

Look to  
Virginia  
Western  
75-76



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\*Accreditation Pending

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# **VIRGINIA WESTERN COMMUNITY COLLEGE CATALOG**

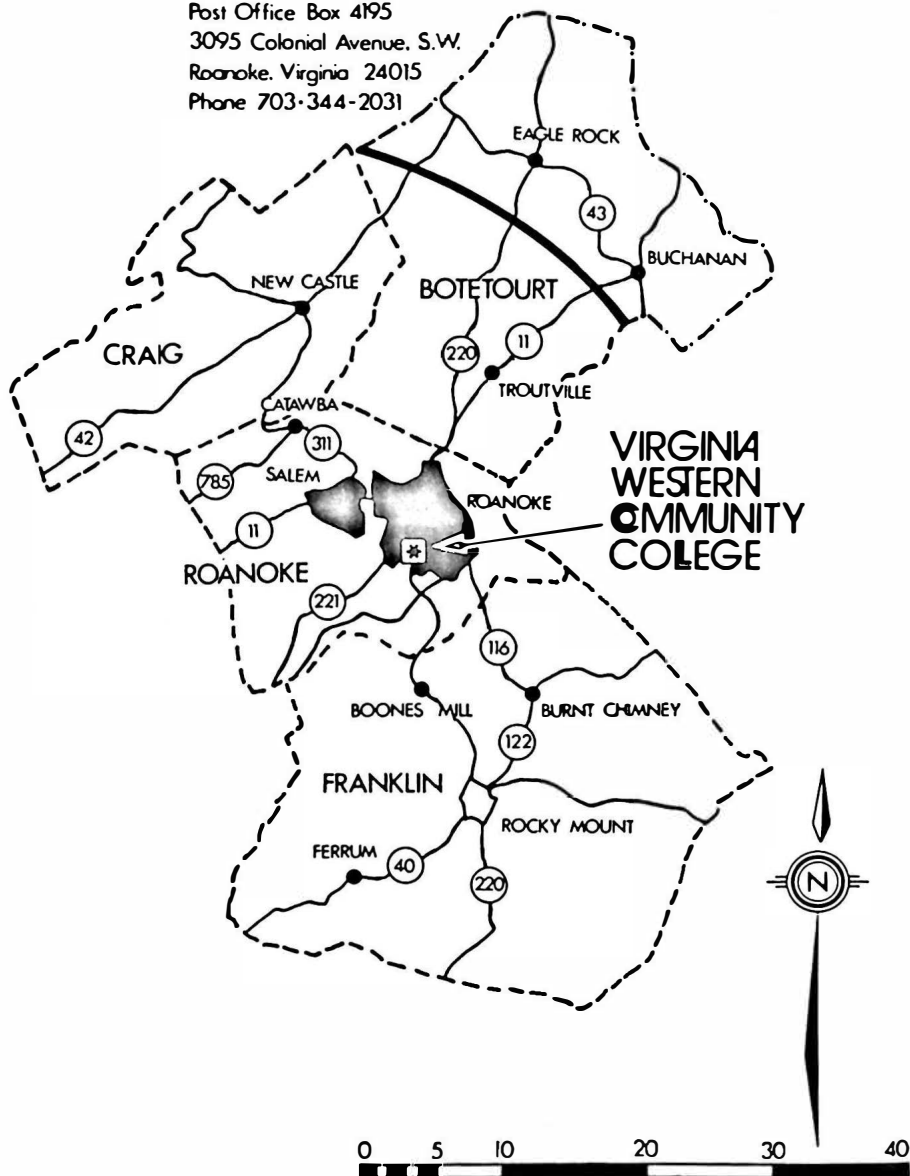


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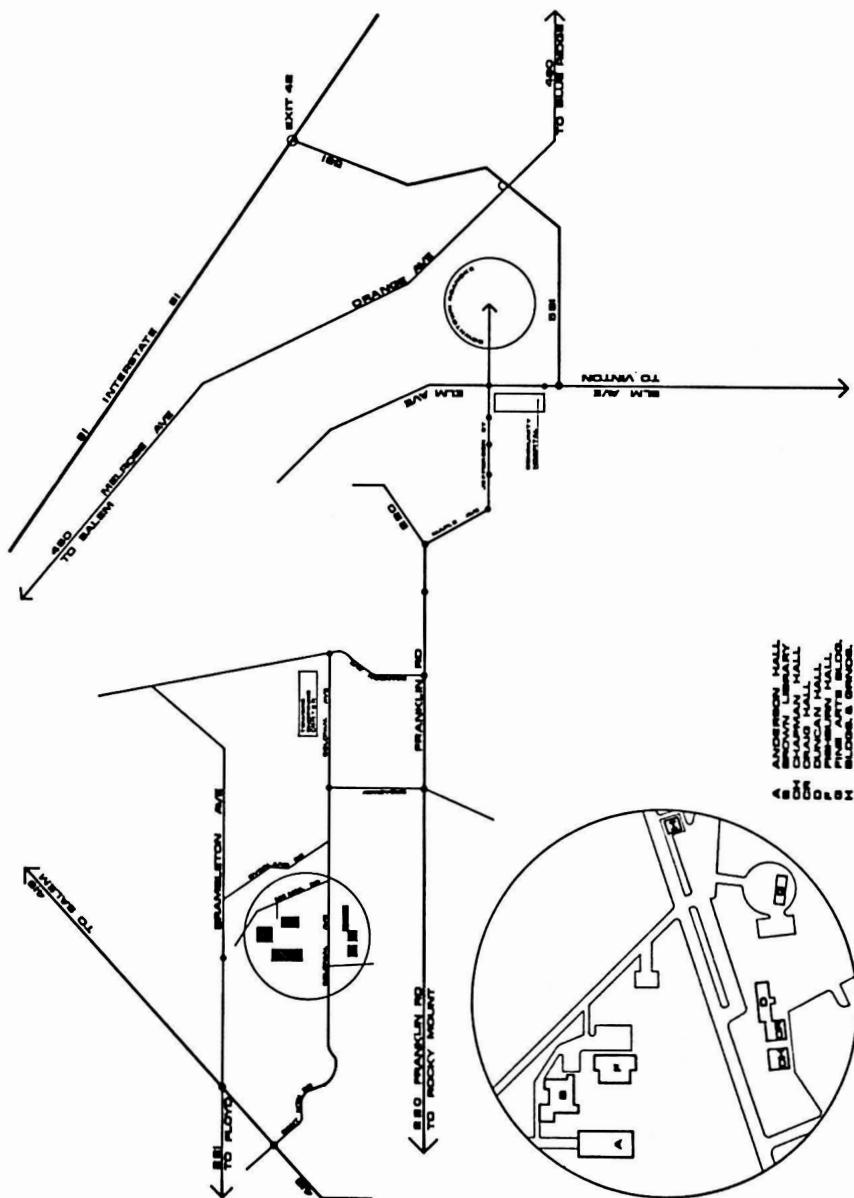
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Phone 703-344-2031







