

**Virginia  
Western  
Community  
College**

**Catalog 1982-83**

# CURRICULUMS

ACCOUNTING .....	43
ADMINISTRATION OF JUSTICE.....	57
AIR CONDITIONING AND REFRIGERATION .....	61
ARCHITECTURAL DRAFTING .....	60
ARCHITECTURAL TECHNOLOGY .....	49
AUTOMOTIVE ANALYSIS AND REPAIR .....	59
AUTOMOTIVE MECHANICS.....	61
AUTOMOTIVE TECHNOLOGY .....	56
BUILDING CONSTRUCTION SUPERVISION .....	62
BUSINESS ADMINISTRATION .....	38
CHILD DEVELOPMENT AIDE .....	63
CIVIL ENGINEERING TECHNOLOGY .....	49
CLERK TYPIST .....	63
COMMERCIAL ART .....	42
DATA PROCESSING TECHNOLOGY .....	43
DENTAL ASSISTANT .....	64
DENTAL HYGIENE.....	52
DEVELOPMENTAL STUDIES PROGRAM.....	13
EARLY CHILDHOOD DEVELOPMENT .....	57
EDUCATION .....	38
EDUCATIONAL ASSISTANT .....	65
ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY .....	50
ELECTRONIC SERVICING .....	60
ENGINEERING .....	39
ENGINEERING/TECHNICAL ASSISTANT .....	66
FINE ARTS .....	36
FOOD SERVICE MANAGEMENT.....	66
GENERAL STUDIES .....	39
HORTICULTURE TECHNOLOGY .....	41
HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT.....	44
HUMAN SERVICES .....	53
LIBERAL ARTS .....	37
MANAGEMENT .....	45
MECHANICAL ENGINEERING TECHNOLOGY .....	51
MEDICAL TRANSCRIPTIONIST .....	66
NURSING .....	54
RADIO AND TELEVISION PRODUCTION TECHNOLOGY .....	59
RADIOLOGIC TECHNOLOGY .....	55
SCIENCE .....	40
SECRETARIAL SCIENCE.....	47
STENOGRAPHIC .....	67
WELDING .....	68

# VIRGINIA WESTERN COMMUNITY COLLEGE



## CATALOG

**1982-83**

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.

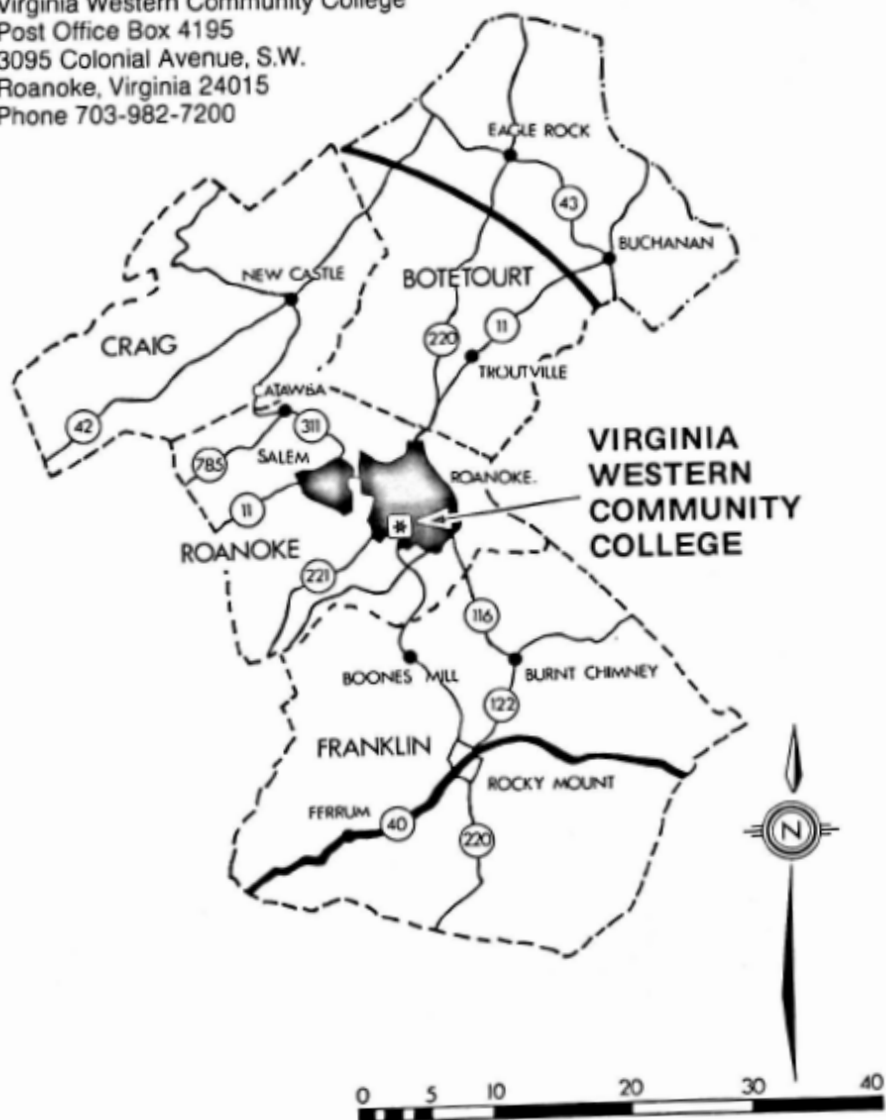
**3095 Colonial Avenue, S.W.  
Roanoke, Virginia 24015**

<b>Admissions</b>	<b>(703) 982-7231</b>
<b>Business Office</b>	<b>(703) 982-7201</b>
<b>Continuing Education</b>	<b>(703) 982-7281</b>
<b>Counseling</b>	<b>(703) 982-7237</b>

It is the policy of the Virginia Community College System and Virginia Western Community College to maintain and promote equal employment and educational opportunities without regard to race, color, sex or age (except where sex or age is a bona fide occupational qualification), religion, handicap, national origin, or other non-merit factors.

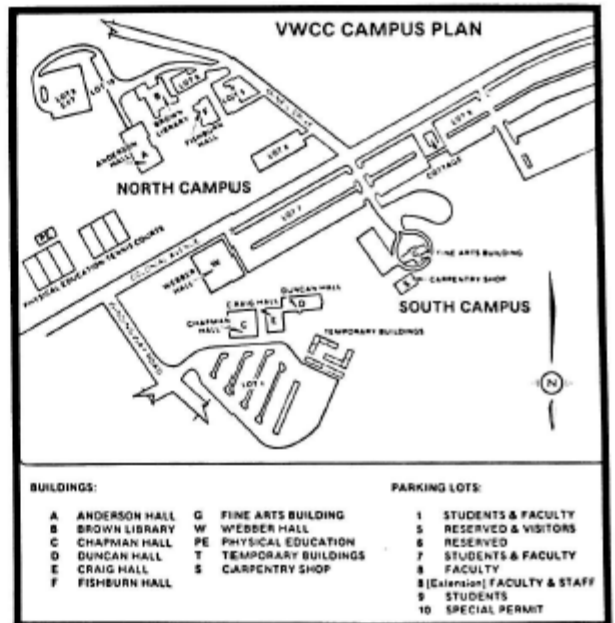
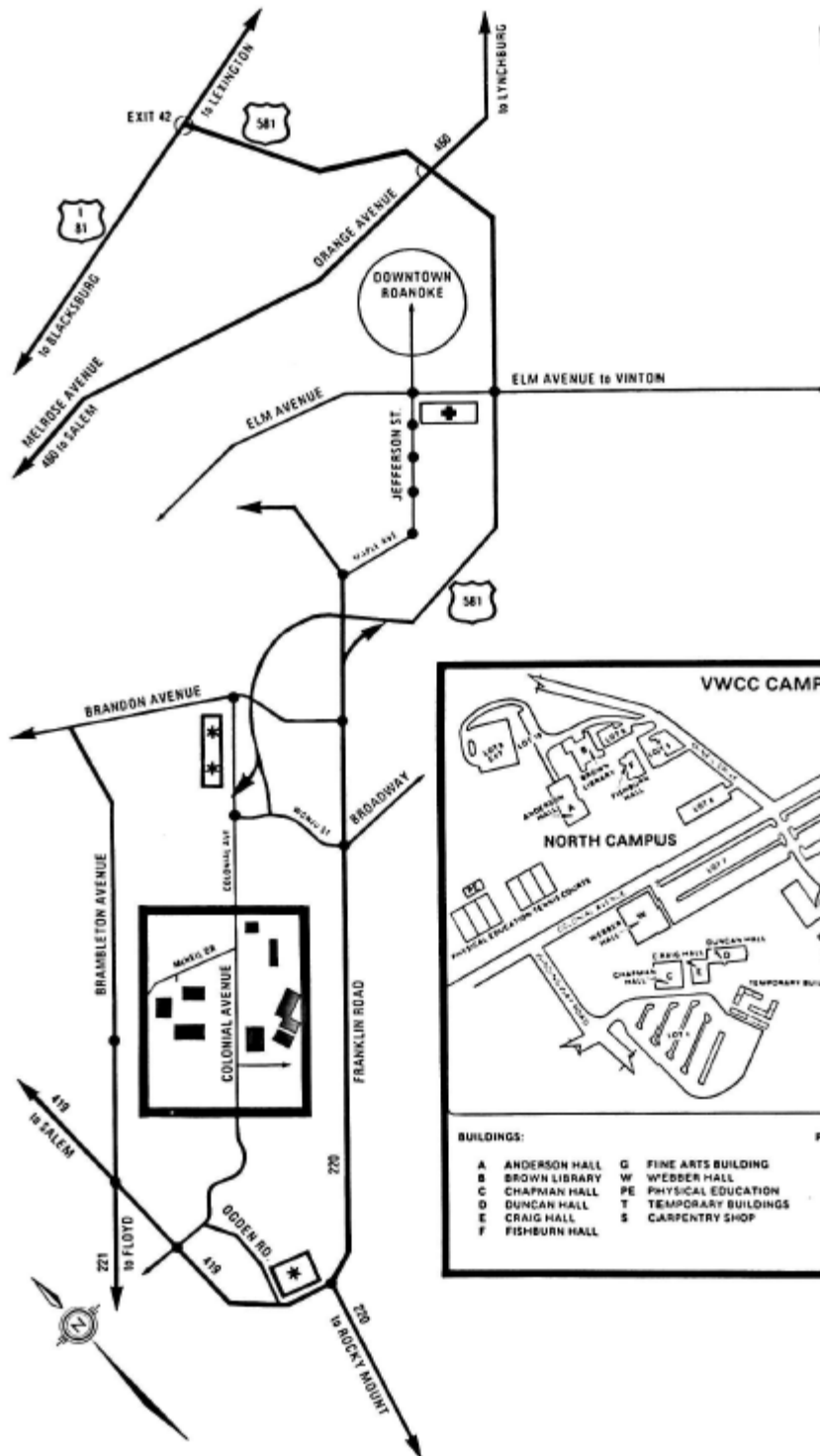
# Virginia Western Community College Area

Dr. Charles L. Downs, 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



# CONTENTS

Calendar .....	8	Associate Degree and Diploma Requirements ..	18
<b>PART I — GENERAL INFORMATION.....</b>	<b>9</b>	Certificate Requirements .....	18
The College .....	9	Second Degree, Diploma, or Certificate .....	18
Location and Facilities .....	9	Academic Regulations .....	18
History .....	9	Attendance .....	18
Purpose .....	9	Change of Registration .....	19
Occupational-Technical Education .....	10	Transfer Between Curriculums .....	19
University Parallel-College Transfer Education .....	10	Academic Standing .....	19
General Education .....	10	Academic Warning .....	19
Continuing Adult Education .....	10	Academic Probation .....	19
Cooperative Education Programs .....	10	Academic Suspension .....	19
Developmental Programs .....	10	Academic Dismissal .....	20
Specialized Regional and Community Services .....	10	Self-Advising .....	20
Special Training Programs .....	10	Normal Academic Load .....	20
Educational Foundation .....	10	Repeating a Course .....	20
Recognition .....	10	Examinations .....	20
		Academic Honors .....	20
		Academic Integrity .....	20
<b>PART II — ADMINISTRATIVE</b>		<b>PART III — STUDENT SERVICES/</b>	
<b>INFORMATION .....</b>	<b>11</b>	<b>HANDBOOK .....</b>	<b>21</b>
Admission Requirements .....	11	Student Development Services .....	21
General Admission to the College .....	11	Career Life Development Center .....	21
Services for the Handicapped .....	11	Testing .....	22
Student Permanent Record File .....	11	CLEP .....	22
Admission to Specific Curriculums .....	13	Orientation .....	22
International Students—Admission		Financial Aid .....	22
Requirements .....	13	Application Procedure .....	22
Admission of Senior Citizens .....	13	Types of Financial Assistance .....	23
Developmental Studies Program .....	13	Federal .....	23
Sample Developmental Studies Program .....	14	Commonwealth of Virginia .....	23
Residence Requirements .....	14	Private .....	23
Students Transferring from Other Colleges .....	14	Institutional .....	23
Students Transferring within the		Off-Campus Employment .....	23
Virginia Community College System .....	14	Cooperative Education .....	23
Advanced Placement .....	14	Placement .....	24
Students Applying for Credit or Waiver of		Veterans — Office of Veterans' Affairs .....	24
Requirements .....	14	Special Services .....	25
Auditing a Course .....	15	Services for the Handicapped .....	25
Credit by Examination .....	15	Customized Learning Packages .....	25
Classification of Students .....	15	Learning Laboratory .....	25
Regular Student .....	15	Library .....	25
Special Student .....	15	Math Center .....	26
Full-time Student .....	15	Writing Center .....	26
Part-time Student .....	15	Evening and Weekend College .....	27
Freshman .....	15	Field Trips .....	27
Sophomore .....	15	Food Services .....	27
Expenses .....	15	Lost and Found .....	27
Application Fee .....	15	Student Health Services .....	27
Tuition .....	15	Bulletin Boards .....	27
Transcripts .....	15	Student Activities .....	27
Graduation Fee .....	16	College Colors .....	28
Other Fees and Charges .....	16	College Rings .....	28
Parking .....	16	Emergency Information .....	28
Books and Materials .....	16	Smoking .....	28
Rules for Bookstore Refunds .....	16	Student Conduct .....	28
Tuition Refunds .....	16	Suggestions, Grievances, Channels of	
Student Accounts .....	17	Communications .....	29
Credits .....	17	Statement of Student Rights, Responsibilities	
Grading System .....	17	and Conduct .....	29
Grade Reports .....	17	<b>PART IV — CURRICULUMS OF</b>	
Degrees, Diplomas, and Certificates .....	17	<b>STUDY .....</b>	<b>35</b>
Graduation Requirements .....	18	State and Regional Specialized Curriculums .....	35

Minimum Requirements for Associate Degrees . . . .	36
Curriculum Outlines . . . . .	36

**PART V — DESCRIPTIONS OF COURSES . . . . . 69**

Continuing Education and Community Services Programs . . . . .	69
General Course Information . . . . .	69
Course Numbers . . . . .	69
Course Credits . . . . .	69
Course Hours . . . . .	69
Course Prerequisites . . . . .	69
Accounting . . . . .	69
Administration of Justice . . . . .	70
Agriculture . . . . .	71
Air Conditioning and Refrigeration . . . . .	71
Architectural Technology . . . . .	72
Arts . . . . .	72
Automotive Technology . . . . .	73
Biology . . . . .	74
Broadcasting . . . . .	75
Building . . . . .	76
Business Management and Administration . . . . .	77
Chemistry . . . . .	78
Civil Engineering Technology . . . . .	79
Data Processing . . . . .	80
Dental . . . . .	80
Drafting . . . . .	82
Economics . . . . .	82
Education . . . . .	83
Electricity and Electronics . . . . .	84
Engineering . . . . .	85
English . . . . .	86
French . . . . .	86
General . . . . .	87
Geography . . . . .	87
Geology . . . . .	88
German . . . . .	88
Government . . . . .	88
Health . . . . .	88
History . . . . .	88

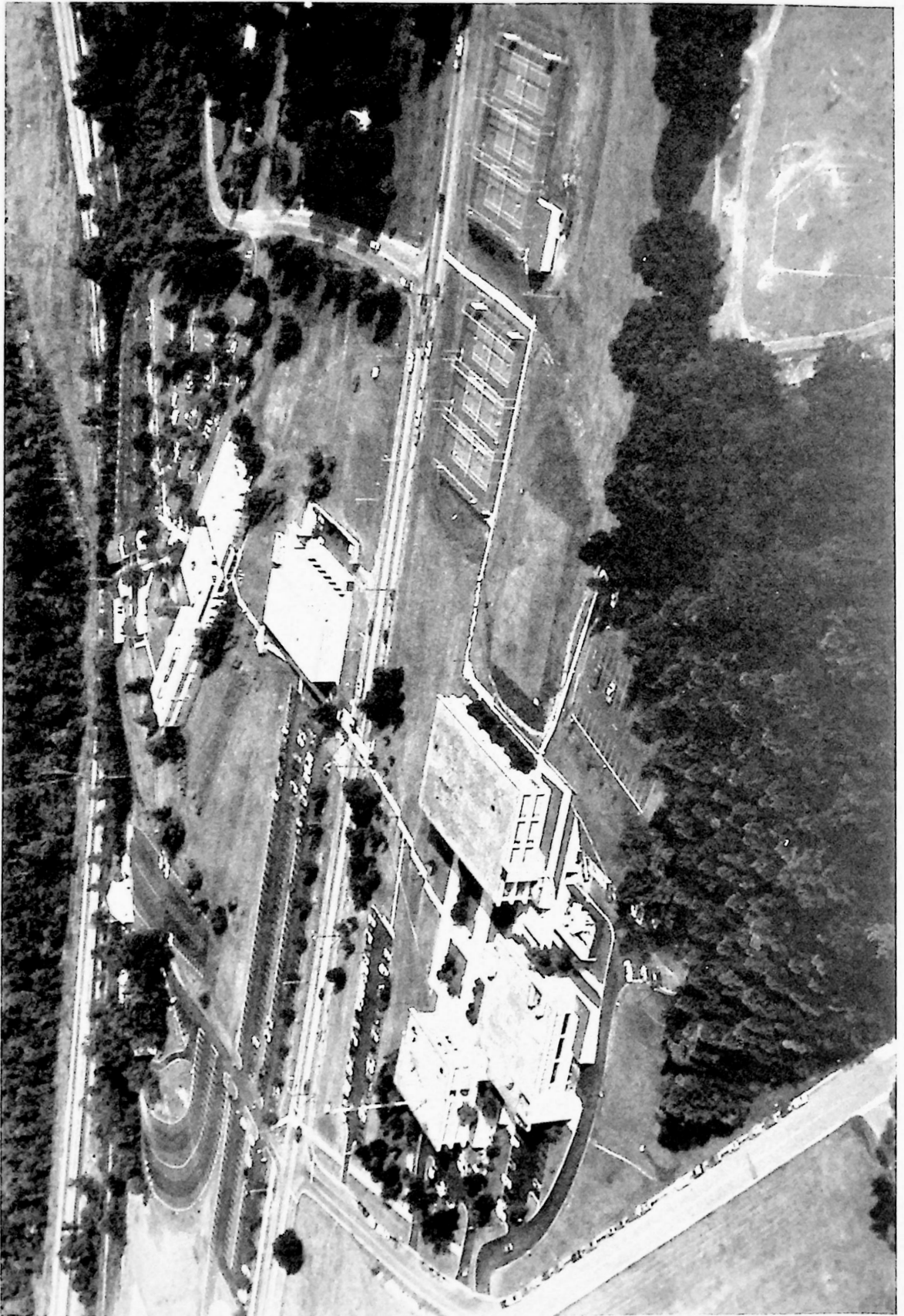
Horticulture . . . . .	89
Hotel, Restaurant and Institutional Management . .	90
Human Services . . . . .	91
Humanities . . . . .	91
Industrial Engineering Technology . . . . .	92
Legal Administration . . . . .	92
Marketing . . . . .	92
Mathematics . . . . .	94
Mechanical Engineering Technology . . . . .	95
Medical Records . . . . .	95
Mental Health . . . . .	95
Music . . . . .	95
Natural Science . . . . .	96
Nursing . . . . .	96
Philosophy and Religion . . . . .	97
Photography . . . . .	97
Physical Education and Recreation . . . . .	97
Physics . . . . .	98
Psychology . . . . .	98
Public Service . . . . .	99
Radio and Television . . . . .	99
Radiologic Technology . . . . .	99
Secretarial Science . . . . .	100
Social Science . . . . .	102
Sociology . . . . .	102
Spanish . . . . .	102
Speech and Drama . . . . .	102
Welding . . . . .	103

**PART VI — STATE AND LOCAL ORGANIZATION . . . . . 104**

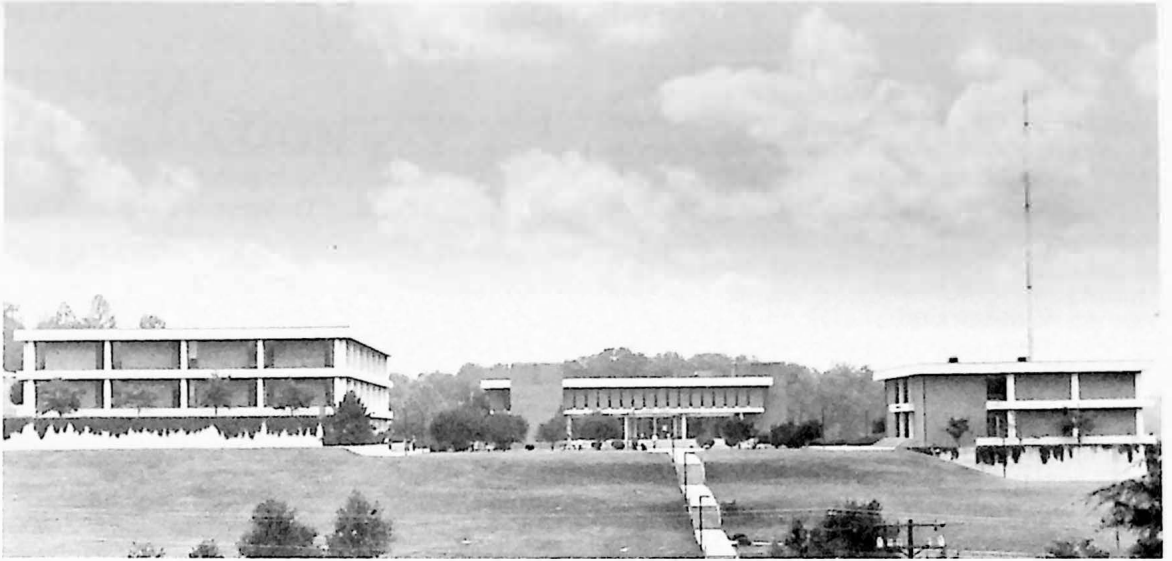
State Board for Community Colleges . . . . .	104
Virginia Community College System . . . . .	104
Virginia Western Community College Board . . . . .	104
Administrative Offices . . . . .	105
Faculty . . . . .	106

**PART VII — INDEX . . . . . 114**

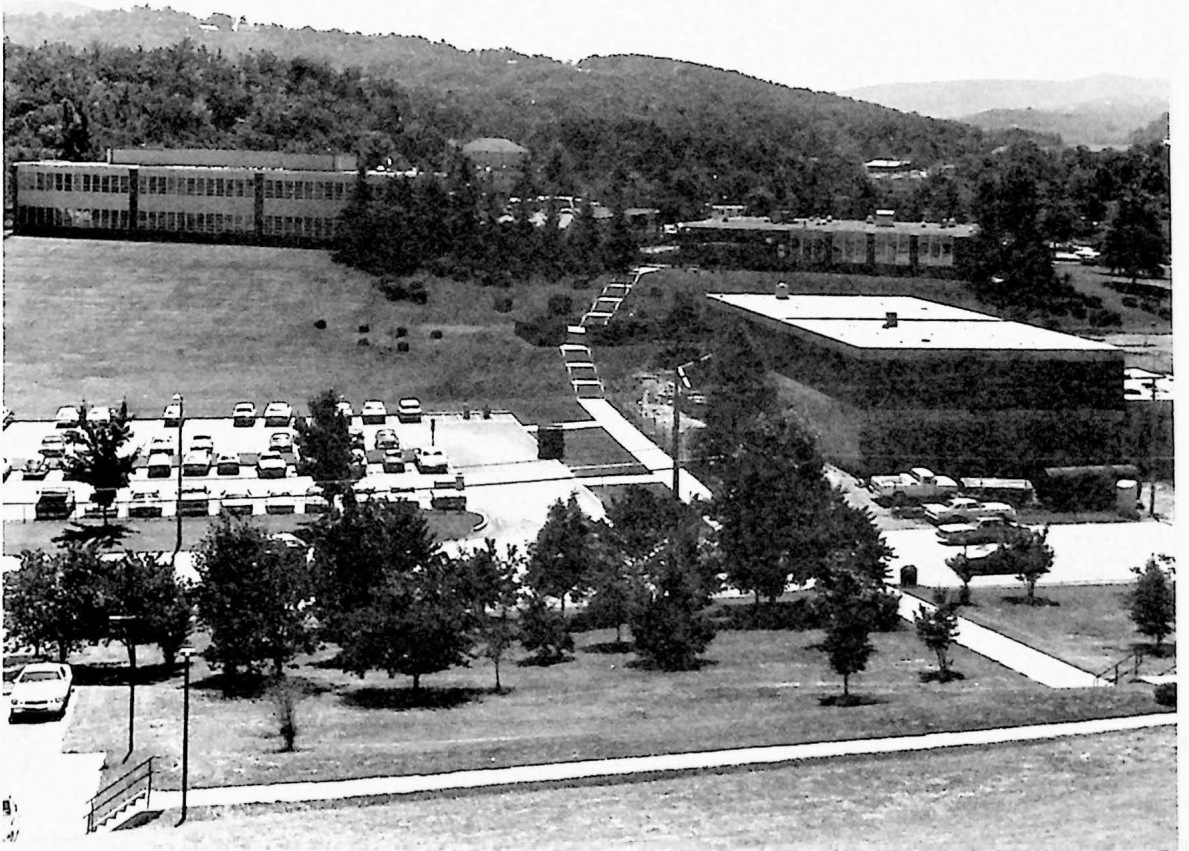
**PART VIII — INFORMATION DIRECTORY . . . . . 116**







NORTH CAMPUS



SOUTH CAMPUS

# CALENDAR

## Fall 1982

Classes Begin ..... September 20  
 Thanksgiving Recess ..... November 22-27  
 Classes End ..... December 4  
 Final Exams..... December 6-11

## Winter 1983

Classes Begin ..... January 3  
 Classes End ..... March 12  
 Final Exams..... March 14-19

## Spring 1983

Classes Begin ..... March 28  
 Classes End ..... June 4  
 Final Exams..... June 6-11  
 Graduation ..... June 15

# 1982

### SEPTEMBER

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### NOVEMBER

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## Part I

# 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 September 26, 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 Human Services, Nursing, and Radiologic Technology Programs, in addition to general classrooms. The Fine Arts Center is occupied by the Music, Fine Arts, and Hotel/Restaurant/Institutional Management departments. Webber Hall houses the Bookstore, Automotive Technology, and Welding Programs, and laboratories for Architectural Drafting and Engineering Graphics. In addition, three temporary buildings provide space for the Child Development Education Program, Humanities Division, Writing Center, Student Special Services, and for faculty offices.

