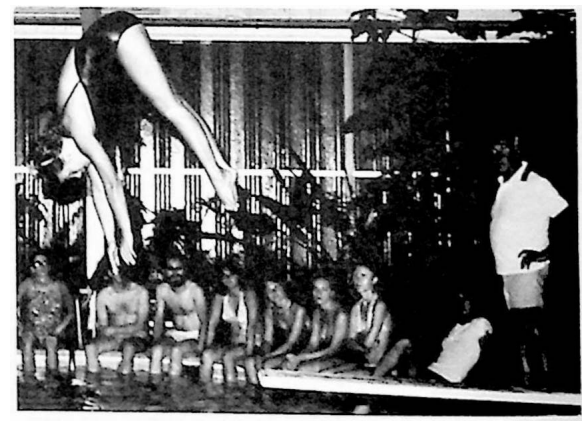
PHTG 210 COLOR PHOTOGRAPHY (2 cr.) — Prerequisite PHTG 101 or equivalent. Introduction to color photography which includes general color theory, developing color slide film and negatives. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

PHTG 269 ADVANCED PHOTOGRAPHIC PRINTING (3 cr.) — Prerequisite PHTG 201. Emphasis placed on developing individual style. Students required to produce a portfolio of high quality prints on subject matter of their choice. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

## PHYSICAL EDUCATION

PHED 101-102-103 PHYSICAL EDUCATION I-II-III (1 cr.) (1 cr.) (1 cr.) — The study of recreational activities which will have value for more effective use of leisure time. The development of skills and methods in archery, badminton, bowling, golf, tennis, volleyball and other sports and activities appropriate to the local season, and facilities available. Lecture 1 hour, Laboratory 1 hour, Total 2 hours per week.

PHED 101 FOOTBALL (1 cr.)
PHED 111 ARCHERY (1 cr.)
PHED 113 BOATING (1 cr.)
PHED 114 EQUITATION (1 cr.)
PHED 115 ICE SKATING (1 cr.)
PHED 119 WATER SKIING (1 cr.)
PHED 131 BOWLING (1 cr.)
PHED 133 GOLF (1 cr.)
PHED 135 TENNIS (1 cr.)
PHED 139 INTERM. TENNIS (1 cr.)
PHED 151 LIFE SAVING (1 cr.)
PHED 153 SWIMMING (1 cr.)
PHED 170 BASKETBALL (1 cr.)
PHED 172 SOCCER (1 cr.)
PHED 173 SOFTBALL (1 cr.)
PHED 174 VOLLEYBALL (1 cr.)
PHED 207 BEG. TENNIS (1 cr.)
PHED 241 KARATE (1 cr.)



## PHYSICS

PHYS 101-102-103 INTRODUCTORY PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.) — A survey of general physics; 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 111-112-113 TECHNICAL PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite three units of high school mathematics; corequisite MATH 121. Precision measurement, properties of matter, hydrostatics and hydraulics; force and motion, Newtonian mechanics, vectors and graphic solutions, statics, dynamics, rotary motion, heat and thermodynamics, heat engines, sound acoustics; the theory of wave motion, light and optics, magnetism and electricity, DC and AC circuits and machines. An introduction to electronics and nuclear energy for industrial purposes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 121-122-123 PRINCIPLES OF PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite three units of high school mathematics including two units of algebra and one unit geometry. An introductory course in Physics satisfying the science distribution requirements for majors other than Physics or Engineering. The fundamental principles of mechanics, heat, electricity and magnetism, wave, motion, atomic and nuclear physics. Attention is given to the historical development and philosophical significance of physical concepts and theories. Application to elementary problems and the role of physics in the modern world. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 131-132-133 APPLIED PHYSICS I-II-III (3 cr.) (3 cr.) (3 cr.) — The fundamentals of physics with laboratory exercises to parallel lectures. Deals with the properties of matter, basic Newtonian mechanics. The second quarter course includes the study of heat, light, optics and sound as wave phenomena. The general course includes a study of electricity and magnetism. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

PHYS 198, 199 — **See General Usage Courses** on page 80.

PHYS 221-222-223-224 GENERAL UNIVERSITY PHYSICS I-II-III-IV (4 cr.) (4 cr.) (4 cr.) (4 cr.) — Prerequisite MATH 143 or equivalent. General University Physics is designed for students in engineering, physics or mathematics. Includes mechanics, relativity, electricity and magnetism, electromagnetic waves, optics, quantum mechanics, atomic structure, and solid state and nuclear physics. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 298, 299 — **See General Usage Courses** on page 80.

## PSYCHOLOGY

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.) — Characteristics of mental health. Psychological principles applied to the development of a mature personality and to the problems of everyday life. Effective methods of study and work. 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.) — The development of the child concentrating on the physical, intellectual, social and emotional factors in his personality. Recent studies in child development. Provides a background for students who intend to become nurses, teachers, or enter other occupations involving continuous work with children. Lecture 3 hours per week.

PSYC 198, 199 — **See General Usage Courses** on page 80.

PSYC 201-202-203 GENERAL PSYCHOLOGY I-II-III (3 cr.) (3 cr.) (3 cr ) — The study of human behavior relating experimental data to practical problems, the measurement of ability, sensory and perceptive processes, organic basis of behavior, heredity, 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 basis of behavior, heredity, maturation, learning and thinking, motivation, emotion, personality and social factors in behavior. Lecture 5-4 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 relation 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, 130 or equivalent. Human behavior and learning treated in the context of educational processes. The nature of various mental characteristics such as intelligence, interest, knowledge; their measurement and appraisal and their significance for educational goals. Lecture 5 hours per week.

PSYC 257 LAW ENFORCEMENT PSYCHOLOGY (3 cr.) — Prerequisite PSYC 110 and 116. Intergroup relations and police work. Some facts about racial, religious, and national differences. Prejudice, suggestion, emotion, frustration and aggression in interpersonal and intergroup situations. Types of abnormal behavior likely to be encountered in police work. Lecture 3 hours per week.

PSYC 260 INTRODUCTION TO BEHAVIOR MODIFICATION (3 cr.) — Survey of the history of behaviorism and the principles and applications of behavior modification. Observation of the training and skills employed in treatment programs based on behavior modification methodology. Lecture 3 hours per week.