**VIRGINIA WESTERN COMMUNITY COLLEGE**

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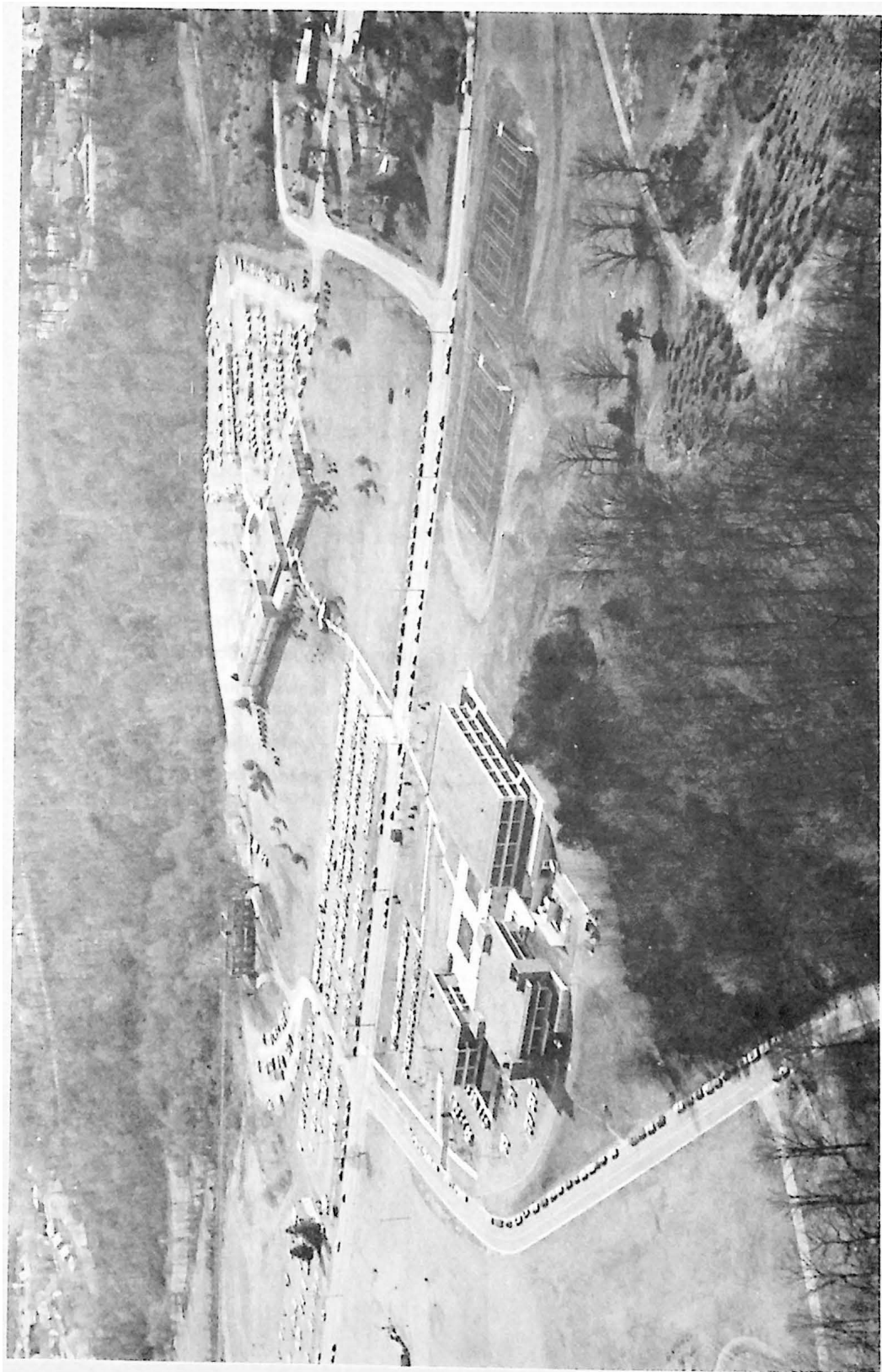
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It is the student's responsibility to become completely familiar with the College regulations and other important material in this catalog.



# Calendar

## FALL QUARTER 1975

Contract Period Begins .....	Tuesday, September 16
Faculty Report .....	Tuesday, September 16
Orientation Day for New Students .....	Tuesday, September 16
Registration .....	Wednesday, September 17 Thursday, September 18
Classes Begin .....	Monday, September 22
Drop/Add (Two Days Only) .....	Wednesday, September 24 and Friday, September 26
Last Day for Withdrawal Without Penalty .....	Friday, October 10
Thanksgiving Recess .....	Thursday - Saturday November 27-29
Classes End .....	Saturday, December 6
Registration Winter Quarter (Returning Students) .....	Monday, December 8
Final Exams .....	Tuesday - Saturday December 9-13
Faculty Work Day .....	Monday, December 15
Christmas Recess .....	Tuesday, Dec. 16, 1975- January 1, 1976