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 and the Office of Continuing Education. Opposite is the Science Building, Anderson Hall, containing a Dental Laboratory, Reading Laboratory, Math Center, classrooms, and faculty offices. In the center is Brown Library with a Learning Laboratory, Language Laboratory, Auditorium, and Financial Aid Office on the second floor. The Admissions and Records Offices, Counseling Center, Career Life Development Center, Office of Veterans' Affairs, Placement Office, and the Information Office are located on the ground floor.

The College's six-court lighted tennis facility is located on the North Campus.

## 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 generally extending 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 curriculums are planned primarily to meet the needs for workers in the region being served by the College.
2. **University Parallel-College Transfer Education.** The university parallel-college transfer program includes college freshmen 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. **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.

## EDUCATIONAL FOUNDATION

All gifts, grants, or donations; tangible or intangible; cash, securities, or real property received by and specifically designated for Virginia Western Community College by the giver, grantor, or donator, are deposited in the College's non-profit and charitable Educational Foundation, Inc.

## 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 federally funded programs.

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

## Part II

# ADMINISTRATIVE INFORMATION

### 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 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 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.

Each student who wants to enter a curriculum of study will be required to meet with a college counselor prior to admission to (a) discuss educational interests, (b) determine what 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 non-credit community service programs should contact the College's Office of Continuing Education for additional information.

### SERVICES FOR THE HANDICAPPED

Persons with a physical disability who are considering applying for admission on a full- or part-time basis should schedule an



DR. CHARLES L. DOWNS  
PRESIDENT

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

The Office of Admissions and Records at Virginia Western Community College maintains files for each student attending, or who has attended, the College. These files contain the following:

1. High school transcripts and GED records
2. Other college transcripts and evaluations
3. Application and fee receipts
4. VWCC permanent record card
5. Correspondence with student
6. Grade change forms
7. Requests for Transcripts
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 Counseling Services originate and maintain student records. College personnel 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 student's permanent record card is microfilmed and all other records may be destroyed after a student has not been in attendance for several quarters. A student can review his file by making a request to the Coordinator 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.



FISHBURN HALL  
ADMINISTRATION BUILDING

- 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 should request action as soon as possible. A record becomes permanent after three years.

Students may obtain copies of information from their file by paying a copying charge of 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 Office of Counseling Services. 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.

#### **ADMISSION OF INTERNATIONAL STUDENTS**

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—administered by the College Entrance Examination Board, Princeton, N.J.). A combined score of 500 on the TOEFL is the minimum required to be considered for admission.

If these preliminary scores are acceptable, the applicant must also demonstrate proficiency both in speaking and understanding the English language. If a personal interview at the College 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.

All current policies of the U.S. Immigration Department state that international students must show proof of how financial responsibility will be met.

#### **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.

#### **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" may be required to 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 not be allowed to repeat the course, nor attempt a higher level course in the discipline during the two subsequent quarters. Exceptions require the approval of the appro-

prate division chairman.

### Sample Developmental Studies Program

COURSE NUMBER	COURSE TITLE	CREDITS
ENGL 01	Verbal Studies	5
ENGL 08	Reading Improvement	5
MATH 01/02	Developmental Math or other Math	
	Sequence	3
GENL 100	Orientation	1
	and/or	
GENL 198	Study Skills	1
	and/or	
GENL 298	Personal/Career Development	2
		14

Some students need remedial help before enrolling in the college mathematics courses required in their curriculum of study. Students needing assistance in arithmetic and business mathematics will be placed in Math 01 or Math 02. Students with a deficiency in highschool algebra will be placed in Math 06 or 07. Grades earned in developmental mathematics and English courses 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.

### 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 pre-

vious 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 Office of Counseling Services 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. His quality points for the courses previously taken are utilized in the computation of his grade-point average (GPA).

### ADVANCED PLACEMENT

Many area secondary schools offer honor courses to students through the Advanced Placement Program, giving them the opportunity to complete college level work while attending high school.

Virginia Western Community College grants college course credits to student who have scored 3 or higher on one or more of the Advanced Placement examinations in the following subject areas:

- Biology
- Chemistry
- English
- Mathematics
- Physics

Students who are eligible for advanced placement should contact the Office of Admissions and Records.

### 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

To audit a course, students must obtain permission from the appropriate division chairman prior to registering for the course during the late registration period only.

Audited courses carry no credit and do not count as a part of the student's course load. Students wishing to change status in a course from audit to credit or credit to audit must do within the add/drop period for the session. The procedure is in the quarterly supplement to the College Catalog: Schedule of Classes.

### 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 the examination is taken.

### 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	\$128.00
Out-of-State Resident	\$428.00

Students not registering for all courses at one time may have to pay additional tuition.

Part-time Student (less than 12 credits)	
Virginia Resident	\$10.75 per credit
Out-of-State Resident	\$36.00 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, 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 sent by the College and bears the college seal; an unofficial transcript, without the seal, is given to the student with "Delivered to Student" stamped on it.

### **Graduation Fee**

A graduation fee of \$10.00 is charged each graduating student per graduation ceremony regardless of the number of degrees, diplomas, or certificates received.

### **Other Fees and Charges**

There may be special fees for Physical Education, Credit by Examination, 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. City of Roanoke traffic tickets will be issued for violation of college parking regulations. Repeated violations will result in disciplinary action which may include removal of campus parking privileges. Where circumstances warrant, the College may have a vehicle removed at the owner's expense. Vehicles obstructing traffic, blocking other vehicles, or unauthorized vehicles parked in "Reserved" or "Handicapped" areas may be towed at the owners' expense.

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.

### **Parking Fees**

Three (\$3) per vehicle for student yearly permit (fall, winter, and spring quarters); \$2 per vehicle for winter and spring quarters; \$1 per vehicle for spring and summer quarters; \$1 per vehicle per quarter for Continuing Education noncredit students. There is no charge for replacement permits if the old parking decal is submitted to the Business Office. These fees are nonrefundable.

### **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-\$100 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 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 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 which will be mailed to the student.

Refunds will be made only if the course is cancelled, or 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. 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 add/drop period 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 immediately*. 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).

- 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 non-credit courses.
- U Unsatisfactory — No credit. Student is not making satisfactory progress. Applies only to Developmental Studies and non-credit 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 add/drop period the registration will be deleted. After the add/drop period and 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 Division Chairman is required to audit a course.

NOTE: Deviations from the stated grading policies may be made with the approval of the Dean of Instruction 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.

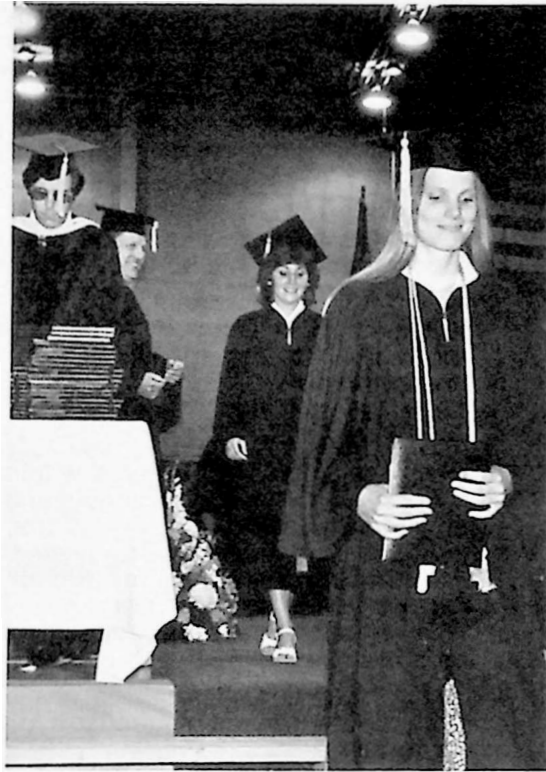
### Grade Reports

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 record card. Errors must be reported to the Records Office within six weeks of the end of the quarter in which the grade was given. A change of grade(s), even under mitigating circumstances, cannot take place after the quarter following the issuance of the grade.

### 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

All students may apply for their degree, diploma, or certificate during the registration period of their last quarter in attendance. The degree, diploma, or certificate will be awarded if the student is certified for graduation, has paid the graduation fee and met all other requirements. All eligible students may participate in the formal commencement exercise in June. Notification of intent must be filed in the Admissions Office by May 1 in order to procure the appropriate cap and gown and to allow the College time

to make the necessary arrangements.

## 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

### Attendance

Instructors will provide students with a statement of their attendance policy during the first class meeting of each quarter.

When absence from a class or laboratory becomes necessary, it is the responsibility

of the student to inform the instructor prior to the absence.

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.

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. If the student is doing "A/B" work at that time, the prerogative is then with the instructor. Students who are dropped from a class because of a lack of attendance will be assigned a "W" grade if the drop is made during the first six weeks of the quarter. After that time, a grade of "F" will be assigned in non-developmental courses and a grade of "R" or "U" in developmental courses. No-shows, in all cases, will be awarded a "W."

### **Change of Registration**

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" automatically 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:**

Students may add classes by following the procedures published in the quarterly supplement to the College Catalog: Schedule of Classes.

#### **3. Withdrawal from the College:**

A student who wishes to withdraw from the College should contact a counselor to determine the appropriate procedure.

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.

### **Transfer Between Curriculums**

No changes in program or curriculum can be made without the approval of the Coordinator of Counseling Services and the instructional division to which transfer is requested.

## **ACADEMIC STANDING**

The College keeps students informed of

their academic standing. A statement will be placed on their Grade Report if they are academically deficient and when they have regained acceptable academic standing. The College will assist students to increase their 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. (Note: The College reserves the right to place other students on probation where circumstances warrant.)

### **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. (Note: The College reserves the right to suspend other students where circumstances warrant.)

### **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, are in a program of study and 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 cannot be assigned to self-advise.
2. Any nondevelopmental student can be placed on self-advising with the approval of the Office of Counseling Services.
3. Each self-advising student will be assigned an academic advisor who will provide assistance when 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 the 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 Counseling Services during the

quarter following being placed on "academic probation."

- c. Once removed from self-advising, the status can be reinstated with approval of the Office of Counseling Services or attainment of minimal standards for self-advising.

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

### **NORMAL ACADEMIC LOAD**

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 Office of Counseling Services.

### **REPEATING A COURSE**

If a course is repeated once or more 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 Dean of Instruction 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.

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

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

### **ACADEMIC INTEGRITY**

Academic integrity is of the utmost importance to the College. Information on academic dishonesty is given on page 33 of this catalog.

## 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 each student's well-being and future success be permitted to assist the student in reaching a proper decision. Sessions with counselors are matters of strict confidence.

### CAREER LIFE DEVELOPMENT CENTER

The Career Life Development Center assists 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 skills guides and various other career developmental resources.

A computerized occupational and educational information system 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 schools is also accessible through the GIS.

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 students wish to understand themselves better in terms of 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 science, 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 Counseling Services.

### ORIENTATION

The orientation program acquaints 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) 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 post-secondary 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 2861, Princeton, New Jersey 08541.
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 a statement of educational purpose, confirming that all financial assistance will be used for legitimate educational purposes, and that, otherwise, appropriate repayment will be provided. This statement may be signed 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. Pell Grant Program
2. College Work-Study Program
3. Supplemental Educational Opportunity Grant Program
4. Nursing Loan Program
5. Nursing Scholarship Program
6. Guaranteed Student Loan Program
7. Veterans Administration Educational Benefits Program
8. 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 curriculums (electrical engineering technology, nursing, 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.

The cooperative education student has the advantage of gaining early insights into his or her chosen vocation through supervised and career related employment in business, industry, a profession or the government. In addition, cooperative education students acquire an excellent reference to add to their resumes when 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 an academic average of at least 2.0 for two quarters, enrollment in a curriculum that has one or more elective courses for substitution of co-op academic credit and approval by the curriculum division chairman. 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 respective division office a job description, a self-appraisal of the job experience, a schedule of hours worked and a performance appraisal by the supervisor.

Personnel in the division office identify job placement openings and approve the student's job for training in relation to the student's major. They also visit each job site or contact the supervisor during the academic quarter. 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  
 Human Services  
 Management/Banking and Finance/  
 Real Estate/Traffic and Transportation  
 Mental Health Technology  
 Merchandising/Marketing  
 Radio and Television Technology  
 Secretarial Science — Legal/Medical/  
 Executive

Other curriculums may be added by special arrangements with the Division Chairman.

All students interested in the cooperative education program are invited to visit their respective division office 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 part-time employment while in college and permanent placement in their chosen field upon graduation. 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 arranging for on-campus interviews.

The Student Placement Office coordinates its efforts with the division offices in order to obtain related job placement opportunities

for students through Cooperative Education. The Placement Office is in continuous contact with the Virginia Employment Service, industries, businesses, professions, and governments to develop the latest job availability information. Numerous full- and part-time temporary jobs, located in the course of this placement research, are in turn made available to students who are seeking employment while attending college.

The Student Placement Office, in cooperation with the Career Life Development Center, attempts to match available jobs with students' 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 Brown Library 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

It is strongly recommended 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.

## 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 17 of the College Catalog, applies to students enrolled in Learning Packages courses.

## LEARNING LABORATORY

Audiovisual materials covering a wide range of topics and employing a variety of formats are available for students and community members using the Learning Laboratory. For students, these materials are designed to enrich, reinforce, and supplement classroom instruction. Community residents are offered the opportunity to explore areas of personal interest, improve present skills or develop new ones.

Facilities are available for individual study or group presentations.

Instructors consult with all individuals and groups on choosing materials to meet their needs. In addition, they administer and grade tests, provide tutorial services, and offer the duplication of Learning Laboratory tapes.

## 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: 49,000 books; 2,300 record albums and cassette tapes; 7,400 reels of microfilm; and current subscriptions to 500 periodicals and 22 newspapers. Adjacent reading areas are carpeted and contain individual study carrels to reduce noise levels and create an atmosphere conducive to browsing, reading, and studying. 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 Informa-

tion Desk. Before beginning work on research assignments or term papers, students are advised to consult with a reference librarian.

It is the policy of Brown Library to charge fines for overdue books and audiovisual items. The rate per day is 20¢ per volume. There is a grace period of seven (7) calendar days beyond the original due date. If the item is returned after the grace period, the fine will be charged from the first day the



item was overdue, excluding Sundays and other days the Library was closed.

College policy does not permit the student to register, graduate, or receive a grade report until the Library reports to Admissions that the student has either paid for the book or returned the book and paid the fine.

### **MATH CENTER**

The staff in the Math Center is always available to help students upgrade skills in mathematics. The Center is equipped with traditional tapes, filmstrips, players, and reference texts. In addition, such non-traditional materials as a soundpage machine, and a programmed calculator provide students with a variety of learning experiences. Supplementary study materials are available for students enrolled in traditional classroom courses, Learning Packages, and Audio-Tutorial Math classes.

### **WRITING CENTER**

The staff in the Writing Center works closely with the English faculty to provide support services in a one-to-one situation for students needing additional help in grammar, composition, and literature. Direction is also offered in the writing of research papers and reports, the compiling of resumes and letters of application, and the studying of GED material. Students with physical handicaps and students with a primary language other than English can find specific help in the Center. CETA and Special Services peer tutors are available for students who qualify.





### **EVENING AND WEEKEND COLLEGE**

Students may continue their education at Virginia Western Community College and earn the baccalaureate degree from a cooperating 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 curriculums including ART & COMMERCIAL ART, AUTO 291, ARCH 111 & 211, MECH 131, BIOL 101-102-103, BIOL 114-115, BIOL 214-215-216, BIOL 220, BIOL 226, BIOL 228, BIOL 267, BIOL 276-277, GEOL 101-102-103, HORT 100, 110, 126, 156, 220, 230, 240, 256, and 257.

### **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 Student Activities Office 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 Dean of Student Services. These boards are to be used for such announcements 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 held. 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.

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

Any student interested in joining a club or organization may contact the Student Activities Office for information.

## **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 generally prohibited in all laboratories, classrooms, and Brown Library.

## **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 office of the Dean of Student Services 96 hours in advance. Forms are available in the office of the Dean of Student Services.

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 ad-

vised 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.

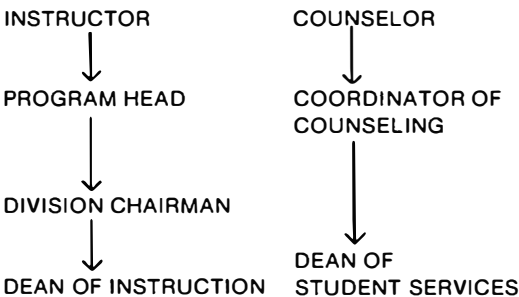
3. Any unauthorized occupation of buildings and/or college property constitutes reason for immediate suspension and/or dismissal from the institution of students who may be involved. Furthermore, legal action will be brought against any student involved in acts on community college property which are prohibited by law.
4. Any person currently not a student is not allowed to participate in demonstrations on the campus.

**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 Counseling Services, instructional concerns should 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 grievance cannot be resolved satisfactorily following either of the above channels, an ad hoc Grievance Committee may be convened by the President of the College to review the case and make recommendations to the President. The President's decision shall be final. The ad hoc committee shall consist of at least one administrator, two teachers, and two students. Members shall not be from the division involved. One student and one teacher may be selected by the student filing the grievance. The appointed administrator shall

be the chairman of the committee and will be responsible for calling the meeting, and keeping a record of the proceedings.

**STATEMENT OF STUDENT RIGHTS, RESPONSIBILITIES AND CONDUCT**

**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 Student Activities Office or from the Dean of Student Services.

B. A group shall become a recognized organization when approved by the Student Forum, the Dean of Student Services, 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. Meeting rooms are assigned in the Office of the Dean of Student Services. 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 offer 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 responsibility 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 for 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. 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. Generally, such records shall be destroyed after three years.
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 con-

duct, 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. Academic Dishonesty (see Section C).
2. Disruption or obstruction of teaching, research, administration, disciplinary proceedings or other college activities.
3. Physical and/or verbal 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. Disorderly conduct on campus. Hallways, laboratories, classrooms, library, or other on-campus facilities should be quiet and orderly at all times in order not to disturb those who are engaged in academic pursuit. Littering the campus or buildings, operating audio equipment at an objectionable level, and boisterous be-

havior are considered unacceptable conduct.

10. 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**

The Dean of Student Services 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 designee 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 reflecting the name of the person(s) making the accusation and a summary of the alleged breach of student conduct. The accused student shall respond within seven calendar days. The time may be extended for such response through mutual agreement with the Dean of Student Services. A time shall be set for a hearing which shall not be less than seven nor more than 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 D.
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 Student Discipline Committee, 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.
  - b. Within five calendar days of receipt of the hearing board's recommendations, the President of the College shall act on the recommendations and notify, in writing, the student and the Student Discipline Committee of his decision.
8. When the penalty for misconduct is suspension or dismissal, the student may, prior to the review of the case by the President, appeal the decision to the Appeals Committee. Members of the Appeals Committee, selected by the College President, will include one administrator, two teaching faculty, and two students. The administrator will serve as chairman of the committee and will be responsible for calling the meeting and making arrangements for having a transcript of the proceedings prepared. Members of the Student Discipline Committee 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. Academic Dishonesty

Academic dishonesty is defined as cheating on a quiz, test, or examination by giving, receiving, offering and/or soliciting information; buying, selling, stealing or soliciting any material purported to be a part of, or in whole, the contents of a forthcoming examination, test, quiz, or a required project; plagiarism; or the unauthorized use of materials, notes, papers, aids, etc., during a test, quiz, or examination. Instructors are responsible for maintaining the integrity of the testing environment.

In a case where academic dishonesty is suspected, the faculty member will meet with the student as soon as possible to resolve the matter. The faculty member may take one of the following actions:

1. Have the student rewrite the work in question.
2. Award a grade of zero (0) for the work in question.
3. Award a grade of "F" for the course and withdraw the student from the course. (If the student wishes to appeal this decision of the faculty member to the Academic Integrity Committee, the student will be permitted to remain in the course while the case is being considered.)
4. Refer the student to the division chairman who may initiate a hearing before the Student Discipline Committee.

Any student accused of academic dishonesty will be reported to the Dean of Instruction. Whenever two such instances have been reported, the Dean of Instruction will initiate a Student Discipline Committee hearing.

If the student wishes to appeal the action taken by the faculty member, he may do so within five days of the alleged infraction by using the following procedures:

The student will state his wish and reasons to appeal in writing to the division chairman who will request the faculty member to prepare a written statement of the specific charges, other relevant information, and the action taken. A copy of this state-

ment will be provided to the student with a request for a written response. If the matter is not settled at this level, the division chairman will forward both documents to the chairman of the Student Discipline Committee who will, within seven days, set a time for a hearing.

The hearing will be private and the student may bring a representative, witnesses, and exhibits. A digest of the hearing will be kept.

Should an appeal process not be completed by the end of an academic quarter, an interim grade of "I" will be issued. A grade change will then be submitted by the faculty member reflecting the outcome of the appeal. Action taken by the Student Discipline Committee is limited to the following:

1. Support the penalty imposed by the faculty member or impose one of the following:
  - a. Have student rewrite the work in question.
  - b. Award a grade of zero (0) for the work in question.
  - c. Award a grade of "F" and withdraw the student from the course.
  - d. Suspend the student.
2. Return student to former status.

Findings of the Student Discipline Committee for academic dishonesty will be advisory to the Dean of Instruction who shall provide a copy of his written decision to the student, the faculty member, the division chairman, and the chairman of the Student Discipline Committee. The time schedule outlined in Section B will generally apply.