PSYC 298, 299 — **See General Usage Courses** on page 80.

## PUBLIC SERVICE

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 258 SOCIAL CHANGE SKILLS (3 cr.) — Institutions and why they change or fail to change. The differing strategies for effecting change. Examination of techniques employed by people attempting change. 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.

PBSV 259 SOCIAL LEGISLATION (3 cr.) — An examination of current and prospective programs dealing with legislation relevant to community services. Covers Federal, State, and municipal programs; interrelationships among governmental agencies; authority and responsibility for administration. Lecture 3 hours per week.

## RADIO & TELEVISION

RDTV 51-52-53 ADVANCED SERVICING AND TROUBLESHOOTING TECHNIQUES I-II-III (5 cr.) (7 cr.) (9 cr.) — Prerequisite RDTV 75 or equivalent. Stage-by-stage analysis of Electronic Circuitry used in monochrome and color Television receivers. Emphasis will be placed upon developing the student's ability to isolate and repair faults found in electronic equipment using the television receiver as an instructional tool. Lecture 3-4-5 hours, Laboratory 6-9-12 hours, Total 9-13-17 hours per week.

RDTV 74 RADIO/TV ELECTRONICS I (4 cr.) — A circuits-system concept with emphasis on both vacuum tube and solid state power supplies, voltage amplifiers, including audio frequency, intermediate frequency, radio frequency and video amplifiers, oscillators, converter-mixers and detector, basic receiver systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RDTV 75 RADIO/TV ELECTRONICS II (4 cr.) — Systems analysis and applications of circuits as applied to receivers, phonographs, recorders and other media in the home entertainment and communications field. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RDTV 80 CET LICENSE PREPARATION (3 cr.) — Provides a broad review of the principles relating to home entertainment electronics that may be encountered on the CET (Certified Electronics Technician) exam. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

## RADIOLOGIC TECHNOLOGY

RADL 110 INTRODUCTION TO RADIOLOGY, PROTECTION, PATIENT CARE (3 cr.) — A brief history of the radiologic profession, the preliminary code of ethics and conduct for radiologic students, and the basic fundamentals of radiation protection. The care and handling of the sick and injured patient in the radiology department. The use of contrast media necessary in the investigation of the internal organs. Lecture 3 hours per week.

RADL 114 PRINCIPLES OF EXPOSURE I (4 cr.) — The control and use of radiation to produce safe levels of radioactive energies necessary for the production of radiographs. Includes the developmental process necessary to produce artifact free radiographs. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 115 PRINCIPLES OF EXPOSURE II (4 cr.) — Prerequisite RADL 114. The controlled use of radiation producing sources both natural and man-made includes studies in the employment of exposure relative to pediatric radiology. In addition, the course will include topics dealing with equipment maintenance and minor repairs of x-ray equipment. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 124 POSITIONING I (4 cr.) — Positioning the patients' anatomical structures on the radiograph with emphasis on positioning of the extremities, chest, skull, and gross examination of the abdomen. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 125 POSITIONING II (4 cr.) — Prerequisite RADL 124. Emphasis on radiographic procedures such as inner ear studies, pediatric radiology, intra oral examination and other more complex examinations. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 141 ELEMENTARY CLINICAL PROCEDURES I (2 cr.) — Designed to develop technical skills in fundamental radiographic procedures. Emphasis is placed on manipulation of general equipment and on patient care. Related clinical experience in cooperating health agencies. Clinic 10 hours per week.

RADL 142 ELEMENTARY CLINICAL PROCEDURES II (3 cr.) — Prerequisite RADL 141. Designed to develop technical skills in fundamental radiographic procedures. Emphasis is placed on osseous studies including skull procedures. Related clinical experience in cooperating health agencies. Lecture 1 hour, Clinic 14 hours, Total 15 hours per week.

RADL 143 ELEMENTARY CLINICAL PROCEDURES III (3 cr.) — Prerequisites RADL 141 and 142. Designed to develop technical skills in fundamental radiographic procedures. Emphasis is placed on basic contrast media studies. Related clinical experience in cooperating health agencies. Lecture 1 hour, Clinic 14 hours, Total 15 hours per week.

RADL 190, 199 — **See General Usage Courses** on page 80.

RADL 210 PROTECTION AND PATIENT SAFETY (2 cr.) — Prerequisite RADL 110. An advanced study in the use of protective devices to insure maximum protection for the patient and fellow employees from excessive amounts of radiation and electrical hazards. Lecture 2 hours per week.

RADL 216 APPLIED RADIATION PHYSICS (4 cr.) — Prerequisite RADL 114. the circuiting and electronics of x-ray machines. The structure of radioactive generators and the resultant isotopes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

RADL 226 CORRELATED RADIOGRAPHIC THEORY (3 cr.) — Prerequisites RADL 250 and RADL 210. Intensive correlation of all major radiologic technology subject areas. Study of interrelationships of areas in biology, physics, principles of exposure, radiologic positioning and special procedures. Lecture 3 hours per week.

RADL 241 ADVANCED CLINICAL PROCEDURES I (5 cr.) — Prerequisite RADL 145. Designed to reinforce technical skills in fundamental radiographic procedures and introduce more intricate contrast media studies. Emphasis is placed on technical proficiency, application of radiation protection, nursing skills and exposure principles. Clinic 20 hours per week.

RADL 242 ADVANCED CLINICAL PROCEDURES II (5 cr.) — Prerequisite RADL 241. Concepts of pediatric radiography, advanced technical procedures and imaging modalities. Emphasis is placed on correlation of all preceding radiographic theory toward total responsibility for the patient in the technical area. Clinic 20 hours per week.

RADL 243 ADVANCED CLINICAL PROCEDURES III (5 cr.) — Prerequisite RADL 242. Introduction to application of radiation therapy, nuclear medicine, ultrasound and

radiation physics. Emphasis is placed on perfecting all technical skills and developing an awareness of related areas utilizing ionizing radiation. Clinic 20 hours per week.

RADL 250 RADIOLOGIC SPECIALITIES (3 cr.) — Introduction to the study and treatment of disease as it relates to Nuclear Medicine, Radiation Oncology, Ultrasound, Imaging Modalities and other innovations in the field of Radiology. Special emphasis will be placed on theory, principles of operation and clinical application of these specialties. Lecture 3 hours per week.