## 1975

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



**WINTER QUARTER 1976**

All Faculty Report .....	Friday, January 2
Registration for New Students and Drop/Add for Registered Students who Failed Fall Courses ..	Monday, January 5
Classes Begin .....	Tuesday, January 6
Drop/Add (Two Days Only) .....	Thursday, January 8 and Monday, January 12
Last Day to Withdraw Without Penalty .....	Monday, January 26
Classes End .....	Monday, March 15
Registration Spring Quarter (Returning Students) ..	Tuesday, March 16
Last Day for Graduation Application .....	Tuesday, March 16
Final Exams .....	Tuesday - Saturday, March 16-20
Faculty Work Day .....	Monday, March 22

**1975**

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

**1976**

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

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

**SPRING QUARTER 1976**

Faculty Report .....	Monday, March 29
Registration for New Students and Drop/Add for Registered Students Who Failed Winter Courses	Monday, March 29
Classes Begin .....	Tuesday, March 30
Drop/Add (Two Days Only) .....	Thursday, April 1 and Monday, April 5
Last Day to Withdraw Without Penalty .....	Monday, April 19
Classes End .....	Monday, June 7
Final Exams .....	Tuesday - Saturday June 8-12
Faculty Work Day .....	Monday, June 14
Graduation .....	Tuesday, June 15

**1976**

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

# **SUMMER QUARTER 1976 (Full Ten Weeks)**

Registration .....	Wednesday, June 16
Classes Begin .....	Thursday, June 17
Drop/Add (Two Days Only) .....	Monday, June 21 and Wednesday, June 23
Independence Day Holiday .....	Monday, July 5
Last Day to Withdraw Without Penalty .....	Wednesday, July 7
Classes End .....	Wednesday, August 25
Final Exams .....	Thursday - Tuesday August 26-31
Graduation .....	Thursday, September 2

## **1976**

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

**SUMMER QUARTER 1976 (Two Five-Week Terms with Double Class Periods)****FIRST TERM**

Registration .....Wednesday, June 16  
Classes Begin .....Thursday, June 17  
Drop/Add (Two Days Only) .....Friday, June 18 and  
Monday, June 21  
Last Day to Withdraw Without Penalty .....Monday, June 28  
Independence Day Holiday .....Monday, July 5  
Classes End .....Wednesday, July 21  
Final Exams .....Thursday, July 22  
Faculty Work Day .....Friday, July 23

**SECOND TERM**

Registration .....Friday, July 23  
Classes Begin .....Monday, July 26  
Drop/Add (Two Days Only) .....Tuesday, July 27 and  
Wednesday, July 28  
Last Day to Withdraw Without Penalty .....Wednesday, August 4  
Classes End .....Friday, August 27  
Final Exams .....Monday, August 30  
Faculty Work Day .....Tuesday, August 31  
Graduation .....Thursday, September 2

## 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, and the counties of Craig, Franklin, and Roanoke. The areas covered have a population of approximately two hundred and fifty thousand, with a heavy projected growth within the next 25 years.

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.

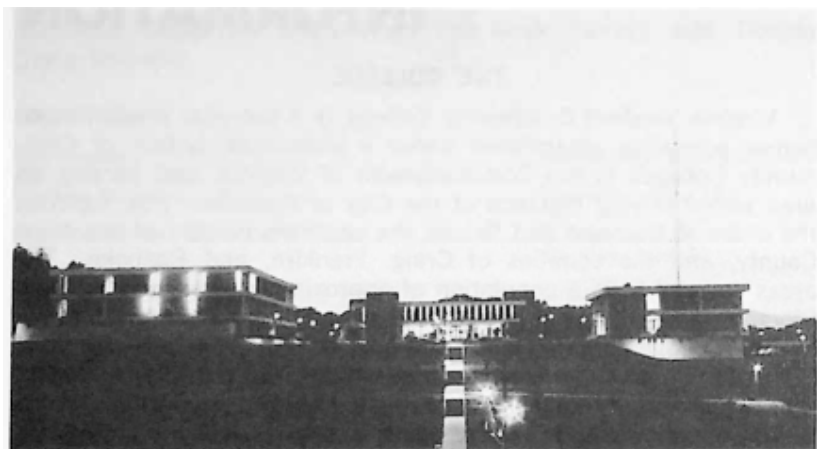
## LOCATION AND FACILITIES

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 four buildings which were acquired by Virginia Western from Roanoke Technical Institute in 1966. Chapman Hall houses laboratories for Civil, Electrical and Mechanical Technologies, Photography, and Radio and Television Production. The Electrical and Electronic Laboratories are located in Craig Hall. Duncan Hall contains facilities for the Mental Health, Nursing, and Radiologic Technology Programs in addition to general classrooms. The Fine Arts Center is occupied by the Music and Fine Arts Departments.

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 smaller of these buildings, Fishburn Hall, is the Administration Building which also houses Business Science classrooms, the Office of Continuing Education, the Co-operative Education Office, and the WVWR-FM Radio Station. Opposite is the Science Building, Anderson Hall, containing laboratories and equipment of the most modern design, a Dental Laboratory, Reading Laboratory, classrooms, and faculty and counselors' offices. In the center is Brown Library with its 38,079 volumes, a Learning Laboratory, Language Laboratory, and Auditorium on the second floor. The Admissions and Records Offices, Office of

## **NORTH CAMPUS**



## **SOUTH CAMPUS**





Veterans' Affairs, Counseling Center, Audio-Visual Department, and the Bookstore are located on the ground floor.

The campus was dedicated on October 23, 1969, and its buildings were named for men of Southwestern Virginia influential in education or in the development of the region.

## HISTORY

Since 1927, the Extension Division of the University of Virginia, its programs under the direction and supervision of the University, has 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 provided 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 also 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 extended not more than two years beyond the high school level. Programs include:

1. **Occupational-Technical Education.** The occupational and technical education programs are designed to meet the increasing demand for technicians, semiprofessional workers, and skilled craftsmen for employment in industry, business, the professions, and government. The curricula are planned primarily to meet the needs for workers in the region being served by the College.