#### **D. 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.

#### **E. Judicial Authority**

1. The Student Discipline Committee handles all questions of student discipline. Findings 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 (AAS)**

Horticulture  
Floriculture  
Landscape/Grower

**Arts & Design Technology (AAS)**

Commercial Art

**Business Technology (AAS)**

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

**Engineering Technology (AAS)**

Architecture  
Civil  
Electrical/Electronics  
    Communications  
    Power  
Mechanical

**Health Technology (AAS)**

Dental Hygiene  
Nursing  
Radiologic Technology

**Industrial Technology (AAS)**

Automotive

**Public Service Technology (AAS)**

Administration of Justice  
Early Childhood Development  
Human Services  
Radio and Television Production

**Diploma**

Automotive Analysis and Repair  
Electronic Servicing

**Certificate**

Air Conditioning & Refrigeration  
Architectural Drafting  
Automotive Mechanics  
Building Construction Supervision  
Child Development Aide  
Clerk Typist  
Dental Assistant  
Educational Assistant  
Engineering/Technical Assistant  
Food Service Management  
Medical Transcriptionist  
Stenographic  
Welding

## STATE AND REGIONAL SPECIALIZED PROGRAMS

In the Virginia Community College System, certain highly-specialized curriculums, though designed to serve all Virginia residents, are limited in offering to selected locations. These curriculums 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 curriculums 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 Northern Virginia Paul D. Camp
Agronomy	

Forestry	Dabney S. Lancaster
Natural Resources Management & Security	Lord Fairfax
Wildlife	Dabney S. Lancaster
Arts and Design Technology	
Majors:	
Media Advertising Arts	Tidewater
Printing	Blue Ridge
Business Technology	
Majors:	
Aviation Administration	Northern Virginia
Office Administration & Management	Northern Virginia
Real Estate	Northern Virginia
Traffic & Transportation	Tidewater Tidewater Virginia Western
Engineering/Industrial Technology	
Majors:	
Broadcast Engineering	Northern Virginia
Environmental Science	J. Sargeant Reynolds Wytheville
Environmental & Science	Northern Virginia
Industrial	New River
Instrumentation	New River
Machine (Tool)	New River
Marine Science	Rappahannock Thomas Nelson
Mining	Mountain Empire Southwest Virginia
Urban Regional Planning & Development	Northern Virginia
Health Technology	
Majors:	
Dental Laboratory	J. Sargeant Reynolds Northern Virginia
Funeral Services	John Tyler
Opticianry	J. Sargeant Reynolds Thomas Nelson
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

<b>Social Sciences</b>			
History (American or Western Civilization)	9	3-9	—
Economics	0-9	0-9	3
Government	0-9	0-9	3
Psychology or Human Relations	0-9	0-9	3
Sociology	0-9	0-9	—
<b>Natural Sciences and Mathematics</b>			
Natural Sciences (Laboratory) (Biology, Chemistry, Geology, Physics)	12-15	12-24 <sup>6</sup>	—
Mathematics	9	9	—
Health, Physical Education or Recreation	3-6	3-6	3-6
Orientation	1	1	1
Electives and Other Major Field Requirements	3-21 <sup>1</sup>	48	75 <sup>1</sup>
Minimum Total Number of Credits for Degree	97	97	97

<sup>1</sup>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.  
<sup>2</sup>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.  
<sup>3</sup>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.  
<sup>4</sup>SOSC 101-102-103 may be substituted for ECON, GOVT, and PSYC.  
<sup>5</sup>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%  
<sup>6</sup>This requirement may be waived for the General Studies major.

**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.

**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 <sup>1</sup>	AS <sup>1</sup>	AAS
<b>Humanities</b>			
English Composition	9	9	0
Communication Skills	0	0	6-9
Literature (English, American, or World)	6-9	0-3	—
English or Speech	0-3	0-3	0-3
Art, Drama, Music, Humanities and/or Philosophy	0-6	0-3	—
Foreign Language	12-24 <sup>2</sup>		

**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.



**Fine Arts Curriculum**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
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		
HIST 111-112-113 United States History (or HIST 101-102-103)	3	3	3
*MATH 161-162-163 College Mathematics (or MATH 181-182-183)	3	3	3
Health 110 or Physical Education	1-3	1-3	1-3
<b>Total Credits</b>	<b>17-19</b>	<b>16-18</b>	<b>16-18</b>

(Second Year)			
ARTS 111-112-113 History and Appreciation of Art	3	3	3
ARTS 274 Intro. to Printmaking	3		
ARTS 275-276 Art Printmaking Workshop		3	3
Literature (American or English)	3	3	3
Natural Science with Laboratory	4	4	4
Social Science	3	3	3
<b>Total Credits</b>	<b>16</b>	<b>16</b>	<b>16</b>

Total Minimum Credits for Degree ..... 97

\*Math courses chosen should fulfill requirement of four-year college or university the student plans to attend.

**Liberal Arts 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
*MATH 161-162-163 College Mathematics (or MATH 181-182-183)	3	3	3
*Foreign Language	4	4	4
Natural Science with Laboratory	4	4	4
Health 110 or Physical Education		1-3	1-3
<b>Total Credits</b>	<b>18</b>	<b>18-20</b>	<b>18-20</b>

(Second Year)			
Foreign Language	4	4	4
Literature (American or English)	3	3	3
<sup>3</sup> Social Science	3	3	3
Speech		3	
Electives	6	3	0-6
Health 110 or Physical Education		1-3	
Total Credits	16	17-19	10-16
Total Minimum Credits for Degree ..... 97			

<sup>1</sup>Math courses chosen should fulfill requirement of four-year college or university the student plans to attend.  
<sup>2</sup>Students who have completed two years of a foreign language in high school with at least a "B" average should enroll in the second-year course 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.  
<sup>3</sup>Social Science chosen should be a one-year sequence in either ECON 211-212-213, GOVT 281-282-283, PSYC 201-202-203, or SOCI 101-102-103.

**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 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 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**

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
HIST 111-112-113 United States History (or HIST 101-102-103)	3	3	3
MATH 161-162-163 College Mathematics	3	3	3
Natural Science with laboratory	4	4	4
<sup>1</sup> Electives	3	3	3
Health or Physical Education	1-3	1-3	1-3
Total Credits	18-20	17-19	17-19

(Second Year)			
ACCT 211-212-213 Principles of Accounting	3	3	3
<sup>2</sup> ECON 211-212-213 Principles of Economics	3	3	3
Literature/Speech	3	3	3
<sup>1</sup> Electives	6	6	6
Total Credits	15	15	15
Total Minimum Credits for Degree ..... 97			

<sup>1</sup>Electives must be selected from Humanities, Natural Sciences, Social Sciences.  
<sup>2</sup>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. 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 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 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**

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
HIST 101-102-103 Western Civilization (or HIST 111-112-113 United States History)	3	3	3
MATH 161-162-163 College Mathematics (or MATH 181-182-183 General College Mathematics or			



MATH 154-155-158 Modern Mathematics for Elementary Teachers)	3	3	3
Natural Science with laboratory	4	4	4
Electives	<u>3</u>	<u>3</u>	<u>3</u>
Total Credits	17	16	16

(Second Year)

ECON 211-212-213 Principles of Economics	3	3	3
ENGL 251-252-253 Survey of American Literature (or ENGL 261-262-263 Survey of English Literature)	3	3	3
PSYC 201-202-203 General Psychology	3	3	3
SPDR 137 Public Speaking	3		3
Humanities Elective	3	6	3
Electives	<u>3</u>	<u>6</u>	<u>3</u>
Health or Physical Education	1-3	1-3	1-3
Total Credits	16-18	16-18	16-18

Total Minimum Credits for Degree ..... 97

**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	Electrical	Mining
Construction	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 algebra, 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 Statics of Particles and Rigid Bodies			3
GENL 100 Orientation	1		
MATH 141-142-143 Introductory Mathematical Analysis	5	5	5
Health or Physical Education		<u>1-3</u>	
Total Credits	18	18-20	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 213 Engineering Physics			3
PHYS 221-222 General University Physics	4	4	
History Elective	3		
Health or Physical Education	1-3	1-3	
Total Credits	18-20	18-20	18

Total Minimum Credits for Degree ..... 107

**GENERAL STUDIES**

**ASSOCIATE IN SCIENCE DEGREE**

**Purpose:** The curriculum is designed for students who are uncertain about their vocational or educational 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**

	Quarter Credit Hours		
	1st	2nd	3rd
<b>(First Year)</b>			
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
*MATH 161-162-163 College Mathematics (or MATH 181-182-183)	3	3	3
*Natural Science with laboratory	4	4	4
Electives	3	3	3
Health 110 or Physical Education		1-3	1-3
<b>Total Credits</b>	<b>17</b>	<b>17-19</b>	<b>17-19</b>
<b>(Second Year)</b>			
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 110 or Physical Education		1-3	
<b>Total Credits</b>	<b>18</b>	<b>16-18</b>	<b>15</b>
<b>Total Minimum Credits for Degree</b>	<b>100</b>		

\*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 sci-



ence; 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
MATH 150 or <sup>2</sup> Electives		3	2-3
Health or Physical Education	1-3	1-3	1-3
<b>Total Credits</b>	<b>15-19</b>	<b>17-21</b>	<b>16-21</b>

(Second Year)

<sup>2</sup> Humanities Elective	3		
MATH 261-262-263 Calculus (or MATH 241-242-243 or <sup>2</sup> Electives)	3-4	3-4	3-4
<sup>1</sup> Science with laboratory	4	4	4
<sup>2</sup> Social Science Elective	3	3	3
<sup>2</sup> Electives	3-4	7-8	6-7
<b>Total Credits</b>	<b>16-18</b>	<b>17-19</b>	<b>16-18</b>

Total Minimum Credits for Degree ..... 97

<sup>1</sup>Two science sequences in different disciplines are required and each sequence must be a full year with laboratory.  
<sup>2</sup>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 advanced 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 fulfill 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. Deficiencies 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		
<sup>1</sup> 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	
BUAD 121-122-123 Business Mathematics	3	3	3
<sup>1</sup> PSYC 128 Human Relations			3
Health or Physical Education Speech or English	1-3	1-3	1-3
<b>Total Credits</b>	<b>15-17</b>	<b>17-19</b>	<b>17-19</b>

(Second Year- Floriculture Option)			
BUAD 174-175 Small Business Management	3	3	
<sup>1</sup> 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 297 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	
<sup>1</sup> ECON 160 Survey of American Economics		3	
HORT 126 Landscape Construction and Maintenance	3		4
HORT 120 Soils			
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 297 Cooperative Education			1-5
MKTG 100 Principles of Marketing			3
MKTG 109 Principles of Salesmanship	3		
Horticulture Electives	1-3	1-3	17-21
Total Credits	16-18	16-18	17-21
Total Minimum Credits for Degree .....	98		

<sup>1</sup>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	Photography
Illustrating	Related
Printing	Occupations

**Special Curriculum Admission Guidelines:** 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 deficiencies 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
<sup>1</sup> ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
<sup>1</sup> GOVT 180 American Constitutional Government		3	
<sup>1</sup> PSYC 128 Human Relations Health 110 or Physical Education		1-3	
English 113 or Speech 137			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
<sup>2</sup> PHTG 201-202-203 Advanced Photography	3	3	
ARTS 298 Seminar and Project Arts Elective			3
Health 110 or Physical Education	1-3	1-3	
Total Credits	16-18	16-18	18

Total Minimum Credits for Degree ..... 100

<sup>1</sup>A year's sequence in social science may be substituted.

<sup>2</sup>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**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211-212-213 Accounting	3	3	3
BUAD 100 Introduction to Business	3		
BUAD 164 Principles of Business Management		3	
DAPR 106 Principles of Data Processing			3
<sup>1</sup> ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
<sup>1</sup> PSYC 128 Human Relations			3
<sup>2</sup> SECR 111 Typewriting I (or elective)		3	
English or Speech			3
Health or Physical Education	1-3	1-3	1-3
<b>Total Credits</b>	<b>17-20</b>	<b>16-19</b>	<b>16-19</b>
<b>(Second Year)</b>			
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		
SECR 147 Business Communication	3		
GOVT 180 American Constitutional Government			3
<b>Total Credits</b>	<b>18</b>	<b>15</b>	<b>15</b>

**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 Curriculum**

(First Year)	Quarter Credit Hours			
	1st	2nd	3rd	Sum
ACCT 211-212-213 Accounting		3	3	3
DAPR 106 Principles of Data Processing	3			
DAPR 130 Operating Systems			3	
DAPR 138 Computer Architecture				3
DAPR 144 Computer Programming (Concepts)	3			
DAPR 147 Computer Programming (Cobol)		3		
DAPR 148 Computer Programming (Inter. Cobol)			4	
DAPR 256 Computer Programming (Adv. Cobol)				4
ENGL 111-112 English Composition	3	3		



Total Minimum Credits for Degree ..... 97

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

Engl/Speech				3
GENL 100 Orientation	1			
<sup>1</sup> BUAD 121, 122, 123 (or MATH 161-162-163)				
Introduction to Business Math	3	3	3	
Health or Physical Education	1-3	1-3	1-3	
<b>Total Credits</b>	<b>14-16</b>	<b>13-15</b>	<b>14-16</b>	<b>13</b>

(Second Year)

BUAD 246 Business Finance (or ACCT 231 Cost Acct.)		3		
BUAD 241 Business Law	3			
BUAD 254 Applied Business Statistics	3			
DAPR 266 Computer Programming (Fortran)			4	
DAPR 267 Computer Programming (RPG)	4			
DAPR 269 Computer Programming (Assembler)		4		
DAPR 281-282-283 Systems Analysis	3	3	3	
DAPR 286 Computer Program Applications			4	
<sup>2</sup> ECON/GOVT/PSYC	3	3	3	
<b>Total Credits</b>	<b>16</b>	<b>13</b>	<b>14</b>	

Total Minimum Credits for Degree ..... 97

<sup>1</sup>If a student elects to take the math rather than the BUAD 121, 122, 123, he must complete the BUAD 123 in addition thereto.  
<sup>2</sup>Six hours in Social Science may be substituted for GOVT/PSYC. All students must take one quarter ECON.

**HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT**

**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.

Practical experience is considered an important part of the curriculum in Hotel, Restaurant and Institutional Management. Such experience can be integrated into regular scheduled quarters, but the student is en-

couraged to gain such experience during the summer quarter following the first year.

The student may register for HRIM 197 Cooperative Education and receive five additional course credits. Prior to registering, it is necessary to file an application in the division office.

**Hotel, Restaurant and Institutional Management Curriculum**

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
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 Introduction 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
BUAD 121-122 Introduction to Business Mathematics	3	3	
English or Speech			3
<b>Total Credits</b>	<b>17</b>	<b>16</b>	<b>16</b>



(Second Year)

BUAD 241 Business Law	3		
<sup>2</sup> BUAD 276 Personnel Management (or Business elective)		3	
<sup>1</sup> ECON 160 Survey of American Economics			3
<sup>1</sup> GOVT 180 American Constitutional Government			3
HRIM 113 Food Service III	3		
HRIM 134-135 Nutrition I-II	3	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
<sup>1</sup> PSYC 128 Human Relations	3		
<b>Total Credits</b>	<b>16</b>	<b>16</b>	<b>16</b>

Total Minimum Credits for Degree ..... 97

<sup>1</sup>A year sequence in Social Science may be substituted.  
<sup>2</sup>Requires departmental approval.

**MANAGEMENT**

(Management, Banking and Finance, Real Estate, Merchandising, and Traffic and Transportation)

**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. Individuals 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
- Rate Analyst
- Purchase Agent
- Sales Supervisor
- Other related traffic and transportation 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.

**Management Curriculum**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211-212-213 Accounting	3	3	3



BUAD 100 Introduction to Business	3		
BUAD 164-165 Principles of Business Management		3	3
<sup>1</sup> ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
MKTG 100 Principles of Marketing			3
<sup>2</sup> SECR 111 Typewriting I (or Business Elective)		3	
English or Speech			3
Health or Physical Education	1-3	1-3	1-3
<b>Total Credits</b>	<b>17-19</b>	<b>16-18</b>	<b>16-18</b>

(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	
SECR 147 Business Communication	3		
<sup>1</sup> GOVT 180 American Constitutional Government	3		
<sup>1</sup> PSYC 128 Human Relations Business Elective		3	3
<b>Total Credits</b>	<b>15</b>	<b>15</b>	<b>18</b>

Total Minimum Credits for Degree ..... 97

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

**Management Curriculum  
(Banking and Finance)**

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ACCT 211-212-213 Accounting	3	3	3
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		
BUAD 121-122-123 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
<b>Total Credits</b>	<b>17-19</b>	<b>16-18</b>	<b>16-18</b>

(Second Year)

ACCT 244 Business Taxes		3	
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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
SECR 147 Business Communications	3		
<sup>1</sup> GOVT 180 American Constitutional Government			3
<sup>1</sup> PSYC 128 Human Relations Business Elective			3
<b>Total Credits</b>	<b>15</b>	<b>15</b>	<b>18</b>

Total Minimum Credits for Degree ..... 97

<sup>1</sup>A year sequence in Social Science may be substituted.

**Management Curriculum  
(Merchandising)**

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ACCT 211-212-213 Accounting	3	3	3
BUAD 100 Introduction to Business	3		
BUAD 164 Principles of Business Management		3	
<sup>1</sup> ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
MKTG 100 Principles of Marketing			3
MKTG 136 Retail Organization and Management			3
<sup>2</sup> SECR 111 Typewriting I (or Business Elective)			3
English or Speech			3
Health or Physical Education	1-3	1-3	1-3
<b>Total Credits</b>	<b>17-19</b>	<b>16-18</b>	<b>16-18</b>

(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		
<sup>1</sup> 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



<sup>3</sup> MKTG 290 Coordinated Internship		1-5	1-5
<sup>1</sup> PSYC 128 Human Relations			3
Total Credits	15	13-17	13-17

Total Minimum Credits for Degree ..... 97

<sup>1</sup>A year sequence in Social Science may be substituted.  
<sup>2</sup>Students who have completed prior training in typewriting may petition for credit by examination.  
<sup>3</sup>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.

**Management Curriculum  
(Real Estate)**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211-212-213 Accounting	3	3	3
BUAD 100 Introduction to Business	3		
BUAD 164-165 Principles of Business Management		3	3
<sup>1</sup> ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 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	17-19	16-18	16-18

**(Second Year)**

ACCT 244 Business Taxes		3	
BUAD 241-242 Business Law	3	3	
BUAD 246 Business Finance		3	
BUAD 254 Applied Business Statistics	3		
BUAD 276 Personnel Management			3
DAPR 106 Principles of Data Processing	3		
SECR 147 Business Communication	3		
<sup>1</sup> 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	
<sup>1</sup> PSYC 128 Human Relations English or Speech	3		3
Total Credits	18	15	15

Total Minimum Credits for Degree ..... 97

<sup>1</sup>A year sequence in Social Science may be substituted.

**Management Curriculum  
(Traffic and Transportation)**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211-212-213 Accounting	3	3	3

DAPR 106 Principles of Data Processing	3		
BUAD 164 Principles of Business Management			3
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122-123 Business Mathematics	3	3	3
MKTG 100 Principles of Marketing			3
MKTG 131-132-133 Traffic and Transportation English or Speech	3	3	3
Health or Physical Education	1-3	1-3	1-3
Total Credits	17-19	16-18	16-18

**(Second Year)**

Business Elective			3
ACCT 244 Business Elective		3	
BUAD 254 Applied Business Statistics	3		
BUAD 276 Personnel Management (or Business Elective)			3
<sup>1</sup> 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) Marketing or Accounting	3		3
Elective			3
<sup>1</sup> 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

<sup>1</sup>A year sequence in Social Science may be substituted.

**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. Individuals 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 211 Accounting			3
BUAD 100 Introduction to Business	3		
BUAD 164 Principles of Business Management		3	
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122 Business Mathematics	3	3	
<sup>1</sup> SECR 111-112-113 Typewriting	3	3	3
<sup>1</sup> 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
<b>Total Credits</b>	<b>18-20</b>	<b>17-19</b>	<b>17-19</b>

(Second Year)	1st	2nd	3rd
BUAD 241 Business Law	3		
<sup>2</sup> ECON 160 Survey of American Economics		3	
SECR 147 Business Communication	3		
<sup>2</sup> GOVT 180 American Constitutional Government			3
BUAD 123 Business Mathematics			3
<sup>2</sup> 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
<sup>3</sup> SECR 256 Machine Transcription			3
SECR 237 Principles of Word Processing	3		
SECR 220 Mag Card Typewriter	1		
<b>Total Credits</b>	<b>16</b>	<b>15</b>	<b>18</b>

Total Minimum Credits for Degree ..... 97

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

**Secretarial Science Curriculum  
(Legal Secretary)**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211 Accounting			3
BUAD 100 Introduction to Business	3		
BUAD 164 Principles of Business Management		3	
ENGL 111-112 English Composition	3	3	

GENL 100 Orientation	1		
BUAD 121-122 Business Mathematics	3	3	
<sup>1</sup> SECR 111-112-113 Typewriting	3	3	3
<sup>1</sup> 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
<b>Total Credits</b>	<b>18-20</b>	<b>17-19</b>	<b>17-19</b>

**(Second Year)**

BUAD 241-242 Business Law	3	3	
BUAD 243 Business Law III (or SECR 217)			3
<sup>2</sup> ECON 160 Survey of American Economics		3	
SECR 147 Business Communication	3		
<sup>2</sup> GOVT 180 American Constitutional Government		3	
<sup>2</sup> 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		
<sup>3</sup> SECR 256 Machine Transcription			3
SECR 264-265 Legal Secretarial Procedures (or SECR 242-243)		3	3
SECR 237 Principles of Word Processing	3		
SECR 220 Mag Card Typewriter	1		
<b>Total Credits</b>	<b>16</b>	<b>18</b>	<b>15</b>

Total Minimum Credits for Degree ..... 97

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

**Secretarial Science Curriculum  
(Medical Secretary)**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ACCT 211 Accounting			3
<sup>2</sup> ECON 160 Survey of American Economics	3		
BUAD 164 Principles of Business Management		3	
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
BUAD 121-122 Business Mathematics	3	3	
<sup>1</sup> SECR 111-112-113 Typewriting	3	3	3
<sup>1</sup> 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
<b>Total Credits</b>	<b>18-20</b>	<b>17-19</b>	<b>17-19</b>

**(Second Year)**

BIOL 154 Human Anatomy and Physiology (or HLTH 124)	3-4		
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BUAD 241 Business Law	3		
SECR 147 Business Communication		3	
<sup>2</sup> GOVT 180 American Constitutional Government		3	
SECR 216 Executive Typewriting	3		
BUAD 123 Business Mathematics	3		
<sup>2</sup> PSYC 128 Human Relations		3	
SECR 221-222 Transcription	3	3	
SECR 227 Medical Transcription (or SECR 223)			3
SECR 241 Secretarial Procedures	3		
<sup>3</sup> SECR 256 Machine Transcription			3
SECR 274-275 Medical Secretarial Procedures (or SECR 242-243)		3	3
SECR 217 Skill Building			3
SECR 237 Principles of Word Processing	3		
SECR 220 Mag Card Typewriter		1	
<b>Total Credits</b>	<b>16-17</b>	<b>15</b>	<b>18</b>

Total Minimum Credits for Degree ..... 97

<sup>1</sup>Students who have completed prior training in typewriting and/or shorthand may petition for credit by examination.

<sup>2</sup>A year sequence in Social Science may be substituted.

<sup>3</sup>Students must have completed SECR 113 or be enrolled concurrently.