RADL 256 SPECIAL PROCEDURES (3 cr.) — Prerequisites RADL 125 and BIOL 155. The use of special radiographic and surgical procedures employed in the more complicated investigation of internal conditions of the human body. Utilization of special and intricate radiographic equipment is included. Lecture 3 hours per week.

RADL 257 SPECIAL RADIOGRAPHIC PROCEDURES (3 cr.) — Prerequisite RADL 256. (Continuation of RADL 256.) Study of specialized methods employed in the more complicated investigation of internal conditions of the human body. Lecture 3 hours per week.

RADL 258 CASE HISTORY EVALUATION (2 cr.) — Prerequisite RADL 256. Orientation to medical records department, clinical history taking and evaluation of general diagnostic procedures relative to radiology. Lecture 2 hours per week.

RADL 259 RADIOGRAPHIC FILM EVALUATION (3 cr.) — Prerequisite RADL 257. Use of a film evaluation procedure to differentiate between diagnostic quality and poor quality films, recognition of anatomic structures, and critique of exposure factors. Lecture 3 hours per week.

RADL 276 RADIOLOGY DEPARTMENTAL ADMINISTRATION (1 cr.) — Purpose of this course is to acquaint the radiology student with the planning and operations of the radiology departments. Particular emphasis will be placed on work flow, call scheduling, inter- and intradepartmental communications and budgetary cost centers. Lecture 1 hour per week.

RADL 290, 298, 299 — **See General Usage Courses** on page 80.

## RESPIRATORY THERAPY

RPTH 117 PATHOLOGY FOR RESPIRATORY THERAPY (4 cr.) — Pathophysiology of medical and surgical diseases with emphasis upon diseases of the respiratory system. The disease process is presented in terms of etiology and symptomatology and the relationship of therapy to the diagnostic, therapeutic and prognostic approach. Lecture 4 hours per week.

RPTH 118 CARDIO-PULMONARY PHYSIOLOGY (3 cr.) — Concentration is on normal anatomy and physiology of the cardiorespiratory system. Focus upon the normal and abnormal function and structure of thorax and contents; basic embryology and neonatology, comparing neonatal states to adult. Lecture 3 hours per week.

RPTH 121 RESPIRATORY CARE SKILLS I (5 cr.) — Introduces the student to the field of respiratory therapy. Emphasis is placed on the theory and skills necessary for the competent administration of medical gases, aerosol and humidity therapy. Past and present contributions to the science and art of respiratory care, the organization and structure of respiratory therapy within the hospital, and the professional role of the respiratory therapy practitioner are also discussed. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

RPTH 122 RESPIRATORY CARE SKILLS II (5 cr.) — Provides the student with the theory and skills required for proficiency in the delivery of those respiratory therapy modalities specific to the maintenance of the airway in both the chronic and/or acute situation. Includes chest phy therapy, IPPB, exercises for deep breathing of the patient, suctioning techniques, tubes and tracks, assessment of ventilation by auscultation of the chest and drug administration by inhalation. Techniques for controlling pathogens in respiratory therapy equipment also are discussed and practiced. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

RPTH 123 RESPIRATORY CARE SKILLS III (5 cr.) — The student will be introduced to controlled, assisted, and intermittent mandatory ventilation, positive end-expiratory pressure and the skills required to assist the therapist and physician in the management of mechanical ventilator therapy. Basics in the competent use of pressure and volume ventilators will be featured. Fundamentals of respiratory monitoring, patient rehabilitation and home care and the team concept in respiratory therapy are also discussed. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

RPTH 138 TECHNIQUES OF CARDIOPULMONARY ASSESSMENT (3 cr.) — Theory of blood gas analysis including techniques, interpretation and clinical applications. Theory of pulmonary function testing, with emphasis on spirometry, including techniques, interpretation and clinical applications. Theory and clinical application of oxygen analyzers. Lecture 3 hours per week.

RPTH 156 INTEGRATED SCIENCES FOR RESPIRATORY THERAPY (5 cr.) — An integration of the major areas of scientific study with application to respiratory therapy theory and procedure. The focus is upon inorganic, organic and physiologic chemistry, medical physics with emphasis upon the physics of gases, fluidics, electricity, and basic laboratory mathematics. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

RPTH 157 PHARMACOLOGY FOR RESPIRATORY THERAPY (3 cr.) — Concentration is on the preparation and safe administration of drugs used in the treatment of respiratory disease focusing upon usage, methods of administration, action, side and toxic effects, contraindications. Introduction to other medicinal types. Antibiotics, analgesics, CNS depressants and stimulants, drugs affecting the autonomic nervous system and cardiovascular system among others. Water, electrolyte, and acid-base balance are also discussed. Lecture 3 hours per week.

RPTH 158 BASIC BUSINESS & LEADERSHIP PRINCIPLES FOR RESPIRATORY THERAPY TECHNICIANS (3 cr.) — Designed to relate general management skills to the supervision and administration of respiratory therapy services. Focus upon basic supervisory and business management techniques, human relations and communication, problem solving and development of leadership skills. Focus also upon theoretical and educational aspect. Roles of the manager, supervisor and educator are discussed and role playing implemented. Lecture 3 hours per week.

## SECRETARIAL SCIENCE

SECR 11 TYPEWRITING I (3 cr.) — The typewriting keyboard and skills essential to obtain employment in an office occupation. Correct typing techniques and practice in production problems such as centering, letters, manuscripts, simple tabulations, and forms. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

SECR 20 BASIC STENOGRAPHIC SKILLS (3 cr.) — Elementary skills fundamental to the effectiveness of shorthand; sensitivity to phonetic sounds; mechanics of spelling and work differentiation with emphasis on the vocabulary of business; word syllabification, division and capitalization; mechanics of punctuation and sentence structure common to transcription; introduction to first lessons of shorthand theory. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 100 SECRETARIAL SKILL REVIEW (3 cr.) — De-

signed to provide the educational secretary with the opportunity to review office skills based on individual needs in typewriting, shorthand, machine transcription, and selected office machines. Lecture 3 hours per week.