2. **University Parallel-College Transfer Education.** The university parallel-college transfer program includes college freshman and sophomore courses in arts and sciences and pre-professional programs meeting standards acceptable for transfer to baccalaureate degree programs in four-year colleges and universities.
3. **General Education.** The programs in general education encompass the common knowledge, skills, and attitudes needed by each individual to be effective as a person, a member of a family, a worker, a consumer, and a citizen.
4. **Continuing Adult Education.** Adult education programs are offered to 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.** 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.** Developmental programs are offered to help prepare individuals for admission to the occupational-technical program and to the university parallel-college transfer program in the community college. These programs are designed to help 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, and special community projects which are designed to provide needed cultural and educational opportunities for the citizens of the region.
8. **Broadcasting Service.** WVWR-FM, Virginia Western's stereo non-commercial educational radio station, went on the air in August of 1973. The purposes of the station are to extend the educational resources and activities of the College and the Virginia Community College System to the communi-

ty, and to provide an educational, informational, and cultural service not presently available. The College's Broadcasting Service provides attractive, challenging programming that involves its listeners as completely as possible in the learning experience. The radio station offers programs such as news and public affairs from the National Public Radio Network, college courses for credit, educational enrichment programs, music ranging from jazz to classical, and discussions on important contemporary subjects. The radio station broadcasts every day of the year on 90.1 MHz. Studios and offices are located on the campus in Fishburn Hall.

9. **Special Training Programs.** Special training may be provided where specific job opportunities are available for new or expanding industries. This special training shall be coordinated with Virginia's economic expansion efforts and with the needs of employers.

### RECOGNITION

The College is a division of the Virginia Community College System and is approved by the State Board for Community Colleges and by the State Department of Community Colleges in Virginia. The Associate Degree Programs of the College have also been approved by the State Council of Higher Education for Virginia. The College was given full academic accreditation by the Southern Association of Colleges and Schools in December 1969.

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

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



## PART II

# ADMINISTRATIVE INFORMATION

## ADMISSION REQUIREMENTS

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

### General Admission to the College

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

1. A completed "Application for Admission as a Regular Student" (Note: Social Security Number is required);
2. A \$5.00 application fee (non-refundable unless the requested program or course is not offered);
3. Official transcripts from all high schools, colleges, and universities attended;
4. Regular health form.
5. Student data form.

For all special students, the following items are required:

1. A complete official application for admission (Note: Social Security Number is required);
2. A \$5.00 application fee (non-refundable unless the requested program or course is not offered);
3. Health form.
4. Student data form.

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

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

All regular students entering the College may be required to take a diagnostic test battery unless they have previously attended college. 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 for additional information.

### **Admission to Specific Curriculums**

The specific requirements for each curriculum in the College are listed in the Curriculum Offerings section of the College catalog. Persons who do not meet the requirements for a specific curriculum or course may be eligible to enter the curriculum or course after they have completed a developmental studies program.

### **Military Science — Army**

A two year sequence in Military Science is available by arrangement through Virginia Western Community College with the Department of Military Science at Virginia Polytechnic Institute and State University, and offered on the campus of Virginia Western Community College. Credit is transferrable to any four-year college offering Army ROTC.

### **International Student—Admission Requirements**

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

Written English proficiency may be demonstrated by submitting scores on either the "Test of English as a Foreign Language" (TOEFL—administered by the College Entrance Examination Board, Princeton, N. J.) or the Virginia Western English Placement Test, whichever is more convenient. Normally, the required score for acceptance on the TOEFL is 500 and on the English Placement Test the required score is 75. If these preliminary scores are acceptable, the applicant must also demonstrate, by personal interview at the College, oral proficiency both in speaking and understanding the English language. If a personal interview is not possible, a letter which testifies to the student's oral proficiency will be acceptable. This must be executed by an official of the U. S. Government residing in the student's native country.

Students should understand that in the event their test scores and interview results indicate minimum acceptable levels of proficiency they will be required to complete non-college credit developmental courses prior to acceptance to a particular curriculum.

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

### **Developmental Studies Program**

The Developmental Studies Program is offered to assist individuals in the acquisition of the necessary knowledge and skills for entry into one of the programs of the College. After a close analysis of the high school transcript, test scores, and a personal interview



with a College counselor students are identified for inclusion in the Developmental Studies Program.

Specialized teaching methods permit students to progress through the area of their weakness at their own rate. Personnel in the Learning Laboratory 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 a grade "R" must re-enroll for that course the following academic quarter. A grade of "U" indicates that students have failed to show interest or application in their studies. Students receiving a "U" will be required to discuss their program of studies with a counselor and may not be permitted enrollment the following two academic quarters.

### DEVELOPMENT STUDIES PROGRAM

COURSE NUMBER	COURSE TITLE	CREDITS
ENGL 01	Verbal Studies	5
ENGL 08	Reading Improvement	5
MATH 05	Developmental Math Sequence	5
GENL 100	Orientation	1
	OR	
GENL 298	Personal/Career Development	2

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16-17

Those students who have shown marginal progress in mathematics, either from test scores or high school grades, will be placed in Math 05. Students with a deficiency in high school algebra will be placed in the Math 31, 32, 33 sequence and will be graded by the standards shown on page 25. The grades earned in these mathematics courses will not be computed in the student's grade point average.

### Residence Requirements

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

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

### **Students Transferring from Other Colleges**

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

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

Each student transferring from another college should contact the Coordinator of Admissions and Records 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 Applying for Credit or Waiver of Requirements**

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

### **Auditing A Course**

Students desiring to attend a course without taking the examination or receiving credit for the course, may do so by registering to audit that course. Degree candidates usually may not audit required courses prior to taking the course for credit. Students desiring to audit a course will register during the first week of classes and pay the regular tuition. Audited courses carry no credit and do not count as a part of the student's course load. Students desiring to change status in a course from audit to credit or credit to audit must do so within the first week of the quarter. Permission of the instructional department is required to audit a course.

## **CLASSIFICATION OF STUDENTS**

All students are classified according to the following categories:  
**Regular Student.**

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

2. A full-time or part-time student taking credit courses for transfer to another college or university.

### **Special Student.**

1. A part-time student taking course(s) as audit for no credit;
2. A high school senior who, with the permission of his high 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	\$ 75.00
Out-of-State Resident	250.00

#### **Part-time Student (less than 12 credits):**

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

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 term or quarter for which he is enrolling.