## 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

(First Year)	Quarter Credit Hours		
	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 168-169 Introduction to Solar Heating of Buildings I-II		3	3
CIVL 140 Construction Planning	3		
ENGR 151 Mechanics			4
GENL 100 Orientation	1		
<sup>1</sup> GOVT 180 American Constitutional Government		3	
MATH 118 Introduction to Technical Mathematics	5		
MATH 121-122 Engineering Technical Mathematics I-II		5	5
<sup>1</sup> PSYC 128 Human Relations	3		
<b>Total Credits</b>	<b>18</b>	<b>17</b>	<b>18</b>
(Second Year)			
ARCH 211-212-213 Architectural Drafting IV-V-VI	3	3	3
ARCH 276 Construction Estimating	3		
CIVL 100 Introduction to Surveying		3	
CIVL 181 Surveying I			4
<sup>1</sup> ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition	3	3	
English or Speech			3
ENGR 252 Engineering Mechanics II	4		
PHYS 111-112 Technical Physics I-II		4	4
Tech Elective ARCH 268 (or CIVL 217)		3-4	
Tech Elective ARCH 269 (or CIVL 218)			3-4
Health or Physical Education	1-3	1-3	1-3
<b>Total Credits</b>	<b>17-19</b>	<b>17-20</b>	<b>18-21</b>
Total Minimum Credits for Degree .....	105		

<sup>1</sup>A year sequence in Social Science may be substituted

## 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 100 Introduction to Surveying		3	
CIVL 124-125 Civil Engineering Drafting		2	2
CIVL 140 Construction Planning	3		
CIVL 181 Surveying I			4
DRFT 111 Technical Drafting	2		
*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 Mechanics I			4
GENL 100 Orientation	1		
*GOVT 180 American Constitutional Government	3		
MATH 118 Introduction to Technical Mathematics	5		
MATH 121-122 Engineering Technical Mathematics I-II		5	5
Health or Physical Education	1-3		
<b>Total Credits</b>	<b>18-20</b>	<b>18</b>	<b>18</b>
(Second Year)			
CIVL 182 Surveying	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 Materials I (Concrete)		3	
CIVL 257 Concrete Laboratory		1	
ENGR 252 Engineering Mechanics II	4		
MATH 123 Engineering Technical Mathematics III	5		
PHYS 111-112-113 Technical Physics	4	4	4
*PSYC 128 Human Relations Tech Elective		3-4	3
Health or Physical Education	1-3		1-3
<b>Total Credits</b>	<b>18-20</b>	<b>18-19</b>	<b>16-18</b>
<b>Total Minimum Credits for Degree</b>	<b>106</b>		

\*A year sequence in Social Science may be substituted.



### ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY

#### ASSOCIATE IN APPLIED SCIENCE DEGREE

**Purpose:** The seven-quarter Associate Degree program in Electrical/Electronics Engineering Technology has been designed to prepare the graduate for a career in a broad spectrum of Electrical Engineering Technology roles. The curriculum is composed of a sequence of lecture and laboratory courses which have been planned and selected to provide both the theoretical foundation and the application experiences essential to the understanding of the complex principles and practices of the modern electronics field.

First year students receive instruction in English, social science, mathematics, and physics along with introductory and intermediate level electrical courses. Circuit analysis techniques, industrial practices, electronic devices, and measurement and instrumentation principles are presented.

The advanced courses of the second year provide an in-depth study in electronic circuit design (both analog and digital), and application-oriented sequences in electrical machinery, electronic communications, and computer based systems. In addition to the laboratory experiences provided with each course, the student participates in a three-quarter shop and seminar-project program to develop basic skills in the fabrication of electronic devices.

Transfer opportunities exist for those desiring to complete a four-year program at certain institutions offering a baccalaureate degree in Engineering Technology.

**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.

**Special Curriculum Admission Guidelines:** Proficiency in high school English and 3 units of mathematics (2 units of algebra and 1 unit of geometry or trigonometry). Developmental courses may be recommended for students with deficiencies in English and mathematics.

\*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. The 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/Electronics Engineering Technology Curriculum**

(First Year)	Quarter Credit Hours			4th
	1st	2nd	3rd	
DRFT 158 Electrical/Electronics Drafting				2
ELEC 111-112-113 Introduction to Electrical Circuits	5	5	3	
ELEC 125 Introduction to Electronics				5
ELEC 199 Supervised Study			2	
*ELEC 211 Electrical Machines I				4
ELEC 276 Instruments and Measurements				4
ENGL 111-112 English Composition	3	3		
ENGL or SPDR			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
<b>(Second Year)</b>				
'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 212 Electrical Machines II	4		
ELEC 237-239 Digital Logic Circuits	4	3	
*ELEC 241-242 Communications I-II		4	4
*ELEC 250 Introduction to Computers			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

\*A year sequence in Social Science may be substituted.

**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**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
DRFT 111-112-113 Technical Drafting I-II-III	2	2	2
'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 Mechanics I			4
GENL 100 Orientation	1		
'GOVT 180 American Constitutional Government		3	
MATH 118 Introduction to Technical Math		5	
MATH 121-122 Engineering Technical Mathematics I-II			5
MECH 131-132 Machine Laboratory I-II	2	2	
MECH 199 Supervised Study Health or Physical Education			2
Total Credits	<u>1-3</u>	<u>1-3</u>	<u>1-3</u>
	17-19	18-20	17-19

(Second Year)

CIVL 230 Structural Analysis		3	
ELEC 214 Electricity			4
ENGR 252 Engineering Mechanics II	4		
MATH 123 Engineering Technical Mathematics III		5	
MATH 221 Advanced Engr. Technical Math (or T.E.*)		3-4	
MECH 156 Mechanisms	2		
MECH 257-258 Machine Design I-II		4	4
MECH 260 Thermodynamics		4	
MECH 268 Fluid Mechanics			4
PHYS 111-112-113			
Technical Physics	4	4	4
'PSYC 128 Human Relations	3		
WELD 120 Fundamentals of Welding			2
Total Credits	<u>18</u>	<u>18-19</u>	<u>18</u>

Total Minimum Credits for Degree ..... 106

\*A year sequence in Social Science may be substituted.

\*Technical Electives:

- CHEM 111-112
- CIVL 217
- DAPR 106-144
- 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

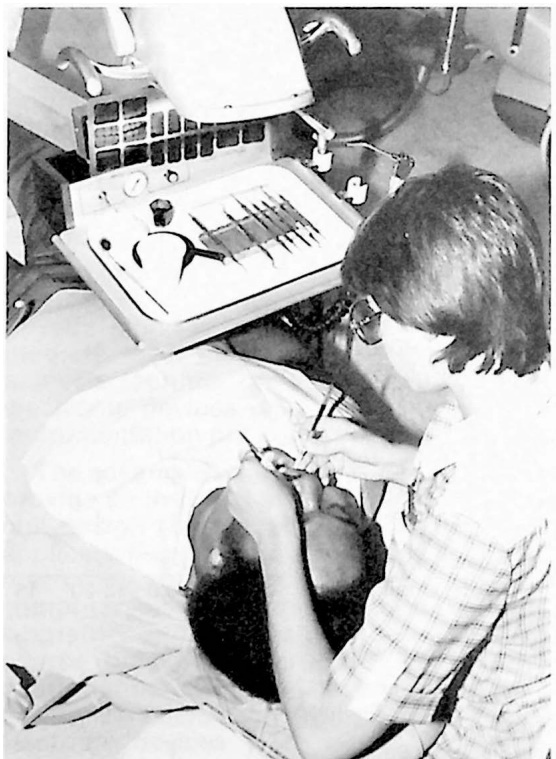
**Special Curriculum Admission Guidelines:** The applicant should have completed on the high school level four units of English, one

unit of biology and chemistry or equivalent, 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 required Dental Hygiene course 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. It is recommended that the student purchase health insurance in addition to the liability insurance.



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

**HUMAN SERVICES/  
MENTAL HEALTH ASSOCIATE  
ASSOCIATE IN  
APPLIED SCIENCE DEGREE**

**Dental Hygiene Curriculum**

(First Year)	Quarter Credit Hours			4th
	1st	2nd	3rd	
DENT 126 Oral Anatomy	3			
DENT 129 General & Oral Histology		2		
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		
<sup>1</sup> GENL 100 Orientation	1			
HLTH 100 Orientation to Allied Health Careers	1			
HLTH 101, CPR	1			
Total Credits	18	18	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	
<sup>2</sup> ECON 160 Survey of American Economics		3		
<sup>2</sup> GOVT 180 American Constitutional Government			3	
<sup>2</sup> PSYC 128 Human Relations		3		
SOCI 101 Introduction to Sociology	3			
SPDR 137 Public Speaking			3	
Total Credits	17	17	13	

Total Minimum Credits for Degree ..... 114

<sup>1</sup>GENL 198, 298 may be substituted.

<sup>2</sup>The following courses may be substituted: ECON 211-212-213, GOVT 281-282-283, PSYC 201-202-203, or SOCI 101-102-103.

**Purpose:** The curriculum is designed to prepare selected students to qualify as contributing members of the Human Service Delivery Team. Such workers counsel and guide patients/clients through educational, therapeutic, rehabilitative and recreational activities. Students will be placed in a variety of human service agencies, i.e. mental hospitals, community mental health clinics, centers for children, the elderly, and the mentally retarded, and other direct service agencies which render assistance to individuals with social concerns/problems.

**Occupational Objectives:** Employment opportunities for the Human Services Mental Health Associate include staff positions in hospitals, mental health clinics, group homes, training centers and community service agencies.

**Special Curriculum Admission Guidelines:** The applicant should hold a high school diploma or the equivalent and have completed 4 units of English, 1 unit of biology, and 2 units of social science, or an appropriate equivalent. Satisfactory performance on an appropriate test may be required for those applicants whose academic records indicate weaknesses in English and reading. A personal interview with the Counseling Department and Human Services faculty is part of the admission process. Upon notification of acceptance, applicants are required 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 a "C" in any of the courses in the human service sequence must be recommended by the Program Head and approved by the Division Chairman to continue in the program 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.

**Human Services Curriculum**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ENGL 111-112-113 English Composition			3
GENL 100 Orientation	1		
GOVT 180 American Constitutional Government			3

HLTH 100 Orientation to Allied Courses	1		
HMSV 106 Introduction to Human Services	3		
HMSV 128 Community Resources and Services		3	
HMSV 134-135 Helping Relationships	3	3	
HMSV 190 Coordinated Practice			4
HMSV 221 Human Behavior I			3
MENT 116 Activity Therapies		3	
PSYC 208 Psychology of Abnormal Behavior		3	
PSYC 260 Introduction to Behavior Modification			3
SOCI 186-187 Social Problems I-II	3		3
SOCI 236 Marriage and the Family		3	
<b>Total Credits</b>	<b>16</b>	<b>18</b>	<b>16</b>

(Second Year)

ECON 147 (or ECON 160) Consumer Economics			3
HLTH 104 First Aid I		2	
HMSV 144-145 Group Process I-II	3	3	
HMSV 222-223 Human Behavior	3	3	
HMSV 290 Coordinated Practice	5	5	5
HMSV 298 Seminar and Project			3
PBSV 258 Social Change Skills	3		
PSYC 231-232-233 Human Growth and Development	3	3	3
<b>Total Credits</b>	<b>17</b>	<b>16</b>	<b>14</b>

Total Minimum Credits for Degree ..... 98

**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, physicians' offices, clinics, day care centers and civil service.

**Special Curriculum Admission Guidelines:** The applicant must hold a high school diploma or the equivalent and have completed one unit of high school biology, chemistry, and algebra, or the equivalent with a grade of "C" or better. Developmental

courses may be recommended for students with deficiencies in English and mathematics. Qualified students are admitted as applications are received. Early application is highly advisable due to the limited available spaces in the program. 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 is responsible for transportation to and from agencies utilized for clinical experience and the purchase of student uniforms, accessories, and liability insurance.

**Advanced Placement:** Advanced placement is considered on an individual basis for LPNs and students who have withdrawn from other nursing education programs.

All inquiries for advanced placement may be directed to the Nursing Program Head.

**Special Curriculum Completion Guidelines:** Students who receive a final grade lower than "C" in any required nursing or natural 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.

Students who have withdrawn from the nursing program for any reason and desire readmission must make formal application for consideration. Such students must maintain an overall "C" average or better in the interim. Students who have been unsuccessful twice in the Nursing program may not be considered for readmission.

**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			
NURS 110-112 Fundamentals of Nursing	6	6		
NURS 123 Fundamentals of Nursing				6



NURS 168 Principles of Medication	2			
NURS 221 Nursing in Major Health Problems				8
NURS 199 Clinical Conference	2	2	2	
NURS 299 Clinical Conference				4
PSYC 201-202-203 General Psychology		3	3	3
Total Credits	18	18	18	15

(Second Year)

<sup>1</sup> NURS 244 Medical-Surgical Nursing I	4			
<sup>1</sup> NURS 247 Obstetric Nursing	4			
<sup>1</sup> NURS 248 Pediatric Nursing		4		
<sup>1</sup> NURS 249 Psychiatric Nursing		4		
NURS 256 Nursing Organization and Management			8	
NURS 266 Nursing Research			2	
NURS 299 Clinical Conference	4	4	4	
<sup>2</sup> SOCI 101-102-103 Introductory Sociology		3	3	3
<sup>3</sup> GOVT 180 American Constitutional Government		3		
<sup>3</sup> ECON 160 Survey of American Economics	3			
Total Credits	18	18	17	

Total Minimum Credits for Degree ..... 122

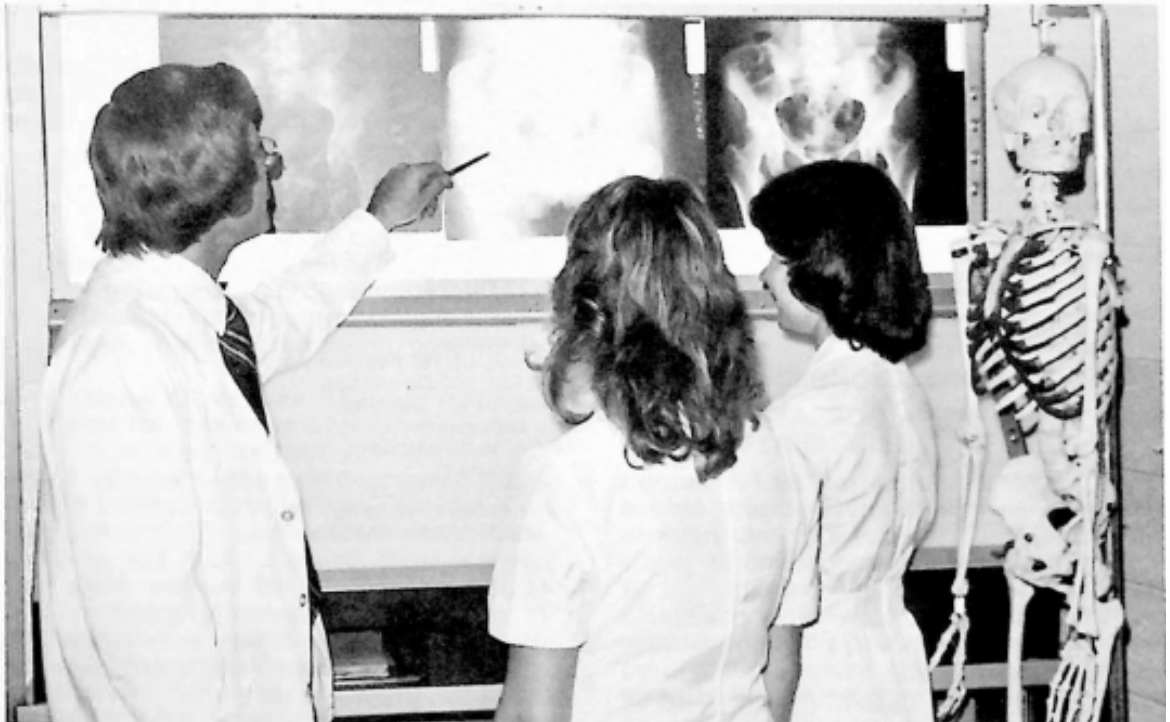
<sup>1</sup>See general course description.  
<sup>2</sup>SOCI 236 may be substituted for SOCI 103.  
<sup>3</sup>A year's sequence of Social Science may be substituted (NOTE: American History is preferred for students planning to transfer to B.S.N. programs).

**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 take 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. A personal interview with the Counseling Department and Radiologic Technology faculty is a part of the admission process. The program begins mid-July and is continuous for 24 months and 5 weeks.

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				5th
	1st	2nd	3rd	4th	
BIOL 154-155 Human Anatomy and Physiology	4	4			
ENGL 111-112-113 English Composition	1	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		3	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
<b>Total Credits</b>	<b>12</b>	<b>17</b>	<b>17</b>	<b>16</b>	<b>12</b>
<b>(Second Year)</b>					
PHYS 101-102 Introductory Physics	4	4			
RADL 216 Radiation Physics			4		
RADL 226 Radiographic Theory Correlation			3		
RADL 241e242-243 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				6	
RADL 298 Supervised Study/Scientific Paper	1				
RADL 299 Supervised Study/Review for Registry				2	
SSE	3	3	3		
<b>Total Credits</b>	<b>16</b>	<b>16</b>	<b>15</b>	<b>12</b>	

Total Minimum Credits for Degree..... 133

\*GENL 198, 298 may be substituted.

†Three 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

(First Year)	Quarter Credit Hours			
	1st	2nd	3rd	4th
AUTO 126 Anti-Pollution Systems				4
AUTO 131-132-133 Automotive Technology I, II, III	6	6	6	
AUTO 138 Automotive Vehicle Inspection				3
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	
AUTO 236 Automotive Heating & Air Conditioning				3
AUTO 268 Automotive Alignment				2
ENGL 109 Communication in Business & Industry		3		
ENGL 08/166 Reading	3			
GENL 100 Orientation	1			
MECH 131 Machine Laboratory				2
SPDR 137 Public Speaking				3
WELD 120 Fundamentals of Welding	2			
WELD 122 Arc Welding I		2		
<b>Total Credits</b>	<b>16</b>	<b>18</b>	<b>18</b>	<b>17</b>
<b>(Second Year)</b>				
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	
<sup>1</sup> ECON 160 Survey of American Economics		3		
ENGL 111-112 English Composition I, II			6	
<sup>1</sup> GOVT 180 American Constitutional Government	3			
HLTH 110 Concepts of Personal & Community Health			3	
BUAD 121-122 Business Math I, II			6	
<sup>1</sup> PSYC 128 Human Relations			3	
<b>Total Credits</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>12</b>

Total Minimum Credits for Degree ..... 129

<sup>1</sup>A year sequence in Social Science may be substituted.

### ADMINISTRATION OF JUSTICE ASSOCIATE IN APPLIED SCIENCE DEGREE

**Purpose:** This curriculum has two primary purposes: (1) to prepare the student for careers in the Criminal Justice field, and (2) to provide the first two years academic foundation for transfer into a four-year liberal arts or professional degree program in the discipline. The courses are particularly attractive to non-majors as interesting electives in a subject matter that is of concern to all. The program is especially enriched by course offerings taught by professionals in Police, Court, and Correctional agencies.

**Occupational Objectives:** The curriculum is designed to aid those seeking careers (or seeking advancement in careers) in

- Law Enforcement (Local, State, Federal)
- Private and Public Security
- Law (paralegal, prosecution/defense attorney, judge, court administration)
- Corrections (Jail/Prison and community-based agencies, probation/parole, and rehabilitation program staff)
- Juvenile Justice (counseling, casework)

**Educational Objectives:** The curriculum is designed for maximum transferability from Virginia Western to four-year institutions which have baccalaureate degree programs in Administration of Justice, Criminal Justice, Criminology, Law Enforcement, Police Science, and Public Service. Most of these four-year degree programs are Social Science oriented, which is the orientation of this curriculum; and it easily merges with pre-law programs at most four-year institutions as well. A number of the careers listed under Occupational Objectives above will

require a four-year degree, so it is essential that students consult early with the Program Head concerning career and academic goals.

### Administration of Justice Curriculum

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
ADJU 100 Introduction to Law Enforcement	3		
ADJU 120 Introduction to Corrections		3	
ADJU 126 Prevention and Control of Juvenile Delinquency			3
ADJU 134-135 Criminal Law I-II	3	3	
ADJU 176 Criminology	3		
ADJU 228 Law Enforcement and the Community		3	
ADJU 240 Constitutional Law for Police			3
ADJU Elective			3
ENGL 111-112-113 English Composition	3	3	3
<sup>1</sup> GENL 100 Orientation	1		
HLTH 110 Concepts of Personal and Community Health			3
SOCI 101-102-103 Introductory Sociology	3	3	3
SPDR 137 Public Speaking		3	
<b>Total Credits</b>	<b>16</b>	<b>18</b>	<b>18</b>
(Second Year)			
ADJU 237 Administration of Justice			3
ADJU Elective	3	3	3
ADJU Elective	3	3	
<sup>2</sup> Elective	(1)	(1)	(1)
<sup>2</sup> Elective	4(3)	4(3)	4(3)
GOVT 281-282-283 United States Government I-II-III	3	3	3
PSYC 201-202-203 General Psychology I-II-III	3	3	3
<b>Total Credits</b>	<b>16</b>	<b>16</b>	<b>16</b>
Total Minimum Credits for Degree .....	100		

<sup>1</sup>GENL 198 or 298 may be taken in lieu of GENL 100 with counselor approval.

<sup>2</sup>Either three 4-credit hour courses in laboratory science or Spanish, or three 3-credit hour courses in mathematics and three 1-credit hour courses in physical education.

### EARLY CHILDHOOD DEVELOPMENT 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 com-



petence 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.

Those students who are interested in working with special needs children should consult with the Early Childhood Development staff prior to registration and course selection.

In addition to the courses offered at the campus, courses are offered at child care centers and school sites. For information on establishing such courses, consult the Social Sciences Division Chairman or the Early Childhood Development staff.

**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, residential child care facilities and industry associated centers. In addition, this program with appropriate electives qualifies graduates for positions as elementary school classroom aides.

#### **Special Curriculum Admission Guidelines:**

A personal interview with the Counseling Department and the Early Childhood Development 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 or mathematics.

#### **Special Curriculum Completion Guidelines:**

Students who receive a final grade lower than "C" in any of the courses in the Early Childhood Development sequence must be approved by the program faculty to continue the major in Early Childhood Development prior to repeating the course. Each student is responsible for transportation to and from field sites used for laboratory experience.

### **Early Childhood Development Curriculum**

	*Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
EDUC 120 Introduction to Early Childhood Education	3		
EDUC 121-122 Early Childhood Education I-II		3	3
EDUC 137 Creative Activities			3
<sup>1</sup> EDUC 190 Coordinated Internship	3	4	4
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
HLTH 104 First Aid		2	
HLTH 156 Child Health and Nutrition	3		
PSYC 110 Applied Psychology		3	
PSYC 231-232-233 Human Growth and Development	3	3	3
SPDR 137 Public Speaking			3
<b>Total Credits</b>	<b>16</b>	<b>18</b>	<b>16</b>
(Second Year)			
<sup>2</sup> ECON 160 Survey of American Economics	3		
EDUC 106 Language Arts for Young Children	3		
EDUC 140 Modern Mathematics Concepts		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
<sup>2</sup> EDUC 290 Coordinated Internship			3
<sup>3</sup> GOVT 180 American Con- stitutional Government		3	
MUSC 109 Music for Children	3		

PHED 153 Swimming			1
SOCI 166 School and Community Relations		3	
SOCI 236 Marriage and Family Electives		4	3
<b>Total Credits</b>	<b>15</b>	<b>16</b>	<b>16</b>
<b>Total Minimum Credits for Degree</b>	<b>97</b>		

<sup>1</sup>Coordinate with Education 120, 121 and 122.  
<sup>2</sup>Coordinate with Education 188 and 186.  
<sup>3</sup>Sociology 101-102 may be substituted.  
<sup>\*</sup>Course may be offered in quarters different from those above.

**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
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 I Elective	3	3	
<sup>1</sup> ECON 160 Survey of American Economics		3	
ENGL 111-112-113 English Composition	3	3	3
GENL 100 Orientation	1		
<sup>1</sup> GOVT 180 American Constitutional Government			3
PHOT 101 Photography I			3
SPDR 141 Voice & Diction I	3		
Health or Physical Education	1-3	1-3	1-3
<b>Total Credits</b>	<b>18-20</b>	<b>17-19</b>	<b>17-19</b>

(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 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		
Elective		3	
<sup>1</sup> PSYC 128 Human Relations	3		
SECR 111/E Typewriting (or approved elective)	3		
<b>Total Credits</b>	<b>17</b>	<b>17</b>	<b>16</b>
<b>Total Minimum Credits for Degree</b>	<b>102</b>		

<sup>1</sup>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 Curriculum**

(First Year)	Quarter Credit Hours		
	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 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	
<b>Total Credits</b>	<b>16</b>	<b>18</b>	<b>18</b>
<b>(Second Year)</b>			
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
<b>Total Credits</b>	<b>16</b>	<b>16</b>	<b>16</b>

Total Minimum Credits for Diploma ..... 100

**ELECTRONIC SERVICING (DIPLOMA)**

**Purpose:** The 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**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ECON 160 Survey of American Economics	3		
ELEC 11-12 Electricity I-II	4	4	
ELEC 40 Electronics I			7
ELEC 118-119 Electrical Shop	1	1	
ENGL 166 College Reading	3		
ENGL 109 Communications in Business and Industry		3	
GOVT 180 American Constitutional Government			3
MATH 11-12 Elements of Mathematics I-II	3	3	
RDTV 74-75 Radio/TV Electronics		4	4
<b>Total Credits</b>	<b>14</b>	<b>15</b>	<b>14</b>
<b>(Second Year)</b>			
BUAD 100 Introduction to Business			3
ELEC 27 Pulse and Digital Circuits		4	
ELEC 68 Electronics II	6		
ELEC 150 Introduction to Communication Systems		4	
PSYC 128 Human Relations	3		
RDTV 51-52-53 Advanced Servicing Techniques	6	6	6
<b>Total Credits</b>	<b>15</b>	<b>17</b>	<b>6</b>
Total Minimum Credits for Diploma ..... 81			

**\*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.

**Architectural Drafting Curriculum**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
ARCH 111-112-113 Architectural Drafting	3	3	3
MATH 06-07-09 Basic Algebra I-II, Basic Trigonometry (or advanced sequence)	3-5	3-5	3-5
Total Credits	6-8	6-8	6-8

(Second Year)	Quarter Credit Hours		
	1st	2nd	3rd
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
<sup>1</sup> ECON 160 Survey of American Economics	3
<sup>1</sup> GOVT 180 American Con- stitutional Government	3
<sup>1</sup> PSYC 128 Human Relations	3
	<u>12</u>

Total Minimum Credits for Certificate ..... 48

<sup>1</sup>Requires part-time enrollment over a two-year period.  
<sup>2</sup>A year sequence in Social Science may be substituted.