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 standard required to meet job requirements in production typing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 114 TYPEWRITING IV (3 cr.) — Production typing of advanced problems involving rough drafts, tabulation, reports, and specialized business forms. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

SECR 121 SHORTHAND I (4 cr.) — Corequisite or prerequisite ENGL 111. Shorthand principles in Gregg Diamond Jubilee Series with emphasis on reading and writing skills, associated with 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 124 SHORTHAND IV (4 cr.) — Prerequisite SECR 123. Speed building in typical business dictation with accuracy in transcription from shorthand notes. Use of Gregg dictation tapes for building speeds. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SECR 136 FILING AND RECORDS MANAGEMENT (3 cr.) — Indexing principles, filing procedures and techniques as applied to filing sytems, 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.) — Concentration on the types of recordkeeping duties performed by secretaries including financial, tax, payroll, personnel and inventory. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 139 CLERICAL PROCEDURES (3 cr.) — Designed to fuse skills acquired in typewriting, recordkeeping, business mathematics, and communication classes in performing clerical activities in the office. Special emphasis is placed on development of skills in the operation of stencil and spirit duplicating machines, selection of duplication process, and a study of type styles, paper, typewriter ribbons. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 157 MACHINE TRANSCRIPTION (3 cr.) — An introduction to machine transcription incorporating good listening techniques, grammar, punctuation, and correct business English. Practice in transcribing machine dictation. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 159 MEDICAL MACHINE TRANSCRIPTION (3 cr.) — Prerequisite SECR 157 and SECR 113. Designed to focus on machine transcription to attain proficiency in the use of medical vocabulary, forms and procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 197, 198 — **See General Usage Courses** on page 80.

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, tabulation, 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 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. 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 (GENERAL) TRANSCRIPTION (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 227 (MEDICAL) TRANSCRIPTION (3 cr.) — Prerequisite SECR 222 or departmental permission. Medical secretary preparation. Development of skill in taking dictation and transcribing material involving medical shorthand forms and phrases. Proficiency in use of medical 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. 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 hour, Total 4 hours per week.

SECR 242 SECRETARIAL PROCEDURES II (3 cr.) — Prequisite SECR 241. Emphasis on the secretary's routine office responsibilities including mail handling, communication services, telephone techniques, and the use of reference materials. Emphasis 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. 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. 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 hours per week.

SECR 274-275 MEDICAL SECRETARIAL PROCEDURES I-II (3 cr.) (3 cr.) — Prerequisite SECR 241. Instruction in medical office procedures, medical office filing and record keeping, extension of medical vocabulary, preparation of medical reports, and special correspondence requirements. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

SECR 297, 298, 299 — **See General Usage Courses** on page 80.

## SOCIOLOGY

SOCI 101-102-103 INTRODUCTORY SOCIOLOGY I-II-III (3 cr.) (3 cr.) (3 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. 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. 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 140 INTRODUCTION TO TRANSACTIONAL ANALYSIS (3 cr.) — Designed to give a conceptional framework for understanding how the socialized personality affects others in social interaction and to introduce the concept of choice in alternative behavior that facilitates communication. Lecture 3 hours per week.

SOCI 166 SCHOOL AND COMMUNITY RELATIONS (3 cr.) — Techniques of working with parents and community groups for the purpose of establishing greater rapport between the school and the community. Emphasis on identifying pressure groups, reorganizing problems of cultural and ethnic groups, and the handling of unusual problems involving the school and the community. Lecture 3 hours per week.

SOCI 177 RELIGION AND SOCIETY (3 cr.) — Prerequisite SOCI 101. Designed to familiarize the student with the changing role of religion in contemporary society and to examine issues raised by such changes. Religious value schemes discussed and examined in the context of our modern world. Lecture 3 hours per week.

SOCI 186-187 SOCIAL PROBLEMS I-II (3 cr.) (3 cr.) — Application of sociological concepts and methods to the analysis of current social problems in the United States including delinquency and crime, mental illness, drug addiction, alcoholism, and sexual behavior; population crisis, race relations, family and community disorganization, poverty, automation, wars and disarmament. Lecture 3 hours per week.

SOCI 198-199 — **See General Usage Courses** on page 80.

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 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 246 CULTURAL ANTHROPOLOGY (3 cr.) — Prerequisite SOCI 101 or 240. 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 crossculturally. Lecture 3 hours per week.

SOCI 250 APPALACHIAN FOLK CULTURE (3 cr.) — Prerequisites SOCI 101, SOCI 246 or instructor's approval. A study of the folk culture of the Appalachian region, with emphasis upon its social history, customs, oral traditions, and material culture. Lecture 3 hours per week.

## SOCIAL SCIENCE

SOSC 180 PROBLEMS OF MAN IN THE MODERN WORLD (3 cr.) — Survey of contemporary social, psychological, political, and economic problems related to industrialization, urbanization, the role of government, national and international tensions. Lecture 3 hours per week.

## SPANISH

SPAN 101-102-103 INTRODUCTORY SPANISH I-II-III (4 cr.) (4 cr.) (4 c.) — The understanding, speaking, reading, and writing of Spanish with emphasis on manipulation of the structure of the language. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SPAN 199 — **See General Usage Courses** on page 80.

SPAN 201-202-203 INTERMEDIATE SPANISH I-II-III (4 cr.) (4 cr.) (4 cr.) — Prerequisite SPAN 103 or successful completion of two years of high school Spanish and departmental permission. Advanced study in the understanding, speaking, reading, and writing of Spanish. Spanish is used in the classroom. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

SPAN 299 — **See General Usage Courses** on page 80.

## SPEECH AND DRAMA

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, light, stage managing, props, promotion, and stage crew. May be repeated for credit. Variable hours.

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 141-142-143 VOICE AND DICTION I-II-III (3 cr.) (3 cr.) (3 cr.) — A study through phonetics of the correct speech sounds, drills in pronunciation, enunciation, and voice usage. Lecture 3 hours per week.

SPDR 198 — **See General Usage Courses** on page 80.

SPDR 296, 299 — **See General Usage Courses** on page 80.