Payment of tuition also enables the student to use the library, bookstore, parking lot, student lounge and other facilities of the College. There are no special laboratory or library fees, but students are expected to pay charges for any college property which they damage or lose (such as laboratory or shop equipment, supplies, library books and materials). There may be special fees from time to time (such as Physical Education fees).

### **Graduation Fee**

A graduation fee of \$10.00, payable at the beginning of the last quarter of instruction, is charged each graduating student.

### **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 \$50 per quarter for the average full-time student. The College operates a bookstore which maintains a complete stock of books and supplies to meet the needs of students.

### **Refunds**

#### **1. Regular Sessions**

Refunds for all regular session quarters and standard short summer sessions for all students.

##### **a. First Week of Classes**

Full tuition will be refunded for credit hours dropped below 12 credit hours.

##### **b. Second Week of Classes**

One-half tuition will be refunded for credit hours dropped below 12 credit hours.

##### **c. After two weeks of classes**

No refunds of any type will be given.

#### **2. Special Sessions**

For any sessions less than the standard short summer sessions, one-half refund on or before the first day of classes will be given; no refund will be given after that day.

#### **3. Eligibility**

To be eligible for refund under any of the circumstances set forth in the foregoing paragraphs, a student must execute within the time frame noted above an official drop form with the Office of Admissions & Records.

### **CREDITS**

A credit is equivalent to one collegiate quarter hour credit or two-thirds of a collegiate semester hour credit. Usually, one credit

for a course is given for approximately three hours of study weekly by each student as follows:

1. One hour of 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 and variable hours with behavioral objectives are assigned to each Developmental Studies Course (courses numbered 01-09).

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

### GRADING SYSTEM

A	Excellent	4 grade points per credit
B	Good	3 grade points per credit
C	Average	2 grade points per credit
D	Poor	1 grade point per credit
F	Failure	0 grade points per credit
R	Re-enroll	No credit (Credit will be given when the course objectives are completed. To be used only for courses numbered 01 through 09.)
S	Satisfactory	No credit (applies to Developmental courses and other specialized courses, and seminars) but course objectives completed.
U	Unsatisfactory	No credit (applies to Developmental and specialized courses and seminars) as student is not making satisfactory progress.
W	Withdrawal	No credit (A grade of withdrawal implies that the student was making satisfactory progress in the courses at the time of his withdrawal or that the withdrawal was officially made before the "deadline" date published in the college calendar).
I	Incomplete	No credit (A grade of incomplete is assigned only in cases of the student's absence from a limited number of class sessions near the end of a term or grading period and when the absence is for a verifiable unavoidable reason; i. e., sickness verified by medical statement,

accident verified by police records, etc., or absence from final examination for a verifiable and unavoidable reason. An "Incomplete" must be academically removed during the ensuing quarter following the issuance of that grade unless special permission for an extension of time is given by the Dean of Instruction or his designate).

- X Audit No credit (Permission of the instructor and the Dean of Instruction is required to audit a class.)

The grade point average (GPA) is determined by dividing the total number of grade points earned in courses by the total number of credits attempted.

### **Grading-Developmental Courses**

A grade of "S" (Satisfactory) is assigned for satisfactory completion of each Developmental Studies Course (courses numbered 01-09).

Students making satisfactory progress but not completing all of the objectives for a Developmental Course (courses numbered 01-09) shall be graded with an Administrative "R" (Re-enroll) and should re-enroll to complete the course objectives.

Students not making satisfactory progress in a Developmental Course (courses numbered 01-09) shall be graded "U" (Unsatisfactory), and counselors will recommend consultation with the instructor to determine the subsequent sequence of courses for the student who receives this 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 or Liberal Arts-Music. 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, pre-engineering, pre-teacher 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 four-year colleges or universities or to pursue immediate employment.



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

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

## **GRADUATION REQUIREMENTS**

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

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

### **Associate Degree and Diploma Requirements**

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

1. Have fulfilled all of the course requirements of his curriculum as outlined in the College catalog;
2. Have been recommended for graduation by the appropriate instructional authority in his curriculum;
3. Have completed at least 97 credits applicable to an associate degree of which 45 classroom credits must be acquired at the College;
4. Have completed the general education requirements (study in Economics, English, Government, Orientation, and Psychology) for an associate degree or diploma;
5. Have earned a grade point average of at least 2 on all courses attempted which are applicable toward graduation in his curriculum;
6. Have filed an application for graduation in the Office of Admissions and Records;
7. 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. Also, if he pursues a degree or diploma program but is unable to complete the degree or diploma requirements, he may, upon the recommendation of the appropriate instructional division and the Dean of Instruction, be issued a certificate provided the portion of study successfully completed is equivalent to an approved certificate program offered at the College.

## **ACADEMIC REGULATIONS**

### **Attendance**

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

The student is responsible for making up all work missed during an absence. If a student fails to appear for a test or final examination he should contact the instructor. The granting of requests for late examinations is left to the discretion of the instructor involved.

The classroom and laboratory are central to the education programs of the College, and require regular attendance to achieve the learning goals of those programs. Any instruction missed and not made up may, regardless of the reason for the absence, affect the grade of the student concerned.

### **Change of Registration**

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

#### **1. Withdrawal from a course:**

Withdrawal from a class without academic penalty may be made within the first three weeks after the beginning of a quarter. If a student's course work has been satisfactory up to that time, he will receive a grade of "W" for withdrawal. After that time the student may receive a grade of "W" if his course work has been satisfactory or will receive a failing grade of "F" if his course work has been unsatisfactory up to the time of official withdrawal. A student does not receive a "W" automatically if he stops attending class. HE MUST FILE A DROP FORM.

## 2. Addition of a course:

In most cases a student may not enter a new class after the first week of a quarter. Any request for entry after that period may be approved by the instructor concerned and the Dean of Instruction.