**\*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**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
AIRC 11-12-13 Air Conditioning I-II-III	3	3	3
ELEC 94-95 Practical Electricity I-II		3	3
MATH 11 Elements of Mathematics I	3		
Total Credits	6	6	6

(Second Year)	Quarter Credit Hours		
	1st	2nd	3rd
AIRC 14-15-16 Air Conditioning IV-V-VI	3	3	3

ELEC 20 Electronics Survey			3
ELEC 73 Electrical and Control Systems		3	
ELEC 76 Electrical Power		3	
Total Credits	6	6	6

Additional required courses that may be taken any quarter:

<sup>1</sup> ECON 160 Survey of American Economics	3
ENGL/SPDR Elective	3
<sup>1</sup> GOVT 180 American Con- stitutional Government	3
<sup>1</sup> PSYC 128 Human Relations	3

Total Minimum Credits for Certificate ..... 48

<sup>1</sup>Requires part-time enrollment over a two-year period.  
<sup>2</sup>A year sequence in Social Science may be substituted.

**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.

**Automotive Mechanics Curriculum**

(First Year)	Quarter Credit Hours		
	1st	2nd	3rd
AUTO 100 Automotive Practice	3		



AUTO 121 Automotive Fuel Systems I	4		
AUTO 122 Automotive Fuel Systems II		4	
AUTO 136 Automotive Lubrication & Cooling Systems		3	
AUTO 154 Power Trains I			4
AUTO 238 Automotive Air Conditioning			3
<b>Total Credits</b>	<u>7</u>	<u>7</u>	<u>7</u>

(Second Year)

AUTO 267 Automotive Suspension and Braking Systems			4
AUTO 284 Automotive Service Procedures and Tune-up I	3		
AUTO 285 Automotive Service Procedures and Tune-up II		3	
AUTO 287 Shop Management and Customer Relations I	3		
AUTO 288 Shop Management and Customer Relations II		3	
INDT 176 Industrial Safety			2
<b>Total Credits</b>	<u>6</u>	<u>6</u>	<u>6</u>

Additional required courses that may be taken any quarter:

ECON 160 Survey of American Economics	3
ENGL/SPDR Elective	3
PSYC 128 Human Relations	3
GOVT 180 American Constitutional Government	3
	<u>12</u>

Total Minimum Credits for Certificate ..... 51



**BUILDING CONSTRUCTION SUPERVISION (CERTIFICATE)**

**Purpose:** The curriculum is primarily designed to upgrade or initially train persons for entry level positions in the Building Trades Industry.

**Occupational Objectives:**

- Building Trades Laborer
- Building Trades Supervisor
- Building Inspector
- Building Maintenance
- Building Supplies Sales and Service

**Special Curriculum Admission Guidelines:** Proficiency in oral and written communication skills and general mathematics. Students with deficiencies may require developmental studies.

**Building Construction Supervision Curriculum**

	Quarter Credit Hours		
	1st	2nd	3rd
(First Year)			
BLDG 109 Architectural Blueprint Reading and Sketching	3		
BLDG 140 Principles of Building Construction	3		
BLDG 146 Building Construction Carpentry		3	
BLDG 147 Principles of Concrete and Masonry Practices			3
BLDG 148 Building Construction Mathematics		3	
BLDG 149 Building Construction Estimation			3
<b>Total Credits</b>	<u>6</u>	<u>6</u>	<u>6</u>

(Second Year)

BLDG 107 Plan Review and Building Codes			3
BLDG 136 Building Construction Supervision		3	
BLDG 157 Principles of Mechanical and Plumbing Practices			3
BLDG 158 Building Maintenance and Energy Conservation	3		
BLDG 159 Principles of Construction Supervision	3		
CIVL 100 Introduction to Surveying		3	
<b>Total Credits</b>	<u>6</u>	<u>6</u>	<u>6</u>

Additional required courses that may be taken any quarter:

BUAD 100 Human Relations and Leadership Training	3
ECON 160 Survey of American Economics	3
ENGL/SPDR English or Speech	3



GOVT 180 American Constitutional Government	3
Total Credits	12
Total Minimum Credits for Certificate	48

**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 Child Development Education faculty prior to entering this program. Each student is responsible for transportation to and from field sites used for laboratory experience.

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

**Child Development Aide Program**

	Quarter Credit Hours		
	1st	2nd	3rd
<sup>1</sup> ECON 160 Survey of American Economics		3	
EDUC 106 Language Arts for Young Children		3	
EDUC 120 Introduction to Early Childhood Education	3		
EDUC 121-122 Childhood Education I-II		3	3
EDUC 137 Creative Activities for Children			3

EDUC 190 Coordinated Practice in Child Development Education	3	4	4
ENGL 111 English Composition I	3		
<sup>2</sup> GENL 100 Orientation	1		
<sup>1</sup> GOVT 180 American Constitutional Government			3
HLTH 104 First Aid I			2
HLTH 156 Child Health and Nutrition	3		
PSYC 110 Principles of Applied Psychology		3	
PSYC 130 Child Growth and Development	3		
SOCI 166 School and Community Relations		3	
Total Credits	16	19	15
Total Minimum Credits for Certificate	50		

<sup>1</sup>A year sequence in Social Science may be substituted  
<sup>2</sup>Optional—if needed



**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

	Quarter Credit Hours		
	1st	2nd	3rd
BUAD 100 Introduction to Business	3		
BUAD 108 Business Machines (or BUAD 123)			2-3
DAPR Elective (or BUAD/SECR Elective)			3
<sup>1</sup> ECON 160 Survey of American Economics		3	
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
<sup>1</sup> GOVT 180 American Constitutional Government	3		
MATH 50 Business Math I (or BUAD 121)	3		
<sup>1</sup> PSYC 128 Human Relations		3	
<sup>2</sup> SECR 111-112-113 Typewriting	3	3	3
SECR 136 Filing & Records Management			3
<sup>3</sup> SECR 138 Office Record-keeping		3	
<sup>4</sup> SECR 139 Clerical Procedures			3
<sup>4</sup> SECR 157 Machine Transcription			3
SPDR 137 Public Speaking		3	
Total Credits	16	18	17-18

Total Minimum Credits for Certificate ..... 51

<sup>1</sup>A year sequence in Social Science may be substituted.

<sup>2</sup>Students who have completed prior training in typewriting may petition for credit by examination.

<sup>3</sup>Student is required to have MATH 50 or BUAD 121 as prerequisite.

<sup>4</sup>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 required Dental Assistant course must obtain permission from the Dental Assistant Faculty Committee and approval of the Division Chairman to continue the major in Dental Assistant.

The student will be responsible for transportation to health agencies utilized for clinical practice and the purchase of uniforms, accessories and Dental Liability Insurance. It is recommended that the student purchase health insurance in addition to the liability insurance.

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

**Dental Assistant Curriculum**

	Quarter Credit Hours			
	1st	2nd	3rd	4th
DENT 108 Introduction to Dental Health Care	3			
DENT 110 Introduction to Dental Materials	4			
DENT 121 Chairside Assisting I	4			
DENT 122 Chairside Assisting II		4		
DENT 123 Chairside Assisting III			6	
DENT 124 Chairside Assisting IV				5
DENT 146 Oral Radiographic Techniques		3		
DENT 149 Dental Office Management Procedure				3
DENT 156 Oral Radiographic Practicum			1	
DENT 159 Nutrition for the Dental Assistant			2	
DENT 161 Dental Care Science I	3			
DENT 162 Dental Care Science II		3		
DENT 163 Dental Care Science III			3	
DENT 176 Advanced Clinical Procedures				3
ENGL 111 English Composition I		3		
GENL 100 Orientation	1			
HLTH 101 Cardiopulmonary Resuscitation Modular System		1		
NASC 130 Body Structure and Function	3			
PSYC 110 Principles of Applied Psychology				3
SOSC 100 The Individual and His World			4	
<b>Total Credits</b>	<b>18</b>	<b>14</b>	<b>16</b>	<b>14</b>

Total Minimum Credits for Certificate ..... 62

\*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

**Special Curriculum Admission Guidelines:** In addition to admissions guidelines estab-

lished 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 or English Elective				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
GOVT 180 American Constitutional Government				3
<b>Total Credits</b>	<b>16</b>	<b>15</b>	<b>15</b>	<b>12</b>

Total Minimum Credits for Certificate ..... 58

**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**

	Quarter Credit Hours		
	1st	2nd	3rd
DRFT 111-112-113 Technical Drafting (or Technical Electives) <sup>2</sup>	2-3	2-3	2-3
<sup>1</sup> ECON 160 Survey of American Economics	3		
ENGL 111-112 English Composition English or Speech	3	3	3
ENGR 100 Introduction to Engineering Technology			2
<sup>1</sup> GOVT 180 American Constitutional Government		3	
MATH 06-07-09 Basic Algebra I-II, Basic Trigonometry (or advanced sequence)	3-5	3-5	3-5
<sup>1</sup> PSYC 128 Human Relations			3
<sup>2</sup> Technical Electives	3-4	3-4	3-4
Total Credits	14-18	14-18	16-20
Total Minimum Credits for Certificate	44		

<sup>1</sup>A year sequence in Social Science may be substituted.  
<sup>2</sup>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. Develop-

mental courses may be recommended for students with deficiencies in English and mathematics.

**Food Service Management Curriculum**

	Quarter Credit Hours		
	1st	2nd	3rd
BUAD 110 Human Relations and Leadership Training			3
BUAD 121 Business Mathematics (or MATH 50)	3		
BUAD 164 Principles of Business Management		3	
ECON 160 Survey of American Economics		3	
GOVT 180 American Constitutional Government			3
HRIM 100 Introduction to Hotel/Restaurant Management	3		
HRIM 134-135 Nutrition I-II	3	3	
HRIM 266 Food Purchasing			3
HRIM 124-125 Principles of Food Preparation	4	4	
HRIM 140 Principles of Baking			4
HRIM 236 Sanitation English or Speech		3	3
Total Credits	13	16	16
Total Minimum Credits for Certificate	45		

**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 student 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		
SOSC 100 The Individual and His World		4		
ENGL 111-112-113 English Composition	3	3	3	
*NASC 111 Health Science	4			
SECR 111-112-113 Typewriting	3	3	3	
SECR 136 Filing and Records Management	3			



SECR 157 Machine Transcription			3	
SECR 159 Machine Transcription-Medical				3
MDRS 190 Coordinated Practice			3	8
PSYC 128 Human Relations		3		
MDRS 199 Supervised Study				1
<b>Total Credits</b>	<b>17</b>	<b>15</b>	<b>12</b>	<b>12</b>
<b>Total Minimum Credits for Certificate</b>	<b>56</b>			

\*BIOL 154 may be substituted.

**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**

	Quarter Credit Hours		
	1st	2nd	3rd
BUAD 100 Introduction to Business	3		
*BUAD 108 Business Machines (or BUAD 123)			2-3
<sup>2</sup> ECON 160 Survey of American Economics		3	
ENGL 111-112 English Composition	3	3	
GENL 100 Orientation	1		
<sup>2</sup> GOVT 180 American Constitutional Government			3
MATH 50 Business Mathematics (or BUAD 121)	3		
<sup>2</sup> PSYC 128 Human Relations		3	
<sup>3</sup> SECR 111-112-113 Typewriting	3	3	3
<sup>3</sup> 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
<b>Total Credits</b>	<b>17</b>	<b>19</b>	<b>18-19</b>
<b>Total Minimum Credits for Certificate</b>	<b>54</b>		

<sup>1</sup>Student is required to have MATH 50 or BUAD 121 as prerequisite  
<sup>2</sup>A year sequence in Social Science may be substituted.  
<sup>3</sup>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 Supervisor  
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			<u>2</u>
Total Credits	<u>4</u>	<u>4</u>	<u>4</u>

(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	<u>3</u>		
Total Credits	<u>5</u>	<u>5</u>	<u>5</u>

Additional required courses that may be taken any quarter:

English Elective	3-5
ECON 160 Survey of American Economics	3
ELEC 94 Electricity	3
GOVT 180 American Constitutional Government	3
PSYC 128 Human Relations	<u>3</u>
Total Credits	<u>15-17</u>

Total Minimum Credits for Certificate ..... 42

## 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 programs; 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 that 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 14-15 BOOKKEEPING I-II (3 cr.) (3 cr.) — A study of the complete cycle of double-entry bookkeeping. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

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. 87.

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 — See General Usage Courses Page 87.

## 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 109 SECURITY OFFICERS—DUTIES AND RESPONSIBILITIES (3 cr.) — A broad overview of the theory and practice of duties of security officers, guards, watchmen, merchant police and private police — leading toward the objective of licensing and professionalization. Lecture three hours per week. This course does not count towards degree requirements in ADJU program.

ADJU 114-115 POLICE ORGANIZATION AND ADMINISTRATION I-II-III (3 cr.) (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 124 JAIL OPERATIONS AND MANAGEMENT I (3 cr.) — Prerequisite ADJU 120. Correctional history as a frame of reference; security procedures in jail operation; the effect of the jail climate on inmates and personnel; criteria for effective supervision of prisoners; correctional aspects of inmate discipline; handling special prisoners. Lecture 3 hours per week.

ADJU 125 JAIL OPERATIONS AND MANAGEMENT II (3 cr.) — Prerequisite ADJU 124. The functions of jail

management as it relates to jail and community programs, planning of jail operation, legal problems in jail administration, community relations, personnel supervision. Lecture 3 hours per week.

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 adaptations. Lecture 3 hours per week.

ADJU 136 LEGAL EVIDENCE (3 cr.) — Kinds, degrees, and admissibility of evidence; methods and techniques of its acquisition, use in criminal proceedings, moot court activities. Lecture 3 hours per week.

ADJU 137 LEGAL EVIDENCE I (3 cr.) — Trial procedure; kinds and rules of; witnesses; credibility and impeachment; and, the hearsay rule—its expectations; confessions and admissions. 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 144 CORRECTIONAL LAW I (3 cr.) — Prerequisite ADJU 120. A study of the consequences of convictions of criminal acts committed by adults and juveniles; the sentencing process; the various types of attack upon the validity of convictions. 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 147 PRINCIPLES OF LOSS PREVENTION (3 cr.) — An overview of the functional operations of various specialized areas of security such as, theft and risk control, security surveys and loss prevention management in proprietary and governmental institutions. Lecture 3 hours per week.

ADJU 164 HUMAN RELATIONS IN LAW ENFORCEMENT SUPERVISION I (3 cr.) — Prerequisite ADJU 100. 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 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 233 CRIMINAL LAW, EVIDENCE, AND PROCEDURES III (3 cr.)** — Review of court systems with emphasis on procedures from incident to final disposition of the accused and on applicable principles of criminal and civil law. Intended to satisfy transfer requirements for one year of Criminal Law. Lecture 3 hours per week.

**ADJU 237 ADMINISTRATION OF JUSTICE (3 cr.)** — 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. Includes field trips and guest lectures by representatives of local agencies and tribunals. Limited to students who have successfully completed five quarters of the Associate in Applied Science Degree program in Police Science, or who have secured departmental permission. 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; obtaining 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 277 PROPRIETARY AND GOVERNMENTAL SECURITY (3 cr.)** — Prerequisite ADJU 276. Continuation and expansion of principles and procedures begun

in ADJU 276. Field work and visits to various types of establishments and installations. Inquiry into internal controls of organizations. Application of investigative procedures and techniques. 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 INNOVATIVE 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 87.**

**ADJU 298** — See **General Usage Courses Page 87.**

## AGRICULTURE

**AGRI 130 INTRODUCTION TO SOIL SCIENCES (3 cr.)** — Biological, physical, edaphic, and social factors that influence crop production. Emphasis is placed on various phases of soil and plant sciences and how each area relates to both urban and rural populations. Lecture 3 hours per week.

**AGRI 140 HOME VEGETABLE GARDENING (3 cr.)** — Fundamentals of family vegetable garden planning and arrangement, seed selection, cultivation, soil management, and cultivation practices necessary for selected regional crops. Lecture 3 hours per week.

**AGRI 236 AGRICULTURAL CHEMICALS (4 cr.)** — A study of farm chemical pesticides, their ingredients, formulation, and farm application, with emphasis on the effective and safe use of chemicals in agricultural pest control. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**AGRI 270 FARM TAXES AND RECORDS MANAGEMENT (3 cr.)** — Principles of taxation relating to farm income taxes with emphasis on tax minimization, preparation of farm tax returns, and farm records. Lecture 3 hours per week.

## 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, condensers, evapora-

tors, 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, load 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, free-hand 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, free-hand 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 168-169 INTRODUCTION TO SOLAR ENERGY I-II (3 cr.) (3 cr.)** — A survey of the principles involved in the planning and design of solar heated buildings. An overview of the development, application, and operation of active and passive systems. Topics include energy use and conservation heat loss calculations, simplified procedures for sizing of systems and determining solar contribution. Lecture 3 hours per week.

**ARCH 197** — See General Usage Courses Page 87.

**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 268 ACTIVE SOLAR ENERGY SYSTEM DESIGN (3 cr.)** — Practical design of active solar hydronic and air systems for domestic hot water and space heating. Emphasis on residential and light commercial applications. Includes discussion of system components, design procedures, F-chart sizing, and economic analysis, installation and maintenance of systems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**ARCH 269 PASSIVE SOLAR ENERGY SYSTEM DESIGN (3 cr.)** — Discussion of the various approaches to passive solar heating and cooling of buildings. Includes detailed procedures for calculating thermal loads, solar gain, and storage mass requirements.

**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 290, 298** — See General Usage Courses on page 87.

**ARCH 297** — See General Usage Courses page 87.

## 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 mainstream 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 154-155-156 DESIGN I-II-III (3 cr.) (3 cr.) (3 cr.)** — Introduction to the concepts of two and three dimensional design and the theory and use of color. Field trips related to design concepts. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

**ARTS 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 87.

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 serigraph, photo silkscreen, intaglio, and lithography. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

ARTS 297 — See General Usage Courses on page 87.

ARTS 298 — See General Usage Courses on page 87.

## AUTOMOTIVE TECHNOLOGY

AUTO 100 AUTOMOTIVE SHOP PRACTICES (3 cr.) — Shop practices for the automotive laboratory including laboratory and shop safety, identification and use of hand tools, general power equipment and maintenance of an automotive shop. Basic operating procedures of installed shop equipment. Occupational Safety and Health Act standards. Lecture 3 hours per week.

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 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 133-193. 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 138 AUTOMOTIVE VEHICLE INSPECTION (3 cr.) — The course is designed to provide information on how to perform automotive vehicle safety inspection. 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 154-155 POWER TRAINS I-II (4 cr.) (4 cr.) — Analysis of transmission, propeller shaft, joints, differential, and rear axle identification of repairs and adjustments. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

AUTO 170 INTRODUCTION TO DIESEL ENGINE (3 cr.) — Prerequisite AUTO 133-193. A study of the modern diesel engine including its construction, fuel sys-



tem, 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 176 SMALL GASOLINE ENGINES (3 cr.)** — A study of small gasoline engine operating principles, construction, design, variety and their many purposes. Instruction on the two-cycle and four-cycle small gas engines, their construction, design, fuel system, ignition system and lubrication systems. The disassembly, reconditioning, overhaul and reassembly is demonstrated in the lab. Thorough study and practice in trouble-shooting and tune-up. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**AUTO 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 87.

**AUTO 199** — See **General Usage Courses** on page 87.

**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 4 hours, Laboratory 6 hours, Total 10 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, adjustments, general servicing, and charging of air conditioning systems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**AUTO 238 AUTOMOTIVE AIR CONDITIONING (3 cr.)** — Principles of refrigeration, air conditioning controls, and the adjustment and general servicing of automotive air conditioning systems. Lecture 3 hours per week.

**AUTO 267 AUTOMOTIVE SUSPENSION AND BRAKING SYSTEMS (4 cr.)** — Operation, design, construction, repair and servicing of braking and suspension systems; use of tools and test equipment, evaluation of test results, estimation and repair cost, front and rear suspension alignment, power and standard steering, and power, standard and disc brakes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**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 87.

**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 trouble-shooting. Lecture 2 hours, Laboratory 6 hours, Total 8 hours per week.

**AUTO 298** — See **General Usage Courses** page 87.

## 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 104-105 GENERAL BIOLOGY I-II (6 cr.) (6 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 4 hours, Laboratory 6 hours, Total 10 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.)** — Prerequisite one unit of high school biology or divisional permission. 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 relationship to individual community health. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**BIOL 198, 199** — See **General Usage Courses** on page 87.

**BIOL 214 INTRODUCTION TO NONVASCULAR PLANTS (4 cr.)** — Prerequisites BIOL 103 or equivalent (not open to students having had BIOL 114-115). 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 114-115). 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 124-125). 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 124-125). 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 264 GENERAL ECOLOGY I (3 cr.)** — Prerequisite BIOL 103 or divisional permission. Study of the

interrelationships between organisms and the natural and cultural environments with emphasis on survey of population, communities and ecosystems. Lecture 2 hours, Laboratory 3 hours, Total 5 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 277 BIRDLIFE (2 cr.)** — Fundamental characteristics of birds, including anatomy, ecology, behavior, classification, and identification. Emphasis will be placed on birds commonly found in the area. Laboratory will consist of field trips to various local habitats for study of resident avifauna. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

**BIOL 298, 299** — See General Usage Courses on page 87.

## 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 111 and SPDR 141. 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 3 hours per week.

**BCST 197** — See General Usage Courses page 87.

**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.)** — The written communication 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 87.

**BCST 297** — See **General Usage Courses** page 87.

## BUILDING

**BLDG 107 PLAN REVIEW AND BUILDING CODES (3 cr.)** — A study and interpretation of the basic building codes as they relate to construction of residential, commercial and public facilities. Interpretation of working drawings and construction specifications for compliance to the basic building codes. Lecture 3 hours per week.

**BLDG 109 ARCHITECTURAL BLUEPRINT READING AND SKETCHING (3 cr.)** — The basic principles involved in blueprint reading and sketching for the construction trades. Emphasis on reading, understanding, and interpreting standard types of architectural drawings and symbols including plans, elevations, sections and details. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**BLDG 136 BUILDING CONSTRUCTION ELECTRICITY (3 cr.)** — The theories and laws of the flow of electricity, magnetism, inductance, capacitance, and fundamentals of direct and alternating currents as related to the building construction industry. Practical application by the use of test and measuring equipment, circuitry, electrical apparatus, and rotating machinery. Lecture 3 hours per week.

**BLDG 140 PRINCIPLES OF BUILDING CONSTRUCTION (3 cr.)** — A survey course outlining the history and impact of the construction industry on American society. Emphasis will be placed on housing as well as commercial terminology. Basic procedures implemented by construction industry from planning to completion of construction projects. Lecture 3 hours per week.

**BLDG 146 BUILDING CONSTRUCTION CARPENTRY (3 cr.)** — Woodworking technologies in the construction vocation of carpentry. Introduction to types of framing and building materials and equipment used in residential and light commercial construction. Emphasis will be placed on the development of skills in the safe use of both hand and machine woodworking tools and the development of construction terminology. Includes laboratory involvement in wall framing and carpentry practices. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**BLDG 147 PRINCIPLES OF CONCRETE AND MASONRY PRACTICES (3 cr.)** — The fundamentals of concrete technology and masonry practices, develop an understanding of ingredients of concrete, properties of concrete, mix proportions and testing procedures which result in quality-controlled products, concrete form use and removal. Introduction to masonry; the use of hand tools, mixing and laying of block and brick. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**BLDG 148 BUILDING CONSTRUCTION MATHEMATICS (3 cr.)** — Mathematics and application of mathematics to the building construction trades. Emphasis on basic arithmetic, accurate measurement, computation of building material, measurement of complex areas and volumes, and everyday problems in the building trades. Lecture 3 hours per week.