## WELDING

WELD 120 FUNDAMENTALS OF WELDING (2 cr.) — An introduction to the history of oxyacetylene welding and SMAW, the principles of welding, cutting and nomenclature of the equipment and assembly of units. Welding procedures such as practice of puddling, running flat beads, different types of joints in the flat position. Safety procedures in the use of tools and equipment are stressed. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 121 OXYACETYLENE WELDING & CUTTING (2 cr.) — Prerequisite WELD 120 or equivalent. A continuation of study of oxyacetylene welding and cutting. Welding procedures such as fusion and nonfusion processes are included in various positions. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 122 ARC WELDING I (2 cr.) — Prerequisite WELD 121 or equivalent. A study of operation of AC transformers and DC machines. Studies are made of welding heat, polarities, and electrodes for use in joining various alloys by the SMAW process. Safety procedures are emphasized throughout the course. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 123 ARC WELDING II (2 cr.) — Prerequisite WELD 122 or equivalent. A continuation of the study of arc welding. Welding procedures such as practices of different types of joints in various positions, intermittent and build-up. Welds are made and tested so that student may detect his weakness. Safety procedures are emphasized throughout the course. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 124 INERT GAS WELDING I (2 cr.) — Prerequisite WELD 123 or equivalent. An introduction to and practical operations in the use of inert gas shield arc welding. A study is made of equipment operation, safety and practice in flat position. A thorough study of GMAW (MIG) principles are covered. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 125 INERT GAS WELDING II (2 cr.) — Prerequisite WELD 124 or equivalent. A continuation of the study of inert gas arc welders with emphasis placed on GTAW (TIG). A study is made of equipment, set-up, safety and operation. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

WELD 136 WELDING METALLURGY (3 cr.) — The study of steel classifications, heat treatment procedures, properties of ferrous and non-ferrous metals. Techniques and practices of testing welded joints. Destructive, nondestructive, visual, magnetic and fluorescent testing. Lecture 3 hours per week.

WELD 198 — **See General Usage Courses** on page 80.

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Dr. Harold H. Hopper

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## Faculty

ABERNATHY, Cheryl F. — Assistant Professor, Continuing Education
A.B. — Randolph-Macon Woman's College, 1970
M.A. — University of North Carolina, Chapel Hill, 1973
C.A.G.S. — Virginia Polytechnic Institute and State University, 1979

ABRAHAM, Harry — Instructor, Radio & Television
A.A. — Mt. Wachusett Community College, 1973
B.A. — University of Massachusetts, 1976
M.A. — University of Massachusetts, 1979

ADKINS, Gary M. — Instructor, Counselor
B.S. — Virginia Polytechnic Institute & State University, 1972
M.A. — Virginia Polytechnic Institute & State University, 1976

AKERS, Vicki L. — Assistant Instructor, Radiologic Technology
A.A.S. — University of Kentucky, 1975

ARMINIO, Robert L. — Assistant Professor, Architecture
B.Arch — University of Virginia, 1968

BAKER, J. W., Jr. — Assistant Professor, Electrical/Electronics Engineering
A.A.S. — Roanoke Technical Institute, 1965
B.S. — Virginia Polytechnic Institute & State University, 1971
M.S. — Virginia Polytechnic Institute & State University, 1975

BANKS, Helen K. — Instructor, Developmental English
A.B. — Grove City College, 1947
M.S. — Radford College, 1978

BANKS, Robert G. — Associate Professor, Music
B.S. — Indiana University of PA., 1948
M.Ed. — The Pennsylvania State College, 1952
Ed.D. — University of North Carolina at Greensboro, 1976

BASS, James Louis, III — Assistant Professor, Biology
B.S. — University of Tennessee, 1960
M.A. — Vanderbilt University, 1977

BENSON, G. Don — Professor, Physics
B.S. — Texas Western College, 1964
Ph.D. — Vanderbilt University, 1971

BIRMINGHAM, Michael G. — Assistant Professor, Business Management
B.A. — St. Bonaventure University, 1967
M.P.A. — University of Missouri, 1969

BLEASE, Alfred D. — Associate Professor, Physics
B.S. — Brown University, 1961
M.S. — University of Maine, 1965

BLOMBERG, Albert A. — Associate Professor, Automotive Technology
A.S. — Boston University, 1960
B.S. — Northeastern University, 1968
M.S. — Virginia Polytechnic Institute & State University, 1974

BOLT, Patricia H. — Instructor, Secretarial Science
B.S. — Longwood College, 1961
M.A. — Radford College, 1977

BONDS, Ethel — Instructor, English
B.A. — Bennett College, 1971
M.A. — Virginia Polytechnic Institute & State University, 1973

BOWMAN, Betty R. — Professor, Accounting
B.S. — Madison College, 1960
M.Ed. — Virginia Polytechnic Institute & State University, 1969
D.Ed. — Virginia Polytechnic Institute & State University, 1977

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B.S. — Radford College, 1957
M.Ed. — University of Virginia, 1962

BROWN, Martha B. — Associate Professor, Secretarial Science
B.S.S.A. — Women's College, University of North Carolina, 1957
M.A. — East Carolina University, 1961

BRUSATI, John F. — Associate Professor, Sociology
A.B. — Southwestern College, 1962
B.D. — Duke University, 1966
M.S. — Radford College, 1971

CALLIS, Tracy G. — Associate Professor, Data Processing
B.S. — Virginia Polytechnic Institute & State University, 1963
M.S.Ed. — Virginia Polytechnic Institute & State University, 1975
C.A.G.S. — Virginia Polytechnic Institute & State University, 1977

CAPPS, John S. — Instructor, English
B.A. — Virginia Polytechnic Institute & State University, 1974
M.A. — Virginia Polytechnic Institute & State University, 1977

CARR, Guy R. — Assistant Professor, Counselor
B.S. — Virginia Polytechnic Institute, 1942
M.S. — Virginia Polytechnic Institute & State University, 1973

CARTER, Douglas, Jr. — Associate Professor, Speech & Drama
B.A. — University of Arizona, 1966
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CHENG, Fa-Hwa — Professor, Civil Engineering Technology
B.S. — National Taiwan University, 1961
M.S. — Virginia Polytechnic Institute & State University, 1966
Ph.D. — Virginia Polytechnic Institute & State University, 1971

CLOWER, Carol — Instructor, Counselor
B.S. — Virginia Polytechnic Institute & State University, 1976
M.A. — Radford College, 1978
M.S. — Radford College, 1978