## 3. Withdrawal from the College:

A student who wishes to withdraw from the College should contact a counselor to determine the appropriate procedure. Failure to follow established procedures could place the student's college record in doubt and prejudice his return to this or another college.

## **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. This action serves to alert the student that he is not making satisfactory academic progress.

## **Academic Probation**

Any student who fails to maintain a cumulative grade point average of 1.50 will be placed on academic probation. The statement "Placed on Academic Probation" will be placed on the student's permanent record.

Any student on academic probation is expected to consult with his counselor and may be required to elect less than the normal academic course load in his next quarter following this action.

## **Academic Suspension**

The student on academic probation who fails to attain a grade point average of 1.50 for the next quarter he is in attendance will be subject to academic suspension. Academic suspension normally will be for two quarters unless the student reapplies, and is accepted, for readmission to another curriculum of the College. The statement "Placed on Academic Suspension" will be placed on the student's permanent record. The student must apply for readmission under all circumstances of academic suspension.

## **Academic Dismissal**

A student who does not maintain at least a 2 average for the quarter following reinstatement to the College after having been on academic suspension will be academically dismissed from that curriculum. Academic dismissal normally is permanent unless, with good cause, the student reapplies, and is accepted under special consideration for readmission by the Admission Committee of the College. The statement "Placed on Academic Dismissal" will be placed on the student's 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.

**Normal Academic Load**

The normal academic course load for a student is 15-17 credits. The minimum full-time load is 12 credits and the normal maximum full-time load is 18 credits. A student wishing to carry on academic load of more than 18 credits must ordinarily have a minimum average of 3 and must have the approval of the Dean of Instruction or the Dean of Student Services.

## PART III

# STUDENT SERVICES

## COUNSELING

As a service to students and to the community, the College maintains a staff of professional counselors and faculty advisors in each instructional program.

The counseling office assists students in making intelligent decisions regarding their occupational, educational, and personal-social plans. As a part of this assistance, students have available appropriate tests, inventories, occupational and educational information, and information regarding financial assistance or employment.

The counseling service provides individual attention and both supplements and complements the instructional program of the College.

## TESTING

A well-planned testing program for all students is coordinated by the Office of Counseling Services. A battery of diagnostic tests may be required for all students planning to enter one of the associate degree, diploma, or certificate programs unless they have previously attended college. This test battery is administered at the College, normally prior to registration. In addition, other special tests and inventories are available at the Counseling Office and may be used to help solve particular problems.

## 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. The program has grown in many different directions. Some of the ways in which CLEP is being used at present are:

To enable adults and unaffiliated students to demonstrate their knowledge and validate their learning by receiving college credit on the basis of examinations.

To assist transfer and continuing students in the transition to upper-division study.

To provide measures of college equivalency for use by business, industry, and other noncollegiate organizations.

To enable enrolled students to get placement and credit by examination.

To help meet licensing and certification requirements and to provide a means of qualifying for job advancement.

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

### **ORIENTATION**

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

A program is scheduled for all new students prior to the registration period for group orientation to the College and a discussion of student services and activities.

In addition, an orientation class, General 100, is provided for all first time students to aid them in their personal, social, and academic adjustments as well as career explorations. This class is required of all newly entering full-time regular students.

### **FINANCIAL AID**

The basic philosophy of the Financial Aid Program at Virginia Western is that "no student shall be denied the opportunity of a post-secondary education because of a lack of financial resources of the student and/or his family." Paramount to this philosophy is that the parents and students are to provide, within their ability, all or part of the cost for a post-secondary education; however, should their funds be found insufficient to cover the cost of attendance, the student may then be eligible to receive financial assistance from the College.

### **APPLICATION PROCEDURES**

To apply for financial assistance with Virginia Western Community College, students should follow procedures as outlined below:

1. File application for admission to Virginia Western Community College. Application forms are available upon request from

the Office of Admissions and Records, Virginia Western Community College, Box 4195, 3095 Colonial Avenue, S.W., Roanoke, Virginia 24015. A financial aid brochure describing each program is mailed out with each application for admission.

2. Request an application for financial assistance with the Financial Aid Office of Virginia Western Community College.
3. Request from your high school counseling department a "Parent's Confidential Statement" and submit this completed form to the College Scholarship Service, Box 176, Princeton, New Jersey, designating VWCC (Code 5868) to receive the analysis. "Parent's Confidential Statements" are also available from the Financial Aid Office at Virginia Western Community College.
4. If you claim self-supporting status and can establish your independence according to federal guidelines, then you may request these guidelines and a "Student's Financial Statement" in lieu of a "Parent's Confidential Statement" from the Financial Aid Office at Virginia Western Community College.

Determination of awards will be processed when the student's admission file and financial aid file are complete.

### **TYPES OF FINANCIAL ASSISTANCE**

A brochure is available upon request in the Financial Aid Office describing the types of aid available with eligibility requirements.

Virginia Western Community College has available the following types of Financial Aid.

#### **Federal Aid Programs**

1. Grants
2. National Direct Student Loans
3. College Work-Study
4. Law Enforcement Educational Program
5. Nursing Loans
6. Nursing Grants
7. Mental Health Grants
8. Assistance with Veteran's Benefits
9. Federal Insured Student Loans through the Virginia State Educational Assistance Authority in cooperation with local banks.

#### **State of Virginia Aid Programs**

1. State Teacher's Scholarships

2. State Tuition Grants
3. The College cooperates with the State Department of Vocational Rehabilitation in providing education and training for persons with vocational handicaps.

### **Scholarships**

The College has available a limited number of scholarships for students in both occupational-technical and College Parallel programs. These awards are made based upon a combination of a student's financial need and potential to maintain at least a "C" average.

Each year the College nominates a minority student who plans to transfer to any university with junior status to the College Entrance Examination Board for a scholarship. This scholarship is based upon need and will pay between 20% and 80% of costs to attend.

### **STUDENT 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 workload of approximately forty-five hours, depending on the particular courses and course load of the student. Consequently, part-time employment, in addition to a full-time course load of fifteen or more credits, is not in the best interest of the student in terms of his academic progress or his health.