**BLDG 149 BUILDING CONSTRUCTION ESTIMATION (3 cr.)** — Estimating costs of material and labor in residential and light commercial construction. Interpreting and computing data from working drawings and specifications for estimating and fabrication of residential and light commercial buildings. Includes computing costs of excavation, concrete, wood, masonry block, brick, steel, and other building materials. Lecture 3 hours per week.

**BLDG 157 PRINCIPLES OF MECHANICAL AND PLUMBING PRACTICES (3 cr.)** — The fundamentals of heating, cooling, sanitary plumbing systems, terminology and symbols as used in layout of various systems. Code requirements for installation and safety in residential and light commercial building construction. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**BLDG 158 BUILDING MAINTENANCE AND ENERGY CONSERVATION (3 cr.)** — The study and practice of residential and light commercial maintenance and repair. Emphasis on selection and use of tools and equipment used in the repair of new or recently built constructions. Also heating and cooling devices, relative fuel efficiencies, insulation, weather stripping, thermostat control; chimney, door, and window heat loss. Lecture 3 hours per week.

**BLDG 159 PRINCIPLES OF CONSTRUCTION SUPERVISION (3 cr.)** — The functions, responsibilities, and leadership of a construction supervisor, including office and field management, construction labor laws, labor relations, safety, and construction law. Lecture 3 hours per week.

## 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 121-122-123 BUSINESS MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)** — A sequence of three courses with instruction, review and drill in solving mathematical problems arising from normal business activities, integrating the use of calculating machines as a tool. The theories of mathematics are applied to business activities emphasizing the use of concepts and procedures concerning payroll computations, ratios, discounts, interest, sales and property tax, pricing mark-up and mark-down, and annuities. 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 87.

**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 247 BANK INVESTMENTS (3 cr.)** — The economic background of investments: federal government, federal agency and municipal securities; general obligation and revenue bonds; markets for Treasury and municipal securities; general nature of bank liquidity; primary and secondary reserves; security prices; yield curves and their uses; safety considerations; tax and related considerations; investment policies. 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 BUAD 122. 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 256 TRUST FUNCTIONS AND SERVICES (3 cr.)** — The services rendered by institutions engaged in the trust business. An introduction to the services and duties involved in trust operations; the distinction between the business and legal aspects of trust functions. 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 259 CREDIT ADMINISTRATION (3 cr.)** — Statement and a discussion of factors influencing and determining loan policy. Methods of credit investigation and analysis, credit techniques, specific credit problems, and regular as well as unusual types of loans. 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 268 BANK MANAGEMENT (3 cr.)** — Presents new trends which have emerged in the philosophy and practice of management. Study and application of the principles provide new and experienced bankers with a working knowledge of bank management. Utilizes the case method of solving management problems. 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 87.

**BUAD 298, 299** — See **General Usage Courses** on page 87.

## CHEMISTRY

**CHEM 05 DEVELOPMENTAL CHEMISTRY FOR HEALTH SCIENCES (4 cr.)** — A developmental course introducing the basic principles of inorganic and organic chemistry with emphasis on application in the health sciences. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**CHEM 06 CHEMISTRY I (3 cr.)** — A developmental course in general chemistry designed to help students develop the basic skills required to successfully complete college chemistry. Major emphasis will be given to developing the mathematical skills that are essential in solving chemistry problems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**CHEM 101-102-103 GENERAL CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.)** — This is a beginning sequence for the non-science major, intended for students who will take no further chemistry courses. The experimental and theoretical aspects of the various branches of chemistry are discussed and emphasis is placed on the concepts and ideas of the science. Particular attention is given to introductory organic and biochemistry and the role of chemistry in human affairs is treated. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**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 fun-



gicides, 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.)** — Prerequisite Algebra I, II and/or CHEM 06. This is the beginning sequence for science and engineering majors. The sequence covers the fundamental theories and laws of chemistry. The laboratory emphasizes the quantitative aspects of the course content. The student is expected to have a strong background in mathematics. 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.

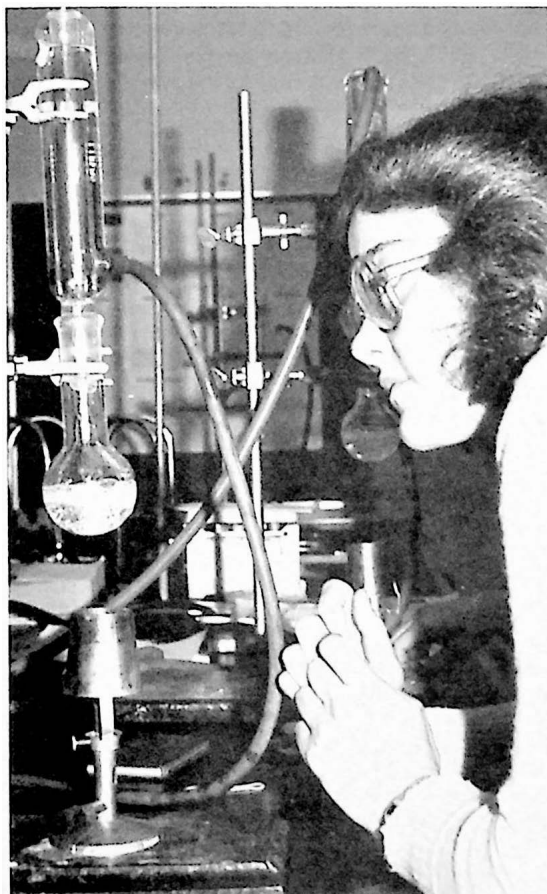
**CHEM 197** — See General Usage Courses page 87.

**CHEM 198, 199** — See General Usage Courses on page 87.

**CHEM 241-242-243 ORGANIC CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.)** — Prerequisite CHEM 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 87.

**CHEM 298, 299** — See General Usage Courses on page 87.



## CIVIL ENGINEERING TECHNOLOGY

**CIVL 100 INTRODUCTION TO SURVEYING (3 cr.)** — Introduction to surveying equipment and instruments; distance and angle measurements with mathematical principles applied; maintenance and adjustments of surveying equipment. Basic surveying operations including: curves, earthwork, and traverse computations, city and route surveying, spiral, vertical and transition curves, highway safety and design. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**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 87.

**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 252 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 151 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 AASHTO 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 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 87.

## 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.)** — Corequisite 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 148 COMPUTER PROGRAMMING (INTERMEDIATE COBOL) (4 cr.)** — Prerequisite DAPR 147 or equivalent. Further development of programming techniques and procedures. Practical experience in utilizing additional capabilities of ANS COBOL to solve business-oriented problems will be gained. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**DAPR 197, 198** — See General Usage Courses page 87.

**DAPR 236 DATA PROCESSING MANAGEMENT (3 cr.)** — Prerequisite DAPR 106 or equivalent. Survey of ADP 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 (ADVANCE COBOL) (4 cr.)** — Prerequisite DAPR 148.

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 258 COMPUTER PROGRAMMING: BASIC (3 cr.)** — Prerequisite DAPR 106 and instructor's permission. The study and development of programming capabilities in Basic All Purpose Symbolic Instruction Circle (BASIC); including program logic, file manipulations, file development, solving of business oriented problems. The BASIC language is used in an interactive mode of communication with a computer. Lecture 2 hours, Laboratory 3 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 of functions; nature of business problem isolation and definition; initial phase of systems 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 hardware and 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 286 COMPUTER PROGRAM APPLICATIONS (4 cr.)** — Prerequisite DAPR 256. The characteristics and requirements of basic business applications. Design of a computer solution to an application as a case study. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**DAPR 297, 298, 299** — See General Usage Courses on page 87.

## DENTAL

**DENT 108 INTRODUCTION TO DENTAL HEALTH CARE DELIVERY (3 cr.)** — Introduction to dental profession and supporting personnel; history and devel-

opment of dentistry; the role of the dental auxiliaries in clinical setting and to members of dental laboratory craft and others of the dental health team; dental ethics and jurisprudence; professional and education opportunities. Lecture 3 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 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 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 123 CHAIRSIDE ASSISTING III (6 cr.)** — A continuation of DENT 122. The student will be involved in the actual experience of clinical procedures and chairside assisting. Lecture 1 hour, Laboratory 15 hours, Total 16 hours per week.

**DENT 124 CHAIRSIDE ASSISTING IV (5 cr.)** — A continuation of 123 with a practicum course designed to involve the student in clinical procedures and chairside assisting. Laboratory 15 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 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 129 GENERAL AND ORAL HISTOLOGY (2 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 1 hour, Laboratory 2 hours, Total 3 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.)** — Introduction 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 skills 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 hours, Total 11 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 149 DENTAL OFFICE MANAGEMENT PROCEDURES (3 cr.)** — Prerequisites DENT 108, DENT 121. Instruction and practice in the management of a dental office in areas such as appointment and recall systems, reception techniques, financial records and accounting procedures, insurance claims, purchase and inventory of supplies and equipment, filing systems. Emphasis is on the role of a dental assistant as office manager. Lecture 2 hours, Laboratory 3 hours, Total 5 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 156 ORAL RADIOGRAPHIC PRACTICUM (1 cr.)** — Practicum will include five weeks using dexter manikin, remaining time spent taking x-rays on clinical patients through the performance of full mouth radiographic surveys. Laboratory 3 hours. Total 3 hours per week.

**DENT 159 NUTRITION FOR DENTAL ASSISTANTS (2 cr.)** — A study of the significance of foods and their relationship to dental health. Techniques in counseling patients in food selection will be correlated with clinical activity. Lecture 2 hours, Total 2 hours per week.

**DENT 161 DENTAL CARE SCIENCE I (3 cr.)** — Pre-

requisite Entrance into Dental Assist. Program. An introductory course stressing oral dental anatomy with emphasis on the deciduous and permanent dentition and specified oral structures. Lecture 3 hours per week.

**DENT 162 DENTAL CARE SCIENCE II (3 cr.)** — Prerequisite DENT 161. Basic microbiology, pathology, and oral pathological conditions as related to the role of the Dental Assistant. Lecture 3 hours per week.

**DENT 163 DENTAL CARE SCIENCE III (3 cr.)** — Prerequisite DENT 162. Pharmacology as related to dentistry and the principles involved in dental health education programs. Lecture 3 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 87.

**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 hours, Total 14 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 hours, Total 13 hours per week.

**DENT 263 DENTAL HYGIENE V (5 cr.)** — Lecture to include pedodontics and seminar. 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 hours, Total 13 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 hours, Total 13 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. Lec-

ture 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 or permission of instructor. 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 147 CONSUMER ECONOMICS (3 cr.)** — Designed to foster an understanding of the American economic system and the individual's role as a consumer in that system. Lecture 3 hours per week.

**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 87.

## 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 identification, assessment, and amelioration of specific learning problems from a preventive rather than remedial standpoint. Includes a survey of both in-depth 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 chil-

dren. 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.)** — 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 AFFECTIVE 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. (See also HLTH 156).

**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 educa-

tionally 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 instrumental 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.)** — Corequisite MATH 11 or equivalent. Principles of electricity covering resistance, current, and voltage in both AC and DC circuits. Lecture 4 hours per week.

**ELEC 20 ELECTRONICS SURVEY (3 cr.)** — The study of the electron and its behavior in passive and active circuits and components. Electrical-electronic components and circuits demonstrated as applied to modern Electronic Systems. Lecture 3 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.)** — Prerequisite ELEC 68. Review of networks, transient analysis, linear and non-linear 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 40 ELECTRONICS (7 cr.)** — Prerequisite ELEC 11-12. 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.)** — Prerequisite ELEC 40. 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 73 ELECTRICAL AND CONTROL SYSTEMS (3 cr.)** — Prerequisite Permission of Instructor. Trouble shooting and servicing electrical controls, electric motors, motor controls, motor starters, relays, overloads, instruments and control circuits. Lecture 3 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 76 ELECTRICAL POWER (3 cr.)** — Prerequisite Permission of Instructor. Circuit elements, direct current circuits and motors, single and three-phase circuits and motors, power distribution systems and protective devices. Lecture 3 hours per week.

**ELEC 94-95 PRACTICAL ELECTRICITY I-II (3 cr.) (3 cr.)** — The fundamentals of electricity, terminology and symbols, diagrams, the principles essential to the understanding of general practices, safety, and the practical aspects of residential and non-residential wiring and electrical installation. Lecture 2 hours, Laboratory 2 hours, Total 6 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, ELEC 199. 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 and introductory concepts of digital circuit design. 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, 198, 199** — See General Usage Courses page 87.

**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 semi-conductor diodes and triodes to electronic circuits. Advanced semiconductor 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 113. 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 and ELEC 125. 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.)** — Prerequisite MATH 122. 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.)** — Prerequisite 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.)** — 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 237. 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 87.

## ENGINEERING

**ENGR 100 INTRODUCTION TO ENGINEERING TECHNOLOGY (2 cr.)** — Corequisite MATH 118. 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.)** — Corequisite MATH 161 or equivalent. 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.)** — 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 197** — See **General Usage Courses** page 87.

**ENGR 206 ENGINEERING ECONOMY (3 cr.)** — Economic decision process in the engineering design environment. Investment, financing, depreciation, man-

ufacturing 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 of particles. Lecture 3 hours per week.

**ENGR 242 DYNAMICS OF RIGID BODIES (3 cr.)** — Prerequisite ENGR 241. Vector treatment 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 ENGR 140. 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 252 ENGINEERING MECHANICS II (Strength of Materials) (4 cr.)** — Prerequisite ENGR 151. Introductory mechanics of continuous media. Concepts of stress and deformation due to longitudinal loads; torsion and bending, plane stress. Lecture 4 hours per week.

**ENGR 297** — See **General Usage Courses** page 87.

## ENGLISH

**ENGL 01 VERBAL STUDIES LABORATORY (1-5 cr.)** — A developmental course in composition designed for students who need help in all areas of writing to bring their proficiency to the level necessary for entrance into their respective curriculums. Emphasis on individual instruction. Students may reregister 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 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 such as handling customer complaints, writing various types of letters, and 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 121-122-123 JOURNALISM I-II-III (3 cr.) (3 cr.) (3 cr.)** — Instruction and classroom practice in gathering, evaluating, and writing news. Techniques of page layout, newspaper make-up, rewriting, and editing. 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 199** — See **General Usage Courses** page 87.

**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 play-writing. 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** page 87.

## 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 107-108-109 CONVERSATION IN FRENCH (3 cr.) (3 cr.) (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** page 87.

**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 FREN203 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** page 87.

## GENERAL

**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.

**NOTE: The following "General Usage Courses" apply to multiple curriculums and prefix sections. The titles and descriptions are generally applicable for such use.**

(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 curriculums 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 87.

## 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, 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 87.

**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** page 87.

## GOVERNMENT

**GOVT 108 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 liber-

ties. 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 87.

## 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 101 CARDIOPULMONARY RESUSCITATION MODULAR SYSTEM (1 cr.)** — Training in coordinated mouth-to-mouth artificial ventilation and heart compression based upon the American Red Cross approved method. Successful completion of all phases of the course results in Red Cross certification in CPR. Lecture 1 hour per week.

**HLTH 104 FIRST AID I (2 cr.)** — The principles and techniques of safety and first aid according to the accepted content of a standard first aid course. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

**HLTH 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 125 MEDICAL TERMINOLOGY II (2 cr.)** — A continuation of HLTH 124 for those students in health-related curriculums requiring additional understanding of medical terms. Lecture 2 hours per week.

**HLTH 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 138 ETHICS FOR HEALTH CARE PERSONNEL (3 cr.)** — A study of ethical concepts of health care. Confidentiality, patient records, personal appearance, professionalism with patients/clients, associates, and awareness of types of health care facilities. Lecture 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 87.

**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 273 THE HISTORY OF VIRGINIA III (3 cr.)** — A survey of the cultural, political, economic history of the Commonwealth from its Elizabethan beginnings to the present. The first quarter covers the period ending in 1789; the second, from 1789 through 1900; the third, the twentieth century. Lecture 3 hours per week.

**HIST 298, 299** — See **General Usage Courses** page 87.

## 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 2 hours, Laboratory 2 hours, Total 4 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 122 TREES, SHRUBS, AND EVERGREENS (3 cr.)** — The characteristics of trees, shrubs, and evergreens and how they may be used to provide shade and beautify the home. A study of the varieties of berried shrubs and trees that can be used to attract birds and wildlife. Lecture 3 hours per week.

**HORT 126 LANDSCAPE CONSTRUCTION AND MAINTENANCE (3 cr.)** — Development of skills and competencies in practical application of landscape design theory. Construction, planning, 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 140 PLANT IDENTIFICATION (3 cr.)** — A course in plant identification and landscape uses providing a foundation for a mental inventory of available plant materials in the immediate area with emphasis placed on materials utilized in commercial and home landscaping. Lecture 3 hours per week.

**HORT 141 HORTICULTURE AND LANDSCAPING I (3 cr.)** — Seasonal application of the principles concerning horticulture and landscaping; practical application for home planning and planting; plant taxonomy and desired habitats for acceptable and successful plants for the area; soil testing, fertilizers, insecticides and fungicides. 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, insect and disease control, marketing, and storage. Lecture 2 hours per week.

**HORT 197, 199** — See **General Usage Courses** on page 87.

**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, burlapping, 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 MANAGEMENT (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, irriga-

tion 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 potted 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, 297, 298, 299** — See **General Usage Courses** on page 87.

## **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.)** — 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.)** — Appli-



cation of scientific principles and techniques of baking. Lecture 3 hours, Laboratory 3 hours, Total 6 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 87.

**HRIM221-222-223 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 297, 298** — See General Usage Courses page 87.

## HUMAN SERVICES

**HMSV 106 INTRODUCTION TO HUMAN SERVICES (3 cr.)** — An overview of human services, types of agencies and delivery systems, and human services as a career field. Emphasis will be on developing the generalist concept and the role of the associate degree graduate to other human service personnel. Lecture 3 hours per week. Prerequisite — Instructor's permission.

**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 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.

**HMSV 134-135 HELPING RELATIONSHIPS I-II (3 cr.) (3 cr.)** — Development of skills needed to function effectively in helping relationships. A major emphasis will be to increase students' self-awareness in order to enable them to relate to and help others more effectively. Students will learn to identify personal skill strengths and deficits, to set goals, and to develop plans for achieving personal and program goals. Second quarter emphasis will be transfer of these skills to client needs. Lecture 3 hours per week.

**HMSV 144-145 GROUP PROCESS I-II (3 cr.) (3 cr.)** — A study of the stages of group development, the role of the group leader and the various kinds of groups. Students will be introduced to various models of group processes that are involved in the helping process. Second quarter students will increase their skill development through increased experiences in group facilitating and leadership. Lecture 3 hours per week.

**HMSV 190 COORDINATED PRACTICE IN HUMAN SERVICE (4 cr.)**

**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 221-222-223 HUMAN BEHAVIOR I-II-III (3 cr.) (3 cr.) (3 cr.)** — Designed to develop the understanding and knowledge of working with individuals, families, groups, organizations and communities within the socio-cultural context. The course emphasizes normal development of social systems through states. Attention is given to major theoretical approaches to individual, community and organization development and is sequential in keeping with the life cycle focus. Lecture 3 hours per week.

**HMSV 290 COORDINATED PRACTICE IN HUMAN SERVICE (5 cr.) (5 cr.) (5 cr.)**

**HMSV 298 SEMINAR AND PROJECT IN HUMAN SERVICE (3 cr.)**

## 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 ENGINEERING TECHNOLOGY

**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 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-courtesy, easements and riparian rights as it affect titles to land. 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 251 LEGAL TRANSACTIONS I (3 cr.)** — Commercial principles and practices. Uniform Commercial Code. Major emphasis on contracts, warrants, title, consideration, performance, parties, subject matter and remedies for breach; torts, sales, negotiable instruments; consumer protection; insurance; wills and inheritance; bankruptcy, statute of limitations. Lecture 3 hours per week.

**LEGL 257 REAL ESTATE LAW (3 cr.)** — Principles and practices of real estate law, including titling, interstate succession and probate problems, liens, encumbrances and restrictions, legal descriptions, surveying and research, contracting, financing, taxation, lending and bankruptcy. Lecture 3 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 connected 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 168 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. Lecture 3 hours per week.

**MKTG 197** — See **General Usage Courses** page 87.

**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 218 FASHION MERCHANDISING (BUYING AND CONTROL) (3 cr.)** — Develops an understanding of the major considerations involved with the buying and merchandising of fashion products. Emphasis is placed on the dynamics of fashion and consumer buying patterns and sources of buying information are analyzed and studied. Discusses fashion buying and inventory control in the merchandising cycle; techniques used in developing fashion buying plans; model stock, unit control and inventory systems. Merchandising selection policy and pricing for profit. Lecture 3 hours per week.

**MKTG 220 INTRODUCTION TO FASHION DESIGN (3 cr.)** — An introductory course in the basic techniques of the development of fashions. Also includes pencil sketching of original designs and a complete study of the garment industry and fashion designers. 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 force 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, salesman and client and community responsibilities. Writing contracts, closing and settlement, and follow-up relations. Lecture 3 hours per week.

**MKTG 267 REAL ESTATE APPRAISAL (3 cr.)** — Fundamentals of real estate 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 274 ADVANCED REAL ESTATE SALES (3 cr.)** — Advanced fundamentals of real estate brokerage and sales procedures as they apply to the real estate business. Relations of broker and salesmen, salesmen and client, and responsibilities. Writing contracts, closing and settlements, and follow-up relations. Lecture 3 hours per week.

**MKTG 275 ADVANCED REAL ESTATE APPRAISAL (3 cr.)** — Advanced fundamentals of real estate evaluation; methods used in determining value; advanced procedures and techniques by utilizing actual appraisals; discussion of the many fields available in appraisal activity of real estate. 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 87.

## MATHEMATICS

**MATH 01 DEVELOPMENTAL MATHEMATICS (3 cr.)** — A developmental course in arithmetic for students who need to build up their arithmetic skills before entering higher level mathematics courses. Lecture 3 hours per week.

**MATH 02 PRE-ALGEBRA (3 cr.)** — A developmental course which is designed to bridge the gap between arithmetic and the College's business mathematics sequence. Topics include fundamental operations in arithmetic and algebra, percents, simple equations, ratios and proportions, and word problems. Lecture 3 hours per week.

**MATH 06-07 BASIC ALGEBRA I-II (5 cr.) (5 cr.)** — A developmental course in review of algebra, designed to develop the mathematical proficiency necessary for selected curriculum entrance. MATH 06 covers the basic material normally covered in high school Algebra I while MATH 07 covers the material in Algebra II. Lecture 5 hours per week.

**MATH 08 BASIC GEOMETRY (3 cr.)** — A developmental course in review of geometry, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Lecture 3 hours per week.

**MATH 09 BASIC TRIGONOMETRY (3 cr.)** — A developmental course in review of trigonometry, designed to develop the mathematical proficiency necessary for selected curriculum entrance. 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, trigonometry to everyday problems in the manufacturing and trade world. Lecture 2 hours, Laboratory 2 hours, Total 4 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 87.

**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 straight line, 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.)** — Prerequisite 2 units of high school math including Algebra or satisfactory score on the mathematics placement test. 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 vector analysis. Lecture 5 hours per week.

**MATH 150 INTRODUCTION TO COMPUTER MATHEMATICS (2 cr.)** — Prerequisite 2 units of high school math. 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. Lecture 1 hour, Laboratory 2 hours, Total 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 or GEOMETRY or satisfactory score on math placement test or MATH 06. 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 07. 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 06. 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 87.**

**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 course comprising infinite series, multiple integrals, linear algebra, and ordinary differential equations. Lecture 4 hours per week.

**MATH 261-262-263 ADVANCE 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, analytical geometry, and calculus for students other than those in engineering. Topics included are differentiation and integration of exponential, logarithmic, and trigonometric functions; sequences and series; solid analytic geometry; multiple integrals; 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 87.**

## MECHANICAL ENGINEERING TECHNOLOGY

**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 87.**

**MECH 257-258 MACHINE DESIGN I-II (4 cr.) (4 cr.)** — Prerequisite ENGR 252 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 260 THERMODYNAMICS I (4 cr.)** — Prerequisite MATH 123. Characteristics of gases; applied study of gas cycles and combustion processes. Lecture 4 hours.