CLOWSER, Margaret P. — Assistant Professor, English
B.A. — Virginia Polytechnic Institute & State University, 1970
M.A. — Virginia Polytechnic Institute & State University, 1971

COOK, Patricia F. — Assistant Instructor, Dental Assistant
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CRAIG, Betty C. — Assistant Professor, English
A.B. — Hollins College, 1946
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CRAWFORD, Robert J. — Instructor, Radio/TV Repair
A.A.S. — Virginia Western Community College, 1973

CRITES, Richard W. — Associate Professor, Biology
A.A.S. — Olney Community College, 1965
B.S. — Eastern Illinois University, 1967
M.S. — Eastern Illinois University, 1968

CROCKETT, S. R., Jr. — Assistant Professor, English
B.A. — University of Virginia, 1958
M.S. — Radford College, 1967

CROTTY, A. Eugene — Professor, Business Administration
B.S. — University of Virginia, 1955
M.B.A. — University of Virginia, 1957
C.P.A. — Virginia, 1959

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Certificate — Radiologic Technology, Stevens Clinic Hospital, 1950

DEARBORN, Charles E., Jr. — Assistant Professor, Automotive Technology
Certificate — Wentworth Institute, 1958
B.S. — Boston University, 1965

DEVINS, George V.
A.B. — San Jose State College, 1939
M.S. — Radford College, 1970
Certified — Medical Rehabilitation Coordinator, 1956
Assistant Professor
Physical Education

DICKERSON, Vera Mason
B.A. — Radford College, 1968
M.F.A. — American University, 1970
Assistant Professor
Art

DILLION, William B.
A.A.S. — Sue Bennett College, 1958
B.S. — Eastern Kentucky State University, 1962
Assistant Professor
Accounting

DOSSETT, James W.
B.S. — North Carolina State University, 1970
M. Ed. — North Carolina State University, 1975
Assistant Professor
Civil Engineering Technology

DUELL, Bradley L.
B.S. — Northern Illinois University
M.S. — University of Florida
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Chemistry

DURHAM, Linda E.
A.B. — Elon College, 1968
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Music

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Reading

EADS, Sally A.
B.A. — Agnes Scott College, 1965
M.A. — University of Virginia, 1967
Assistant Professor
History

ELLIOTT, Helen Yvonne
B.S. — Radford College, 1968
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Instructor
English

EMICK, Mark Q., Sr.
A.S. — Virginia Western Community College, 1969
B.S. — Virginia Commonwealth University, 1971
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Instructor
Grants/Continuing Education

EWING, Larry E.
A.B. — Franklin & Marshall, 1965
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FERRIS, Margaret G.
B.A. — Virginia Polytechnic Institute & State University, 1973
M.S. — Radford College, 1974
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FIGHTMASTER, James W.
B.S. — Georgetown College, Kentucky, 1957
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FLOWERS, Bryna H.
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Instructor
Hotel/Restaurant & Institutional Management

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Instructor
Photography

FURBISH, Dale S.
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A.A. — Thomas Nelson Community College, 1972
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Mental Health

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HOUCHINS, William M. — Assistant Professor, Health
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KRASNOW, Rita J. — Assistant Professor, Sociology
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KUNZE, Donald C.
B.S. — Baldwin-Wallace College, 1945
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Associate Professor
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A.B. — Douglass College, Rutgers University, 1962
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LAMANCA, Shirley D.
Certificate — Lewis-Gale School of Radiologic Technology, 1968
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B.S. — Auburn University, 1968
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M.Litt. — University of Pittsburgh, 1956
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B.S. — Roanoke College, 1951
Diploma — Commercial Banking — Rutgers University and Stonier Graduate School of Banking, 1960
M.S. — Radford College, 1970
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MCFARLAND, Rosalind L.
A.B. — Radcliffe College, 1939
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Mathematics

MANCINI, Marsha G.
B.S. — Kansas State University, 1972
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Assistant Professor
Early Childhood Education

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B.S. — University of Missouri, School of Mines, 1951
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Geology

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A.S. — Ferrum College, 1971
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B.A. — Western Kentucky University, 1965
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Continuing Education/
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MOORE, Betty L.
A.B. — Kansas State Teachers College, 1943
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M.A. — Columbia University, 1949
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MURPHY, Marcia J. — Instructor, Learning Laboratory
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MUSGROVE, Charles P. — Associate Professor, Mathematics
B.S. — East Tennessee State University, 1967
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MUSIC, William O., Jr. — Assistant Professor, Physical Education
B.S. — Lynchburg College, 1963
M.S. — University of Tennessee, 1964

NELSON, James E. — Assistant Professor, Mechanical Engineering
B.S. — U.S. Merchant Marine Academy, 1944
B.S. — Roanoke College, 1949
M.S. — Appalachian State University, 1966

NICKERSON, Gwendolyn J. — Associate Professor, Chemistry
B.S. — Roanoke College, 1951
M.Ed. — University of Virginia, 1965

NININGER, Edward C. — Associate Professor, History
B.A. — University of Richmond, 1931
M.A. — University of Richmond, 1932

NORDQUEST, Kim William — Assistant Professor, Chemistry
B.A. — Wittenberg University, 1968
M.A. — Bowling Green State University, 1971
Ph.D. — University of North Carolina, 1976

OWEN, Susan R. — Instructor, Nursing
B.S.N. — University of Virginia, 1970
M.Ed. — University of Virginia, 1975

OWEN, William C. — Associate Professor, Psychology
B.S. — University of Virginia, 1966
M.Ed. — University of Virginia, 1970
Ed.D. — University of Virginia, 1974

PACK, Joel C. — Assistant Professor, Mathematics
A.A. — Mars Hill Junior College, 1959
B.S. — Roanoke College, 1963
M.A. — Wayne State University, 1967

PARRISH, Ramona N. — Instructor, Psychology
B.A. — Wake Forest University, 1975
M.A. — Radford College, 1978

PATTERSON, Dallas M. — Associate Professor, Business Law
B.A. — University of Omaha, 1960
J.D. — William & Mary, 1968

PAYNE, Christine K. — Assistant Professor, Reading
B.S. — Winston-Salem State University, 1946
M.Ed. — Pennsylvania State University, 1956