Although part-time employment is not encouraged for full-time students, it is evident that in some cases it is necessary. A student who is considering part-time employment should discuss the question with his counselor or faculty advisor prior to seeking a position. Extreme caution should be used in making a commitment for more than fifteen hours of part-time work per week. Students who must work more than fifteen hours should consider taking a reduced schedule of classes.

Full-time freshmen, in particular, are encouraged not to undertake any part-time employment during the Fall Quarter as experience has clearly shown that the first quarter of college is the most difficult. The adjustments to college work and to college life will require a student's best full-time efforts if he is to succeed.

### **VETERANS—OFFICE OF VETERANS' AFFAIRS**

Programs and courses of study at this College are approved by the Veterans Administration. A "Veteran's Application for Program



of Education or Training" must be obtained from, completed and returned to the Veterans Administration. Once the program of study has been approved, the Veteran will receive a "Certificate of Eligibility" that must be submitted to the Office of Admissions and Records prior to the awarding of benefits.

The College maintains an Office of Veterans' Affairs which 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 PROGRAM**

The college operates a Special Services Program for students with academic potential who, by reason of educational, cultural, or economic background, or physical handicap, are in need of assistance to initiate, continue, or insure their academic success. Services provided include tutorial assistance, priority for financial aid and registration, career exploration, and personal development. College faculty and members of the Student Services staff work cooperatively to provide the special attention needed by student participants.

### **HEALTH SERVICES**

The College provides no facilities or staff for the treatment of students' health problems. Each student must make his own arrangements for caring for his health needs. Applications for student accident insurance are available in the office of the Dean of Student Services.

### **CAREER COUNSELING**

The College maintains a career counseling service for the following: part-time employment, summer and vacation employment, and assistance in the selection of types of careers after graduation. This service will provide students with occupational information and the techniques of seeking employment, including the preparation of resumes, letters of application, and arranging and preparing for interviews.

### **LUNCH ROOM**

The College provides a student lounge where light refreshments and foods are available at reasonable cost.

### **PARKING**

In order to make most effective use of our limited parking facilities, students must register their vehicles at the time of registration for classes. All students are expected to comply with the

parking regulations in force. A copy of these regulations is made available at registration, and they are also printed in the Student Handbook. Permits may be obtained in the Business Office at any time after the regular registration period. Students who change cars during the quarter must get a new permit.

### STUDENT ACTIVITIES

The student activities program is designed to provide a variety of meaningful educational, cultural, and social experiences.

Additional information is provided in the Student Handbook.

### STUDENT HANDBOOK

A student handbook is available to provide additional information of interest to students. The handbook describes student activities and organizations and lists the College rules and regulations.

**Students are responsible for the information published in the Handbook.**

The Student Handbook may be obtained through the office of the Dean of Student Services or through Counseling Services.

### 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. The **Statement of Student Rights, Responsibilities and Conduct** is contained in the Student Handbook.

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 granted.

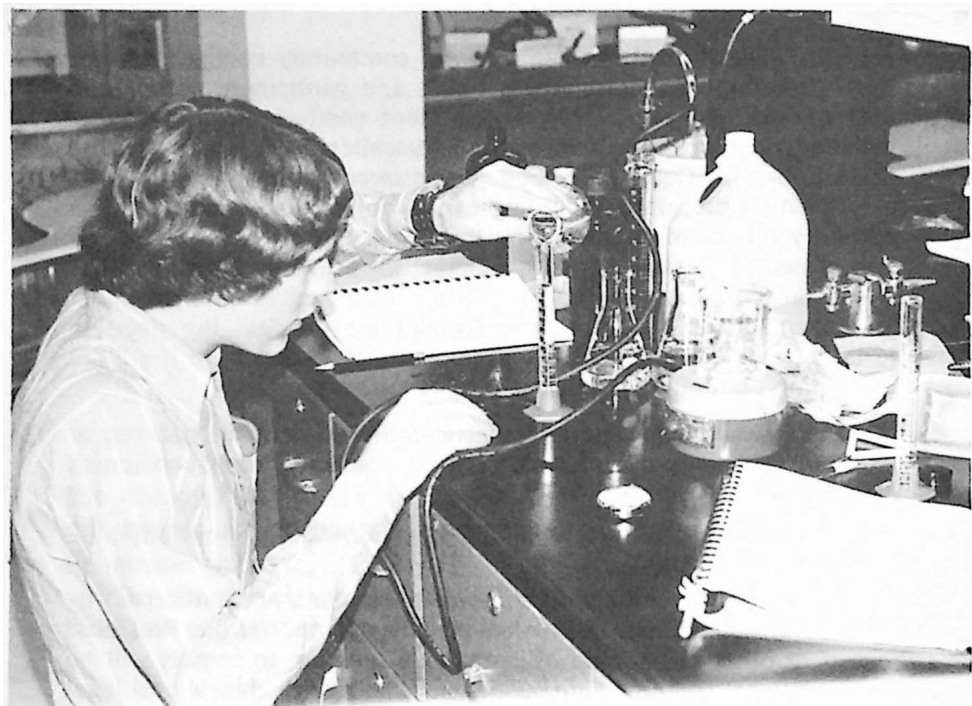
The Virginia Community College System guarantees to each student the privilege of exercising his right of citizenship under the Constitution of the United States without fear of prejudice. Special care is taken to assure due process and to spell out clearly-defined routes of appeal when a student feels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

Basically, students of the Virginia community colleges are expected to conduct themselves as ladies and gentlemen, both within the colleges and elsewhere. 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. 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 for Community Colleges.

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

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

1. When an assembly on campus of students not authorized by the College has been requested to disband by the President or other designated officer, those refusing to comply will be subject to immediate suspension, and/or dismissal and legal action.
2. In the event that an assembly appears to be a demonstration related to grievances, those present should be advised that orderly procedures for the hearing of grievances are available and must be adhered to. College officials will not negotiate with such groups under condition 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.