**MECH 268 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 4 hours per week.

**MECH 297, 298 — See General Usage Courses on page 87.**

## MEDICAL RECORDS

**MDRS 190 COORDINATED PRACTICE** — Supervised training in Medical Records, Pathology and Radiology departments in hospitals.

**MDRS 199 — See General Usage Courses page 87.**

## MENTAL HEALTH

**MENT 116 ACTIVITIES THERAPIES (3 cr.)** — 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 individual 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.

## 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, clefs, and meters. Beginning analysis of the Bach chorale style and construction of cadential phrases in that style. Similar experience at the keyboard. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**MUSC 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 138 CHORUS (1 cr.)**

**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 cr.) (4 cr.)** — Continuation of MUSC 111-112-113. Development of facility in the analysis and usage of diatonic and chromatic harmonies. Continued study in analysis of Bach style, sight-singing and ear training, and keyboard harmony. Lecture 3 hours, Laboratory 2 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 130 BODY STRUCTURE AND FUNCTION (3 cr.)** — A survey of the structure and function of the human body. This course is designed for non-health or science majors. Lecture 3 hours per week.

**NASC 154-155 ASTRONOMY I-II (3 cr.) (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 99 NURSING ASSISTANT (5 cr.)** — SUPERVISED STUDY IN NURSING ASSISTANT. A course in basic nursing care of the patient in the hospital or the home. Areas taught are hygienic care, comfort, safety measures, transfer activities, body mechanics, elimination, care of equipment, admission and discharge

procedures, special feeding needs. Clinical experience 6 hours. Lecture 3 hours, Total 9 hours per week.

**NURS 110 FUNDAMENTALS OF NURSING I (6 cr.)** — The development of nursing skills for the physical, psychological, and social needs of patients. Selected clinical laboratory experiences in cooperating health agencies. This course includes content of Health 100 and Nursing 111 and replaces these two courses as a prerequisite to Nursing 112 and 123. Lecture 4 hours, Laboratory/Clinic 6 hours, Total 10 hours per week.

**NURS 112 FUNDAMENTALS OF NURSING II (6 cr.)** — Prerequisite NURS 110. Continuation of NURS 110. Lecture 3 hours, Clinical 9 hours, Total 12 hours per week.

**NURS 123 FUNDAMENTALS OF NURSING III (6 cr.)** — Prerequisites NURS 110, 112. Includes development of nursing skills for the physical, psychological and social needs of patients. Selected clinical laboratory experiences in cooperating health agencies. Lecture 3 hours, Laboratory 9 hours, Total 12 hours per week.

**NURS 168 PRINCIPLES OF MEDICATION ADMINISTRATION (2 cr.)** — Elementary principles of medication administration including dosage calculation, major drug classifications, drug legislation, legal aspects of medication administration and drug action on specific body systems. Lecture 2 hours per week.

**NURS 199 PRE- AND POSTCLINICAL CONFERENCE (2 cr.)** — Preparation by student with instructor guidance for the day's plans for executing assignment, methods of implementation and completion; demonstrations, research, oral and written reports, case presentation to students and instructor. This course is conducted on a one to one basis between individual students and instructor. Lecture 2 hours, Total 2 hours per week.

**NURS 221 NURSING IN MAJOR HEALTH PROBLEMS (8 cr.)** — Prerequisites NURS 110-112-123, 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 MEDICAL SURGICAL NURSING (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 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.)** — Prerequisite 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 rehabilita-

tive measures. Related clinical experience in cooperating health agencies. Lecture 2 hours, Clinical 6 hours, Total 8 hours per week.

**NURS 256 NURSING ORGANIZATION AND MANAGEMENT (8 cr.)** — Prerequisites NURS 221, BIOL 154, 155, 176. Focus is on beginning management skills of planning, organizing, directing and controlling as related to nursing. Emphasis is placed on leadership styles, conflict resolution, formal and informal groups, socialization and legal aspects of nursing. Consideration is also given to management in special situations, including emergencies, disasters, burns, community agencies and intravenous therapy. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

**NURS 257 RE-ENTRY INTO NURSING (8 cr.)** — Prerequisite Registered Nurse License. Nursing care of the acutely ill adult patient. Designed for R.N.'s who have been inactive for at least three years. Course content includes diagnosis, treatment and nursing management of major medical and surgical illnesses. Other areas included are pharmacology, drug dosage calculation, legal aspects, leadership skills and selected advanced nursing procedures. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

**NURS 266 NURSING RESEARCH (2 cr.)** — Prerequisites NURS 221, BIOL 154-155-176. Introduction to basic research methodology, research tools, elementary descriptive and inferential statistics and their application to research. Completion of individual or group research projects may be included. Lecture 2 hours per week.

**NURS 299 SUPERVISED STUDY (4 cr.)** — Assignment preparations, pre- and postconference. Preparation by student with instructor guidance for the day's assigned activities. Includes discussion of plans for completion of assignment, methods of implementation after completion of assignments, demonstrations, oral and written reports, research, case presentations to the group, and individual presentations to the instructor. This course is conducted on a one to one basis between individual students and instructor. A higher number of credit hours is assigned in the 2nd year due to the increased number of assignments, complexity of care given, increased expectations of student research and correlation of knowledge, and increased number of clinical conferences.

## 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.)** — 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 & RECREATION

**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.)** Laboratory 2 hours per week.

**PHED 111 ARCHERY (1 cr.)** Laboratory 2 hours per week.

**PHED 113 BOATING (1 cr.)** Laboratory 2 hours per week.

**PHED 114 EQUITATION (1 cr.)** Laboratory 2 hours per week.

**PHED 115 ICE SKATING (1 cr.)** Laboratory 2 hours per week.

**PHED 118 SNOW SKIING (1 cr.)** Laboratory 2 hours per week.

**PHED 119 WATER SKIING (1 cr.)** Laboratory 2 hours per week.

**PHED 131 BOWLING (1 cr.)** Laboratory 2 hours per week.

**PHED 133 GOLF (1 cr.)** Laboratory 2 hours per week.

**PHED 135 TENNIS (1 cr.)** Laboratory 2 hours per week.

**PHED 136 FUNDAMENTALS OF ROLLER SKATING (1 cr.)** Laboratory 2 hours per week.

**PHED 138 SELF DEFENSE (1 cr.)** Laboratory 2 hours per week.

**PHED 139 INTERM. TENNIS (1 cr.)** Laboratory 2 hours per week.

**PHED 151 LIFE SAVING (1 cr.)** Laboratory 2 hours per week.

PHED 153 SWIMMING (1 cr.) Laboratory 2 hours per week.

PHED 157 INTERMEDIATE SWIMMING (1 cr.) Laboratory 2 hours per week.

PHED 170 BASKETBALL (1 cr.) Laboratory 2 hours per week.

PHED 172 SOCCER (1 cr.) Laboratory 2 hours per week.

PHED 173 SOFTBALL (1 cr.) Laboratory 2 hours per week.

PHED 174 VOLLEYBALL (1 cr.) Laboratory 2 hours per week.

PHED 207 BEG. TENNIS (1 cr.) Laboratory 2 hours per week.

PHED 241 KARATE (1 cr.) Laboratory 2 hours per week.

## 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 87.

PHYS 213 ENGINEERING PHYSICS III (3 cr.) — Prerequisite MATH 143 or equivalent and PHYS 222. General University Physics designed for students in engineering, physics of mathematics. Includes wave optics, quantum effects, atomic structure and nuclear physics. Lecture 3 hours per week.

PHYS 221-222-223 GENERAL UNIVERSITY PHYSICS I-II-III (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 nuclear physics. Lecture 3

hours, Laboratory 3 hours, Total 6 hours per week.

PHYS 298, 299 — See General Usage Courses on page 87.

## 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 87.

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 factor 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 4-5 hours per week.

PSYC 208 PSYCHOLOGY OF ABNORMAL BEHAVIOR (3 cr.) — Prerequisite: Instructor's permission. Exploration of the range of human behavior known as abnormal. Emphasis placed on criteria of abnormality, individual and social causes of psychopathology, major categories for classification of behavior, possibilities for treatment and personal adjustment. Lecture 3 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 rela-

tions 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 87.

## 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 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 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 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

**RDTV51-52-53 ADVANCEDSERVICING AND TROUBLESHOOTING TECHNIQUES I-II-III (6 cr.) (6 cr.) (6 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 3-3-3 hours, Laboratory 6-6-6 hours, Total 9-9-9 hours per week.

**RDTV 74 RADIO/TV ELECTRONICS I (4 cr.)** — Prerequisite ELEC 11. 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, convertmixers and detector, basic receiver systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**RDTV 75 RADIO/TV ELECTRONICS II (4 cr.)** — Prerequisite RDTV 74. 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.)** — Prerequisite ELEC 68 and RDTV 52. 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 artifactfree 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 (3 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 15 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 skill 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 141-142. 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 87.

**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 amount of radiation and electrical hazards. Lecture 2 hours per week.

**RADL 216 APPLIED RADIATION PHYSICS (4 cr.)** — Prerequisite RADL 114. The circuiting of 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 143. 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 SPECIALTIES (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 film evaluation procedures 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 87.

## 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.

**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 67 PROOFREADING (2 cr.)** — Course deals with the importance of proofreading and the development of proofreading skills. An intense review of grammar, punctuation, capitalization, numbers, and word division is included. Using correct terminology and spelling aids are emphasized. References are made to the proper styles of correspondence, titles, and abbreviations. Lecture 2 hours per week.

**SECR 100 SECRETARIAL SKILL REVIEW (3 cr.)** — Designed 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 standards 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 systems, establishment of filing system, selection of equipment and supplies, survey of system using electronics and microfilm, solution of records management problems. Lecture 3 hours per week.

**SECR 138 OFFICE RECORDKEEPING (3 cr.)** — 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, record-keeping, 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 147 BUSINESS COMMUNICATIONS (3 cr.)** — Prerequisites ENGL 111 and SECR 112. Review of English grammar with emphasis on application of its principles to today's business. Special emphasis on the secretary's role in and contribution to the preparation of business communications. Lecture 3 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 87.

**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 220 MAGNETIC CARD EXECUTIVE TYPEWRITER (1 cr.)** — Prerequisite divisional permission. A self-instructional laboratory course designed to develop proficiency in the operation of the Magnetic Card Executive Typewriter. Laboratory 3 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 236 SPECIALIZED TYPEWRITER APPLICATIONS (3 cr.)** — Prerequisite SECR 113 or program permission. Development of proficiency in use of a variety of specialized typewriters, including the executive typewriter and automatic typewriters involving magnetic tape or cards and similar electronic word processing devices. Emphasis on techniques and applications, with development of speed and accuracy in production operation. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**SECR 237 PRINCIPLES OF WORD PROCESSING (3 cr.)** — Prerequisite SECR 113 or departmental permission. Principles of operating a word processing center. Development of proficiency in the use of a variety of specialized typewriters, including the use of power typing equipment and electronic dictation equipment. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**SECR 239 MAGNETIC CARD SELECTRIC TYPEWRITER (3 cr.)** — Prerequisite Instructor's permission. A course designed to develop proficiency in the operation of the Magnetic Card Selectric Typewriter. The course includes procedures for recording, revising and playing back from magnetic cards; and also aids the student in establishing organized guidelines for the work situation. 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 hours, Total 4 hours per week.

**SECR 242 SECRETARIAL PROCEDURES II (3 cr.)** — Prerequisite 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 87.

## SOCIAL SCIENCE

**SOSC 100 THE INDIVIDUAL AND HIS WORLD (4 cr.)** — A course designed to relate the individual to his total environment. Four course units: (1) the individual and his psychological and social environment; (2) the individual and his political environment; (3) the individual and his economic environment; and (4) the individual and ecology. Students may enroll at the beginning of any unit, none of which are prerequisite to the other. Lecture 4 hours per week.

**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.

## 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.)** — 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 conceptual 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 87.

**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.

## SPANISH

**SPAN 101-102-103 INTRODUCTORY SPANISH I-II-III (4 cr.) (4 cr.) (4 cr.)** — 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** page 87.

**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** page 87.

## SPEECH AND DRAMA

**SPDR 106 INTRODUCTION TO THE THEATRE I (3 cr.)** — The principles of drama; the study of the development of the theatre production; study of selected plays as theatrical presentations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**SPDR 119 THEATRE WORKSHOP (1-5 cr.)** — Organization and work in the various activities of play production. Practice in set design, stage carpentry, theatre development, sound, costumes, 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 page 87.

SPDR 296, 299 — See General Usage Courses on page 87.

## 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. GMAW (MIG) principles are thoroughly 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, non-destructive, visual, magnetic and fluorescent testing. Lecture 3 hours per week.

WELD 198 — See General Usage Courses page 87.



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Dr. Charles L. Downs

## ADMINISTRATIVE OFFICES

- Dr. Charles L. Downs President of the College  
 B.A. — The George Washington University, 1958  
 M.A. — Florida State University, 1965  
 Ph.D. — University of Georgia, 1969
- Archer, J. Andrew Chairman, Division of Science and Mathematics  
Professor  
 A.A. — Reinhardt Junior College, 1959  
 A.B. — Mercer University, 1961  
 M.A. — George Peabody College, 1965  
 Ph.D. — George Peabody College, 1972
- Blalock, Dwight E. Dean of Financial and Administrative Services  
Associate Professor  
 B.S. — University of Alabama, 1966  
 M.S. — Virginia Commonwealth University, 1970
- Coleman, Ronald L. Director, Continuing Education  
Associate Professor  
 B.S. — Virginia Commonwealth University, 1965  
 M.Ed. — University of Virginia, 1969
- Emick, Mark Q., Sr. Coordinator of Development  
Assistant Professor  
 A.S. — Virginia Western Community College, 1969  
 B.S. — Virginia Commonwealth University, 1971  
 M.A. — Virginia Polytechnic Institute & State University, 1976
- Gentry, Carroll L. Chairman, Division of Business  
Professor  
 B.S. — East Tennessee State University, 1966  
 M.B.A. — East Tennessee State University, 1967  
 C.A.G.S. — Virginia Polytechnic Institute & State University, 1978
- Hancock, F. Gordon Coordinator, Admissions & Records  
Assistant Professor  
 B.S. — Virginia Polytechnic Institute, 1963  
 M.E. — University of Virginia, 1977
- Hillman, David L. Director, Learning Resources  
Assistant Professor  
 B.A. — College of William & Mary, 1969  
 M.L.S. — University of Maryland, 1972
- Houston, Charles A. Coordinator, Institutional Research  
Professor  
 B.S. — University of Tennessee, 1964  
 M.M. — University of Tennessee, 1969  
 Ph.D. — Virginia Polytechnic Institute & State University, 1976
- Knisely, Ellie F. Coordinator, Learning Laboratory  
Associate Professor  
 B.S. — California, PA State College, 1966  
 A.M. — West Virginia University, 1967
- Mays, Clarence C., Jr. Chairman, Division of Humanities  
Professor  
 B.S. — University of Virginia, 1961  
 M.Ed. — University of Virginia, 1965  
 Ed.D. — University of Virginia, 1973
- McCabe, James N. Administrative Assistant to the President  
Assistant Professor  
 A.B. — West Virginia University, 1940
- Moore, Dolores K. Public Relations Officer  
Assistant Professor  
 Diploma — Lehrerinnen Seminar, 1946  
 Interpreter's Diploma — Rackow Schule, 1947
- Nickens, Harry C. Dean of Student Services  
Professor  
 B.S. — Tennessee Tech University, 1966  
 M.A. — Tennessee Tech University, 1968  
 Ed.D. — University of Tennessee, 1972
- Phelps, Hugh B. Chairman, Division of Engineering/Industrial Technology  
Professor  
 B.M.E. — Clarkson College of Technology, 1950  
 M.M.E. — Clarkson College of Technology, 1956

- Pullen, Paul T. Dean of Instruction  
 Professor  
 A.B. — Asbury College, 1949  
 M.Div. — Asbury Theological Seminary, 1951  
 M.Th. — Pittsburgh Theological Seminary, 1957  
 M.Ed. — University of Pittsburgh, 1958  
 Ph.D. — University of Pittsburgh, 1961
- Sellers, Harry Manager, Administrative Data Processing  
 Assistant Professor  
 A.S. — Virginia Commonwealth University, 1971  
 B.S. — Virginia Commonwealth University, 1973  
 M.Ed. — Virginia Polytechnic Institute & State University, 1980
- Shirley, W. T. Chairman, Division of Social Sciences  
 & Public Service Technology  
 Associate Professor  
 B.A. — Furman University, 1948  
 M.A. — University of North Carolina, 1950
- Singer, Madelyn H. Chairman, Division of Health Technology  
 Professor  
 B.A. — Brooklyn College, 1942  
 M.A. — Columbia University, 1946
- Suggs, Delano R. Coordinator of Counseling Services  
 Associate Professor  
 B.A. — Wake Forest University, 1959  
 M.Div. — Southeastern Baptist Seminary, 1968  
 Th.M. — Wake Forest University, 1973  
 Ed.D. — University of North Carolina, Greensboro, 1978

### Faculty

- 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
- ANDERSON, Donald Associate Professor  
 Counselor  
 B.S. — Louisiana State University, 1970  
 M.Ed. — Virginia Polytechnic Institute & State University, 1973  
 Ed.D. — Virginia Polytechnic Institute & State University, 1977
- 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  
 Reading  
 A.B. — Grove City College, 1947  
 M.S. — Radford College, 1978
- BANKS, Robert G. 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. Associate 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.  
 A.S. — Boston University, 1960  
 B.S. — Northeastern University, 1968  
 M.S. — Virginia Polytechnic Institute & State University, 1974  
 Associate Professor  
 Automotive Technology
- BOLT, Patricia H.  
 B.S. — Longwood College, 1961  
 M.A. — Radford College, 1977  
 Assistant Professor  
 Secretarial Science
- BONDS, Ethel  
 B.A. — Bennett College, 1971  
 M.A. — Virginia Polytechnic Institute & State University, 1973  
 Instructor  
 English
- BOWMAN, Betty R.  
 B.S. — Madison College, 1960  
 M.Ed. — Virginia Polytechnic Institute, 1969  
 D.Ed. — Virginia Polytechnic Institute & State University, 1977  
 Professor  
 Accounting
- BRANSCOM, Sallie D.  
 B.S. — Radford College, 1957  
 M.Ed. — University of Virginia, 1962  
 Associate Professor  
 Accounting
- BROWN, Martha B.  
 B.S.S.A. — Women's College, University of North Carolina, 1957  
 M.A. — East Carolina University, 1961  
 Associate Professor  
 Secretarial Science
- BRUSATI, John F.  
 A.B. — Southwestern College, 1962  
 B.D. — Duke University, 1966  
 M.S. — Radford College, 1971  
 Associate Professor  
 Sociology
- CALLIS, Tracy G.  
 B.S. — Virginia Polytechnic Institute, 1963  
 M.S.Ed. — Virginia Polytechnic Institute & State University, 1975  
 C.A.G.S. — Virginia Polytechnic Institute & State University, 1977  
 Associate Professor  
 Data Processing
- CAPPS, John S.  
 B.A. — Virginia Polytechnic Institute & State University, 1974  
 M.A. — Virginia Polytechnic Institute & State University, 1977  
 Instructor  
 English
- CARTER, Douglas, Jr.  
 B.A. — University of Arizona, 1966  
 M.A. — University of Arizona, 1969  
 Associate Professor  
 Speech & Drama
- CHENG, Fa-Hwa  
 B.S. — National Taiwan University, 1961  
 M.S. — Virginia Polytechnic Institute, 1966  
 Ph.D. — Virginia Polytechnic Institute & State University, 1971  
 Professor  
 Engineering
- CLOWER, Carol  
 B.S. — Virginia Polytechnic Institute & State University, 1976  
 M.A. — Radford College, 1978  
 M.S. — Radford College, 1978  
 Instructor  
 Counselor
- CLOWSER, Margaret P.  
 B.A. — Virginia Polytechnic Institute & State University, 1970  
 M.A. — Virginia Polytechnic Institute & State University, 1971  
 Assistant Professor  
 English
- COOK, Patricia F.  
 Certificate — Virginia Western Community College, 1971  
 Instructor  
 Dental Assistant
- CRAIG, Betty C.  
 A.B. — Hollins College, 1946  
 M.A.L.S. — Hollins College, 1971  
 Assistant Professor  
 English
- CRAWFORD, Robert J.  
 A.A.S. — Virginia Western Community College, 1973  
 Instructor  
 Radio/TV Repair
- CRITES, Richard W.  
 A.A.S. — Olney Community College, 1965  
 B.S. — Eastern Illinois University, 1967  
 M.S. — Eastern Illinois University, 1968  
 Associate Professor  
 Biology

- 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
- DAVID, Rita H. Instructor  
Radiologic Technology  
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. Assistant Professor  
Physical Education  
A.B. — San Jose State College, 1939  
M.S. — Radford College, 1970  
Certified — Medical Rehabilitation Coordinator, 1956
- DICKERSON, Vera Mason Assistant Professor  
Art  
B.A. — Radford College, 1968  
M.F.A. — American University, 1970
- DILLON, William B. Assistant Professor  
Accounting  
A.A.S. — Sue Bennett College, 1958  
B.S. — Eastern Kentucky State University, 1962  
M.S. — Radford University, 1979
- DURHAM, Linda E. Assistant Professor  
Music  
A.B. — Elon College, 1968  
M.M. — University of North Carolina, 1971
- DURLING, Marjorie S. Assistant Professor  
Reading  
B.S. — West Virginia University, 1946  
M.A. — West Virginia University, 1950
- EADS, Sally A. Assistant Professor  
History  
B.A. — Agnes Scott College, 1965  
M.A. — University of Virginia, 1967
- ELLIOTT, Helen Yvonne Instructor  
English  
B.S. — Radford College, 1968  
M.A. — Virginia Polytechnic Institute & State University, 1974
- EWING, Larry E. Professor  
Counselor  
A.B. — Franklin & Marshall College, 1965  
M.A. — Pennsylvania State University, 1967  
Ed.D. — Virginia Polytechnic Institute & State University, 1976
- FERRIS, Margaret G. Assistant Professor  
Art  
B.A. — Virginia Polytechnic Institute & State University, 1973  
M.S. — Radford College, 1974
- FIGHTMASTER, James W. Assistant Professor  
Mathematics  
B.S. — Georgetown College, Kentucky, 1957  
M.Ed. — University of Virginia, 1965
- FINTON, Thomas E. Assistant Professor  
Radio/Television Technology  
B.A. — College of William & Mary, 1970  
B.A. — Virginia Polytechnic Institute & State University, 1976  
M.A. — University of Maryland, 1977
- FLOWERS, Bryna H. Instructor  
Hotel/Restaurant  
& Institutional Management  
B.S. — Virginia Polytechnic Institute & State University, 1974
- FURBISH, Dale S. Associate Professor  
Counselor  
B.S. — University of Pittsburgh, 1972  
Ed.M. — Temple University, 1974  
Ed.D. — Virginia Polytechnic Institute & State University, 1979

- GAYNOR, Richard J. Assistant Professor  
Mental Health  
A.A. — Thomas Nelson Community College, 1972  
B.A. — Christopher Newport College, 1974  
M.A. & M.S. — Radford College, 1977
- GILL, Dawn M. Assistant Professor  
Biology  
B.S. — Mary Washington College, 1949  
M.S. — Radford College, 1969
- GRAYBEAL, June A. Instructor  
Librarian  
B.A. — Emory & Henry College, 1973  
M.L.S. — George Peabody College, 1974
- GREEN, Rodney E. Assistant Professor  
Counselor  
B.A. — Wake Forest University, 1968  
M.A. — Appalachian State University, 1972
- HAMPTON, Norman A. Assistant Professor  
Data Processing  
A.B. — West Virginia University, 1952
- HEADLAND, Charles J. Associate Professor  
Mathematics  
B.S. — State Teachers College, Slippery Rock, PA, 1941  
M.Ed. — University of Pittsburgh, 1951
- HIPP, J. Lee Assistant Professor  
Horticulture Technology  
A.B. — Lenoir Rhyne College, 1971  
B.S. — North Carolina State University, 1974  
M.S. — Virginia Polytechnic Institute & State University, 1978
- HOFFMAN, William E., Jr. Instructor  
Electrical Engineering  
A.A.S. — Roanoke Technical Institute, 1964  
B.S. — Roanoke College, 1971
- HOFHEINZ, Rudolph H. Assistant Professor  
Commercial Art  
B.S. — East Carolina University, 1975  
M.A.E. — East Carolina University, 1979
- HOOVEN, James A. Associate Professor  
History  
B.A. — New Mexico Highlands University, 1965  
M.A. — New Mexico Highlands University, 1967
- HOOVEN, Judith L. Assistant Professor  
English  
B.A. — New Mexico Highlands University, 1963  
M.A. — New Mexico Highlands University, 1966
- HOUCHINS, William M. Assistant Professor  
Health  
B.S. — Concord College, 1949  
M.P.H. — University of North Carolina, 1961
- HOUSEMAN, William Robert Assistant Professor  
Welding  
A.A.S. — Virginia Western Community College, 1977
- JAMES, David P., Jr. Assistant Professor  
Counselor  
B.S. — Virginia Polytechnic Institute, 1960  
M.S. — Radford College, 1969
- JOHNS, Dolores Y. Associate Professor  
Counselor  
B.S. — Virginia State College, 1955  
M.S. — Virginia Commonwealth University, 1970  
C.A.G.S. — Virginia Polytechnic Institute & State University, 1978  
Ed.D. — Virginia Polytechnic Institute & State University, 1981
- JONES, Clyde Associate Professor  
English  
B.A. — Furman University, 1956  
M.A. — Peabody College, 1957
- KESSLER, Anita S. Assistant Professor  
Nursing  
B.S.N. — Medical College of Virginia, 1969
- KILLIAN, John M. Professor  
Biology  
B.S. — Louisiana State University in New Orleans, 1965  
Ph.D. — Louisiana State University in New Orleans, 1971