PAYNE, Elizabeth W. — Professor, Secretarial Science
B.S. — University of North Carolina, 1950
M.S. — University of North Carolina, 1969
C.A.G.S. — Virginia Polytechnic Institute & State University, 1976
Ed.D. — Virginia Polytechnic Institute & State University, 1979

PERDUE, Richard V. — Assistant Professor, Counselor
B.S. — Bluefield State College, 1971
M.S. — Radford College, 1973

PHIPPS, James T. — Instructor, Administration of Justice
A.A. — Kellogg Community College, 1972
B.S. — Eastern Kentucky University, 1974

POOLE, Meredith — Instructor, English
B.A. — Oberlin College, 1968
M.A. — University of Virginia, 1971

PORTER, Thomas E. — Instructor, Photography
A.S. — Southeastern Illinois Jr. College, 1973
B.S. — Southern Illinois University, 1975

POTTER, John F. — Instructor, English and Speech/Drama
B.A. — Hampden-Sydney College, 1969
M.A. — University of Virginia, 1974

POWELL, Iris C. — Assistant Professor, Nursing
B.S.N. — University of Virginia, 1959
M.S. — Radford College, 1971

RAKES, L. Jeffrey — Assistant Instructor, Radiologic Technology
Certificate in Radiologic Technology — Roanoke Memorial Hospital, 1969
A.A.S. — Virginia Western Community College, 1977

RHODES, Elizabeth B. — Instructor, Data Processing
A.S. — Virginia Western Community College, 1972
B.S. — Virginia Commonwealth University, 1974

RICKABAUGH, Linda — Assistant Professor, Nursing
B.S.N. — Columbia University, 1963

SARGENT, James E. — Associate Professor, History/Government
B.S. — Eastern Michigan University, 1964
M.A. — Michigan State University, 1968
Ph.D. — Michigan State University, 1972

SAUNDERS, Jean M. — Associate Professor, Business Management
B.S. — Radford College, 1954
M.Ed. — Virginia Polytechnic Institute & State University, 1967

SCHULTZ, L. David — Assistant Professor, Mathematics
B.A. — University of California, 1967
M.A. — University of Arizona, 1969

SELANDER, Edwin V. — Associate Professor, Mathematics
B.S. — Virginia Polytechnic Institute & State University, 1955
M.S. — Virginia Polytechnic Institute & State University, 1967

SELANDER, Mary V. — Assistant Professor, Mathematics
B.S. — Virginia Polytechnic Institute & State University, 1955
M.A. — Penn State University, 1959

SHEPARD, David E. — Associate Professor, Business Management
B.S. — Virginia Commonwealth University, 1958
M.B.A. — University of Virginia, 1962

SHEPPARD, Vernon M., Jr. — Associate Professor, Economics
B.S. — Virginia Polytechnic Institute, 1954
M.S. — Virginia Polytechnic Institute, 1960

SIMMONS, Patricia P. — Instructor, Mathematics
B.A. — Hollins College, 1951
M.S. — Radford College, 1971

SLAUGHTER, Michael L. — Instructor, Biology
A.S. — Virginia Western Community College, 1972
B.S. — Eastern Illinois University, 1975
M.S. — Eastern Illinois University, 1977

SMITH, Hugh P. — Professor, Geology
A.A. — San Francisco Junior College, 1940
B.A. — University of California, 1948
M.A. — University of California, 1950
Ph.D. — University of Utah, 1969

SMITH, Richard E. — Associate Professor, Supervising Dentist
B.S. — Roanoke College, 1957
D.D.S. — Medical College of Virginia, 1965

STARNES, John M. — Associate Professor, Mathematics
B.S. — East Tennessee State University, 1960
M.S. — East Tennessee State University, 1968

STEINHARDT, Mary H. — Assistant Professor, Early Childhood Education
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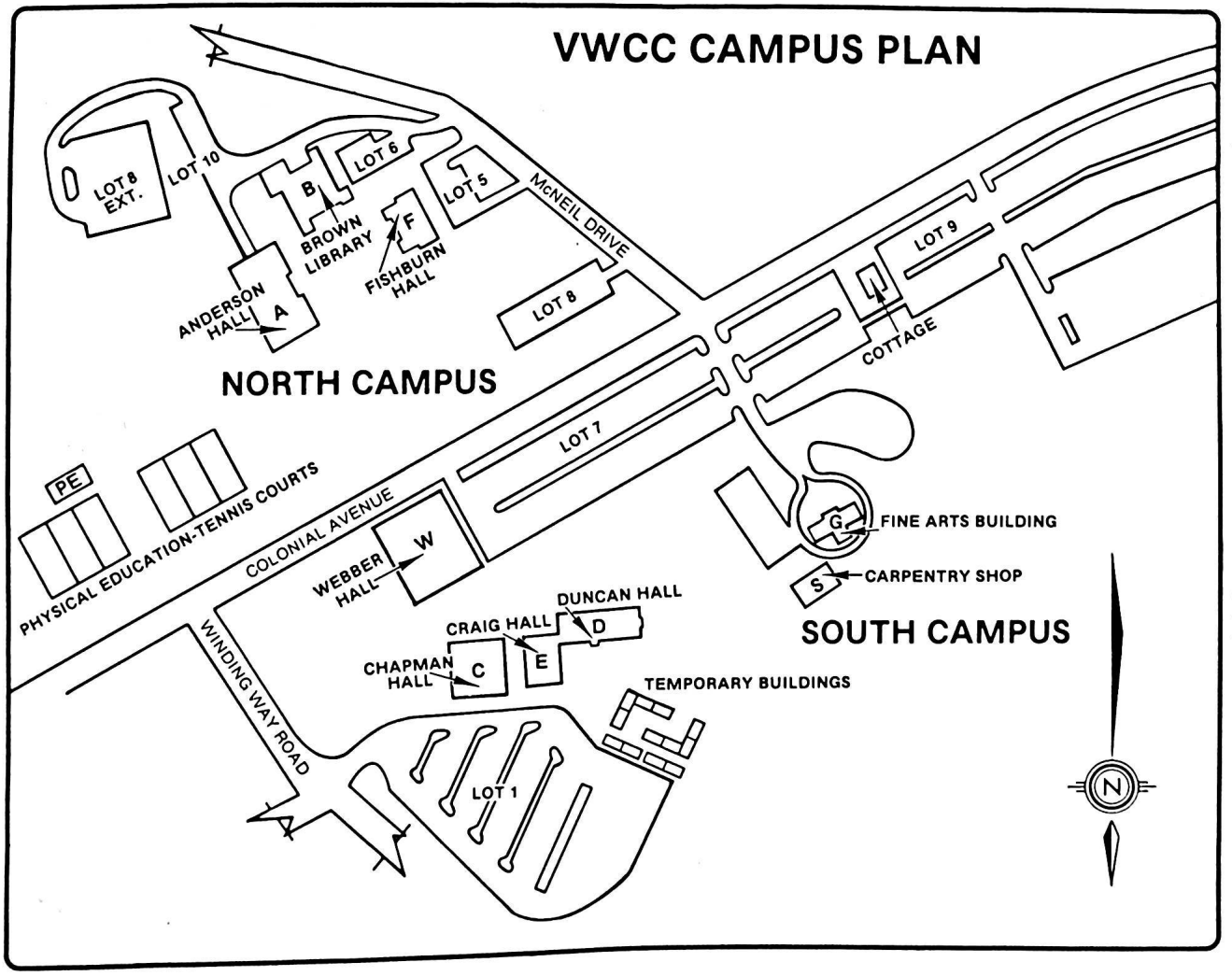
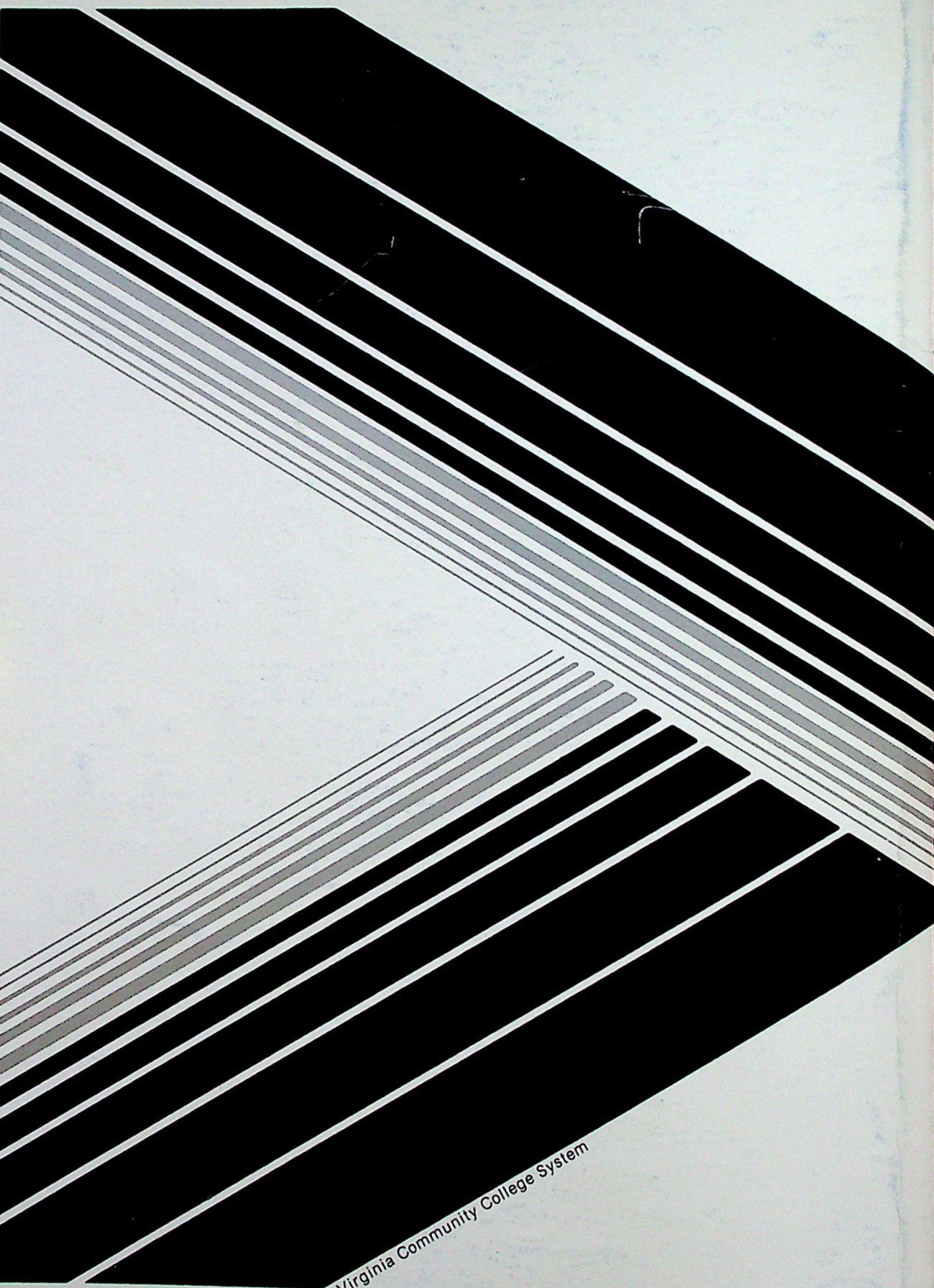



**BUILDINGS:**

| | |
|---|---|
| A | ANDERSON HALL |
| B | BROWN LIBRARY |
| C | CHAPMAN HALL |
| D | DUNCAN HALL |
| E | CRAIG HALL |
| F | FISHBURN HALL |
| G | FINE ARTS BUILDING |
| W | WEBBER HALL |
| PE | PHYSICAL EDUCATION |
| T | TEMPORARY BUILDINGS |
| S | CARPENTRY SHOP |

**PARKING LOTS:**

| | |
|---|---|
| 1 | STUDENTS & FACULTY |
| 5 | RESERVED & VISITORS |
| 6 | RESERVED |
| 7 | STUDENTS & FACULTY |
| 8 | FACULTY |
| 8 [Extension] | FACULTY & STAFF |
| 9 | STUDENTS |
| 10 | SPECIAL PERMIT |


Virginia Community College System