- KRASNOW, Rita J. Assistant Professor  
Sociology  
B.A. — Old Dominion University, 1969  
M.A. — University of Virginia, 1971
- KUNZE, Donald C. Associate Professor  
Biology  
B.S. — Baldwin-Wallace College, 1945  
M.A. — Kent State College, 1952
- KUNZE, Edna L. Associate Professor  
Biology  
A.B. — Douglass College, Rutgers University, 1962  
M.S. — University of Rhode Island, 1968
- LAMANCA, Shirley D. Assistant Instructor  
Radiologic Technology  
Certificate — Lewis-Gale School of Radiologic Technology, 1968  
A.A.S. — Virginia Western Community College, 1977
- LANDIS, Linda D. Instructor  
Nursing  
B.S.N. — University of Virginia, 1959
- LANDRUM, Larry S. Assistant Professor  
Economics  
B.S. — Auburn University, 1968  
M.S. — Auburn University, 1971
- LEVINE, Martin Professor  
Engineering Technology  
B.E.E. — College of the City of New York, 1949  
M.Litt. — University of Pittsburgh, 1956  
M.Ed. — University of Pittsburgh, 1960  
Ph.D. — University of Michigan, 1969
- LORITSCH, Mary B. Instructor  
Radiologic Technology  
B.S. — Radford College, 1972  
A.A.S. — Virginia Western Community College, 1974
- LUSK, Julie T. Instructor  
Counselor  
B.A. — Marshall University, 1975  
M.A. — Virginia Polytechnic Institute & State University, 1978
- MAGRUDER, Edward G. Professor  
Business/Management  
B.S. — Roanoke College, 1951  
Diploma — Commercial Banking — Rutgers University and  
Stonier Graduate School of Banking, 1960  
M.S. — Radford College, 1970
- McFARLAND, Rosalind L. Instructor  
Mathematics  
A.B. — Radcliffe College, 1939
- MICHIE, Wayne R. Assistant Professor  
Electrical Technology  
A.A.S. — Roanoke Technical Institute, 1966  
B.S. — Roanoke College, 1969
- MILES, Roy G. Professor  
Geology  
B.S. — University of Missouri, School of Mines, 1951  
M.S. — Northwestern University, 1958  
Ed.D. — Virginia Polytechnic Institute & State University, 1977
- MITCHELL, Frances T. Professor  
Secretarial Science  
B.S. — Radford College, 1942  
M.S. — Radford College, 1968  
C.A.G.S. — Virginia Polytechnic Institute & State University, 1978
- MITCHELL, James L. Assistant Professor  
Business Management  
B.A. — Western Kentucky University, 1965  
M.A. — Virginia Polytechnic Institute & State University, 1972
- MOORE, Betty L. Professor  
English  
A.B. — Kansas State Teachers College, 1943  
B.S. — Kansas State Teachers College, 1943  
M.A. — Columbia University, 1949  
Ph.D. — Columbia University, 1972
- MUSGROVE, Charles P. Associate Professor  
Mathematics  
B.S. — East Tennessee State University, 1967  
M.S. — Virginia Polytechnic Institute, 1969



- MUSIC, Joyce N. Assistant Professor  
 B.S. — Radford College, 1971 Secretarial Science  
 M.Ed. — Virginia Polytechnic Institute & State University, 1972
- MUSIC, William O., Jr. Assistant Professor  
 B.S. — Lynchburg College, 1963 Physical Education  
 M.S. — University of Tennessee, 1964
- NELSON, James E. Assistant Professor  
 B.S. — U.S. Merchant Marine Academy, 1944 Mechanical Engineering  
 B.S. — Roanoke College, 1949  
 M.S. — Appalachian State University, 1966
- NICKERSON, Gwendolyn J. Associate Professor  
 B.S. — Roanoke College, 1951 Chemistry  
 M.Ed. — University of Virginia, 1965
- OWEN, Susan R. Assistant Professor  
 B.S.N. — University of Virginia, 1970 Nursing  
 M.Ed. — University of Virginia, 1975
- OWEN, William C. Associate Professor  
 B.A. — University of Virginia, 1966 Psychology  
 M.Ed. — University of Virginia, 1970  
 Ed.D. — University of Virginia, 1974
- PACK, Joel C. Assistant Professor  
 A.A. — Mars Hill Junior College, 1959 Mathematics  
 B.S. — Roanoke College, 1963  
 M.A. — Wayne State University, 1967
- PARRISH, Ramona N. Instructor  
 B.A. — Wake Forest University, 1975 Psychology  
 M.A. — Radford College, 1978
- PATTERSON, Dallas M. Professor  
 B.A. — University of Omaha, 1960 Business Administration  
 J.D. — William & Mary, 1968
- PAYNE, Christine K. Assistant Professor  
 B.S. — Winston-Salem State University, 1946 Reading  
 M.Ed. — Pennsylvania State University, 1956
- PAYNE, Elizabeth W. Professor  
 B.S. — University of North Carolina, 1950 Secretarial Science  
 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
- POOLE, Meredith Instructor  
 B.A. — Oberlin College, 1968 English  
 M.A. — University of Virginia, 1971
- POTTER, John F. Instructor  
 B.A. — Hampton-Sydney College, 1969 English and Speech/Drama  
 M.A. — University of Virginia, 1974
- POWELL, Iris C. Associate Professor  
 B.S.N. — University of Virginia, 1959 Nursing  
 M.S. — Radford College, 1971
- PROTINSKY, Marsha G. Assistant Professor  
 B.S. — Kansas State University, 1972 Early Childhood Education  
 M.S. — Kansas State University, 1974
- QUINLEY, Patrick C. Instructor  
 B.A. — James Madison University, 1973 Counselor  
 M.Ed. — James Madison University, 1976
- RAKES, L. Jeffrey Instructor  
 Certificate in Radiologic Technology — Radiologic Technology  
 Roanoke Memorial Hospital, 1969  
 A.A.S. — Virginia Western Community College, 1977  
 B.S. — Roanoke College, 1980

RHODES, Elizabeth B. A.S. — Virginia Western Community College, 1972 B.S. — Virginia Commonwealth University, 1974 M.S. — Virginia Polytechnic Institute & State University, 1981	Assistant Professor Data Processing
RICKABAUGH, Linda B.S.N. — Columbia University, 1963	Assistant Professor Nursing
SARGENT, James E. B.S. — Eastern Michigan University, 1964 M.A. — Michigan State University, 1968 Ph.D. — Michigan State University, 1972	Associate Professor History/Government
SAUNDERS, Jean M. B.S. — Radford College, 1954 M.Ed. — Virginia Polytechnic Institute, 1967	Associate Professor Business Management
SCHULTZ, L. David B.A. — University of California, 1967 M.A. — University of Arizona, 1969	Associate Professor Mathematics
SELANDER, Edwin V. B.S. — Virginia Polytechnic Institute, 1955 M.S. — Virginia Polytechnic Institute, 1967	Associate Professor Mathematics
SELANDER, Mary V. B.S. — Virginia Polytechnic Institute, 1955 M.A. — Penn State University, 1959	Associate Professor Mathematics
SHEPARD, David E. B.S. — Virginia Commonwealth University, 1958 M.B.A. — University of Virginia, 1962	Associate Professor Business Management
SHEPHERD, Betty Turner B.S.N. — Duke University, 1967 M.S.N. — University of Virginia, 1981	Assistant Professor Nursing
SHEPPARD, Vernon M., Jr. B.S. — Virginia Polytechnic Institute, 1954 M.S. — Virginia Polytechnic Institute, 1960	Associate Professor Economics
SIMMONS, Patricia P. B.A. — Hollins College, 1951 M.S. — Radford College, 1971	Instructor Mathematics
SINHA, Jabil R. B.S. — University of Dacca, Bangladesh, 1963 M.S. — North Dakota State University, 1966 Ph.D. — University of Georgia, 1972	Associate Professor Chemistry
SLAUGHTER, Michael L. A.S. — Virginia Western Community College, 1972 B.S. — Eastern Illinois University, 1975 M.S. — Eastern Illinois University, 1977	Instructor Biology
SMITH, Hugh P. 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	Professor Geology
SMITH, Richard E. B.S. — Roanoke College, 1957 D.D.S. — Medical College of Virginia, 1965	Professor Supervising Dentist
STARNES, John M. B.S. — East Tennessee State University, 1960 M.S. — East Tennessee State University, 1968	Associate Professor Mathematics
STEINHARDT, Mary H. B.S. — Virginia Polytechnic Institute, 1944 M.A. — Hollins College, 1967	Assistant Professor Early Childhood Education

- STEWART, Albert W.  
B.S.E.E. — Virginia Polytechnic Institute, 1957  
Assistant Professor  
Electrical Engineering
- STRAUSBAUGH, Maurice  
B.A. — Juniata College, 1950  
M.Ed. — Bethany Theological Seminary, 1953  
M.Ed. — Johns Hopkins University, 1966  
C.A.G.S. — Virginia Polytechnic Institute & State University, 1976  
Associate Professor  
Counselor
- TATE, Carol S.  
A.A. — Virginia Western Community College, 1967  
B.S. — Radford College, 1969  
M.S. — Radford College, 1973  
Assistant Professor  
Psychology
- TUCKER, Ray B.  
B.S. — Southern Illinois University, 1956  
M.A.T. — Southeastern State College, 1966  
M.A. — University of Illinois, 1969  
Associate Professor  
Mathematics
- VAN LIERE, Ruth B.  
B.A. — Roanoke College, 1967  
M.S. — Radford College, 1968  
Assistant Professor  
Psychology
- WASHBURN, William B.  
B.A. — Lynchburg College, 1953  
M.B.A. — University of New Haven, 1972  
Associate Professor  
Business Management
- WEBB, Janice E.  
B.S.N. — University of Virginia, 1972  
M.S.N. — University of Virginia, 1975  
Associate Professor  
Nursing
- WEIS, Marcia  
B.A. — Oakland University, 1963  
M.A. — Wayne State University, 1967  
Ph.D. — Michigan State University, 1973  
Professor  
French
- WELCH, John D.  
B.A. — St. Vincent College, 1964  
M.L.S. — University of Pittsburgh, 1972  
Associate Professor  
Librarian
- WILLETTE, Karen S.  
A.A.S. — Fayetteville Technical Institute, 1975  
B.S. — Old Dominion University, 1978  
M.S. — Old Dominion University, 1979  
Instructor  
Dental Hygiene
- WILSON, Roger C.  
A.B. — Newberry College, 1966  
M.A. — Miami University, 1968  
M.S. — Florida State University, 1973  
C.A.G.S. — Virginia Polytechnic Institute & State University, 1980  
Associate Professor  
Speech/Drama
- WIMMER, Woodrow  
B.S. — University of Virginia, 1970  
C.P.A. — Virginia, 1973  
M.S. — Radford University, 1980  
Assistant Professor  
Accounting
- WINTERS, William Eugene  
B.A. — Catawba College, 1966  
M.A. — LeHigh University, 1968  
L.L.B. — LaSalle University Extension, 1971  
M.S. — Radford College, 1974  
A.A.S. — Virginia Western Community College, 1979  
Assistant Professor  
Government & Administration of  
Justice
- YANCEY, Colette M.  
Certificate — University of Louisville, 1964  
B.H.S. — University of Kentucky, 1975  
Assistant Professor  
Dental Hygiene
- ZIRKLE, Benjamin F., III  
B.S. — Roanoke College, 1965  
M.S. — Florida State University, 1968  
Associate Professor  
Mathematics

## PART VII

## INDEX

	Page		Page
Academic Dishonesty .....	33	Data Processing, Course Descriptions .....	80
Academic Dismissal .....	20	Degrees, Diplomas and Certificates .....	17
Academic Honors .....	20	Dental, Course Descriptions .....	80
Academic Integrity .....	20	Description of Courses .....	69
Academic Probation .....	19	Developmental Programs .....	10
Academic Regulations .....	18	Developmental Studies Program .....	13
Academic Standing .....	19	Admission to .....	13
Academic Suspension .....	19	Sample .....	14
Academic Warning .....	19	Disciplinary Proceedings .....	32
Accounting, Course Descriptions .....	69	Dismissal, Academic .....	20
Activities, Student .....	27	Drafting, Course Descriptions .....	82
Administrative Offices .....	105	Economics, Course Descriptions .....	82
Administration of Justice, Course Descriptions .....	70	Education, Course Descriptions .....	83
Admission, International Students .....	13	Educational Foundation .....	10
Admission, Senior Citizens .....	13	Electricity and Electronics, Course Descriptions ..	84
Admission Requirements .....	11	Emergency Information .....	28
Admission to Specific Curriculums .....	13	Employment, Off-Campus .....	23
Advanced Placement .....	14	Engineering, Course Descriptions .....	85
Agriculture, Course Descriptions .....	71	English, Course Descriptions .....	86
Air Conditioning and Refrigeration, Course Descriptions .....	71	Evening and Weekend College .....	27
Application Fee .....	15	Examinations .....	20
Associate Degrees, Requirements .....	17	Expenses .....	15
Architectural Technology, Course Descriptions ..	72	Facilities .....	9
Arts, Course Descriptions .....	72	Faculty .....	106
Auditing a Course .....	15	Field Trips .....	27
Automotive Technology, Course Descriptions .....	73	Financial Aid .....	22
Biology, Course Descriptions .....	74	Food Services .....	27
Books and Materials .....	16	French, Course Descriptions .....	86
Bookstore Refunds .....	16	General Education .....	10
Broadcasting, Course Descriptions .....	75	General Course Descriptions .....	87
Building, Course Descriptions .....	76	Geography, Course Descriptions .....	87
Bulletin Boards .....	27	Geology, Course Descriptions .....	88
Business Management and Administration, Course Descriptions .....	77	German, Course Descriptions .....	88
Career Life Development Center .....	21	Government, Course Descriptions .....	88
Certificate Requirements .....	18	Grade Reports .....	17
Change of Registration .....	19	Grading System .....	17
Chemistry, Course Descriptions .....	78	Graduation Fee .....	16
Civil Engineering Technology, Course Descriptions .....	79	Graduation Requirements .....	18
Class Attendance .....	18	Associate Degree and Diploma Requirements ..	18
Classification of Students .....	15	Certificate Requirements .....	18
CLEP .....	22	Second Degree, Diploma or Certificate .....	18
College Colors .....	28	Grievances .....	29
College Rings .....	28	Channels of Communications .....	29
Conduct, Student .....	28	Handicapped Services .....	11
Community Services .....	10	Health Services, Students .....	27
Continuing Adult Education .....	10	Health, Course Descriptions .....	88
Cooperative Education Programs .....	23	History, Course Descriptions .....	88
Counseling/Student Development Services .....	21	Horticulture, Course Descriptions .....	89
Course Credits .....	69	Hotel, Restaurant and Institutional Management, Course Descriptions .....	90
Course Descriptions .....	69	Hours, Course .....	69
Course Hours .....	69	Human Services, Course Descriptions .....	91
Course Numbers .....	69	Humanities, Course Descriptions .....	91
Course Prerequisites .....	69	Industrial Engineering Technology, Course Descriptions .....	92
Credit by Examination .....	15	Information Directory .....	116
Credits .....	17	Learning Laboratory .....	25
Curriculums of Study .....	35	Legal Administration, Course Descriptions .....	92
Customized Learning Packages .....	25	Library .....	25
		Location, College .....	9

	Page		Page
Lost and Found .....	27	Self-Advising .....	20
Marketing, Course Descriptions .....	92	Senior Citizens, Admission of .....	13
Math Center .....	26	Smoking .....	28
Mathematics, Course Descriptions .....	94	Social Science, Course Descriptions .....	102
Mechanical Engineering Technology, Course Descriptions .....	95	Sociology, Course Descriptions .....	102
Medical Records, Course Descriptions .....	95	Spanish, Course Descriptions .....	102
Mental Health, Course Descriptions .....	95	Special Training Programs .....	10
Music, Course Descriptions .....	95	Special Services .....	25
Natural Science, Course Descriptions .....	96	Speech and Drama, Course Descriptions .....	102
Nursing, Course Descriptions .....	96	State Board for Community Colleges .....	104
Occupational-Technical Education .....	10	State and Regional Specialized Curriculums .....	35
Orientation .....	22	Student Accounts .....	17
Organizations, Students .....	30	Student Permanent Record .....	11
Parking .....	16	Student Rights .....	29
Philosophy and Religion, Course Descriptions .....	97	Student Services Handbook .....	21
Photography, Course Descriptions .....	97	Students Transferring .....	14
Physical Education & Recreation, Course Descriptions .....	97	From other Colleges .....	14
Physics, Course Descriptions .....	98	Within Virginia Community College System .....	14
Placement .....	24	Testing .....	22
Probation, Academic .....	19	Transcripts .....	15
Psychology, Course Descriptions .....	98	Tuition .....	15
Public Service, Course Descriptions .....	99	Tuition Refunds .....	16
Purpose .....	9	University Parallel-College Transfer Education .....	10
Radio and Television, Course Descriptions .....	99	Veterans' Affairs, Office .....	24
Radiologic Technology, Course Descriptions .....	99	Virginia Western Community College Board .....	104
Recognition .....	10	Waiver of Requirements .....	14
Repeating a Course .....	20	Welding, Course Descriptions .....	103
Residence Requirements .....	14	Withdrawal .....	19
Secretarial Science, Course Descriptions .....	100	From a Course .....	19
		From the College .....	19
		Writing Center .....	26

**PART VIII****INFORMATION DIRECTORY****VIRGINIA WESTERN COMMUNITY COLLEGE**

## General Address:

P.O. Box 4195  
3095 Colonial Avenue, S.W.  
Roanoke, Virginia 24015

Telephone: 703/982-7200

## Specific Inquiries:

## Admissions

About applications and admission to Virginia Western Community College

Telephone: 982-7231

## Counseling Services

About testing, counseling, and program selection

Telephone: 982-7237

## Business Office

About student accounts

Telephone: 982-7201

## Financial Aid Office

About applications and Financial Aid Handbook

Telephone: 982-7331

## Veterans' Affairs Office

About applications for program of education and training

Telephone: 982-7395

## Career and Placement Services

About career counseling services

Telephone: 982-7298

## Continuing Education Office

About courses

Telephone: 982-7281

## Business Science Division

About programs of study

Telephone: 982-7272

## Engineering/Industrial Technology Division

About programs of study

Telephone: 982-7275

## Health Technology Division

About programs of study

Telephone: 982-7307

## Humanities Division

About programs of study

Telephone: 982-7271

## Mathematics &amp; Sciences Division

About programs of study

Telephone: 982-7273

## Social Science &amp; Public Service Technology Division

About programs of study

Telephone: 982-7276

## Public Information Office

For general information

Telephone: 982-7200

**VISITORS**

The College welcomes visitors to the campus. Interviews and tours may be arranged through the Information Office. It is advisable to make an appointment in advance.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Telephone Home \_\_\_\_\_ Business \_\_\_\_\_

Area(s) of Academic Interest \_\_\_\_\_

Please send me the following information:

- Application Forms
  - Financial Aid Brochure
  - Women's Educational Development Services Flyer
  - Schedule of Classes
- I am interested in an appointment with a college counselor.

Name \_\_\_\_\_

Address \_\_\_\_\_

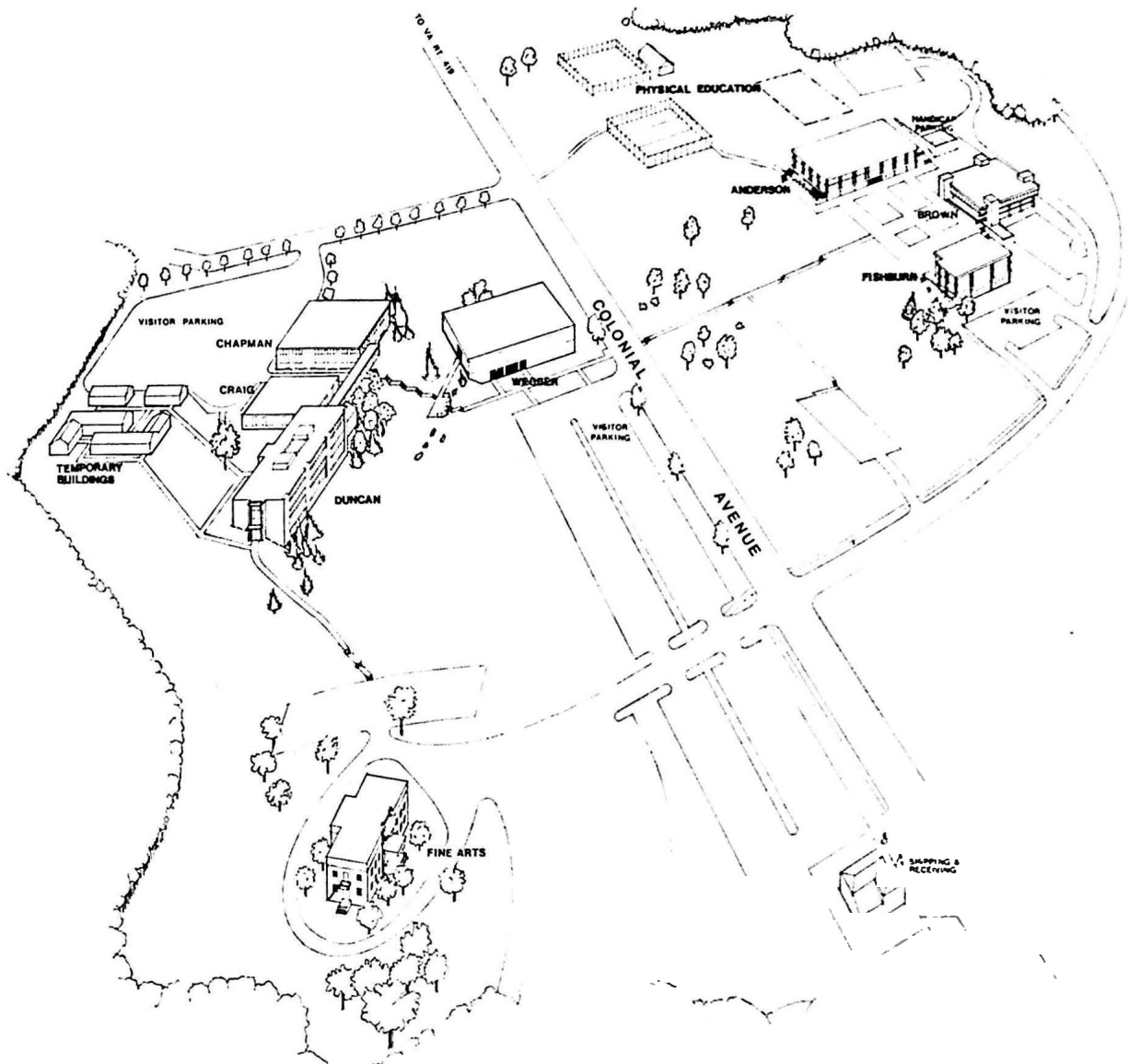
City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Telephone Home \_\_\_\_\_ Business \_\_\_\_\_

Area(s) of Academic Interest \_\_\_\_\_

Please send me the following information:

- Application Forms
  - Financial Aid Brochure
  - Women's Educational Development Services Flyer
  - Schedule of Classes
- I am interested in an appointment with a college counselor.



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