## PART IV

# CURRICULUMS OF STUDY

## BUSINESS SCIENCE DIVISION

Accounting (AAS)  
 Business Administration (AS)  
 Clerk-Typist (Certificate)  
 Data Processing Technology (AAS)  
 Management (AAS)  
 Merchandising (AAS)  
 Secretarial Science (AAS)  
 Stenographic (Certificate)  
 Traffic & Transportation Management (AAS)

## ENGINEERING/INDUSTRIAL & HEALTH TECHNOLOGIES DIVISION

### Engineering/Industrial Technology:

Air Conditioning & Refrigeration (Certificate)  
 Architectural (AAS or certificate)  
 Automotive (diploma)  
 Civil (AAS)  
 Electrical/Electronic (AAS)  
 Electromechanical (AAS)  
 Engineering (AS)  
 Engineering/Technical Assistant (Certificate)  
 Hotel, Restaurant and Institutional Management (AAS)  
 Mechanical (AAS)  
 Radio & Television Production Technology (AAS)

### Health Technology:

Dental Assistant (certificate)  
 \*Dental Hygiene (AAS)  
 Mental Health (AAS)  
 Nursing (AAS)  
 Radiologic (AAS)

## HUMANITIES DIVISION

Commercial Art (AAS)  
 Liberal Arts (AA)  
 Music (AA)

## SCIENCE AND MATHEMATICS DIVISION

Science (AS)

## SOCIAL SCIENCE & PUBLIC SERVICE TECHNOLOGY DIVISION

Child Care (certificate)  
 Fire Fighting & Prevention (certificate)  
 Police Science (AAS)  
 Pre-Teacher Education (AS)

## STATEWIDE ASSOCIATE DEGREE CURRICULUMS AVAILABLE TO ALL QUALIFIED STUDENTS

Student interested in these special curriculum should contact the Admissions Office of this community college for further information.

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

## MINIMUM REQUIREMENTS FOR ASSOCIATE DEGREES

## Associate in Arts (AA)

## Associate in Science (AS)

## Associate in Applied Science (AAS)

	Number of Credits		(Quarter Hours)
	AA <sup>1</sup>	AS <sup>2</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	} 9
English or Speech	0-3	0-3	
Art, Drama, Music, Humanities and/or Philosophy	0-6	0-3	
Foreign Language	12-24 <sup>3</sup>		
<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	
Mathematics	9	9	
Health, Physical Education or Recreation	3-6	3-6	3-6
Orientation	1	1	1
Electives and Other Major Requirements	3-21 <sup>4</sup>	48	75 <sup>4</sup>
Minimum Total Number of Credits for Degree	97	97	97

<sup>1</sup> Each student is urged to acquaint himself with the requirements of the major department in the college or university to which transfer is contemplated and further to consult with the Counseling Department of the community college in planning his program and selecting his 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 level 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> The Associate in Applied Science Degree programs should be organized approximately as follows:

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

## ACCOUNTING

**Degree:** Business Technology (Accounting) (AAS)

**Length:** Six-quarter (two-year) curriculum

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

**Occupational Objectives:** Accounting Trainee  
Accounting Technician  
Auditing Trainee  
Management Trainee  
Junior Accountant  
Accountant

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Accounting program requires a minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Students with deficiencies will require Developmental Studies.

**Program Requirements:** The first three quarters of the Accounting program are similar to other curriculums in business. In the second year each student will pursue his specialty in Accounting. The curriculum will include technical courses in accounting, courses in related areas, general education and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in accounting. Students are urged to consult with the counseling office and their faculty advisor in planning their program and selecting electives.

## ACCOUNTING

### Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ACCT 111*	Accounting I	3	2	4
BUAD 100	Introduction to Business	3	0	3
ECON	Economics*	3	0	3
ENGL 101	Communication Skills I (or ENGL 111)	3	0	3
GENL 100	Orientation	1	1	1
MATH 151	Introduction to Business Mathematics I	3	0	<u>3</u>
<b>Total</b>				<b>17</b>

\* ACCT 211-212-213 may be substituted.

z A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.



Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**SECOND QUARTER**

ACCT	112*	Accounting II	3	2	4
BUAD	164	Principles of Business Management I	3	0	3
ENGL	102	Communication Skills II (or ENGL 112)	3	0	3
MATH	152	Introduction to Business Mathematics II	3	0	3
SECR	111	Typewriting I <sup>1</sup> (or Elective) Health or Physical Education	2	3	3 <u>1-3</u>
Total					17-19

**THIRD QUARTER**

ACCT	113*	Accounting III	3	2	4
DAPR	106	Principles of Data Processing	3	0	3
MATH	153	Business Math by Machines	3	0	3
PSYC		Psychology <sup>2</sup>	3	0	3
SPDR	137	Public Speaking Health or Physical Education	3	0	3 <u>1-3</u>
Total					17-19

**FOURTH QUARTER**

ACCT	221	Intermediate Accounting	4	0	4
ACCT	234	Cost Accounting I	3	0	3
BUAD	241	Business Law I	3	0	3
DAPR	144	Computer Concepts	2	3	3
ENGL	180	Business English	3	0	<u>3</u>
Total					16

**FIFTH QUARTER**

ACCT	222	Intermediate Accounting II	4	0	4
ACCT	244	Business Taxes I	3	0	3
BUAD	242	Business Law II	3	0	3
BUAD	254	Applied Business Statistics I	3	0	3
GOVT		Government <sup>2</sup> Health or Physical Education	3	0	3 <u>1-3</u>
Total					17-19

**SIXTH QUARTER**

ACCT	223	Intermediate Accounting III	4	0	4
ACCT	229	Auditing (or Business Elective)	3	0	3
ACCT	245	Business Taxes (or Acct Elective)	3	0	3
ACCT	298	Seminar and Project			3
BUAD	246	Business Finance (or Bus. Elective)	3	0	<u>3</u>
Total					16

Total Minimum Credits for the Accounting Degree ..... 97

\* ACCT 211-212-213 may be substituted.

<sup>1</sup> Students who have completed prior training in typewriting may petition for course waiver.

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

## BUSINESS ADMINISTRATION

**Degree:** Associate in Science (Business Administration) (AS)

**Length:** Six-quarter (two-year) curriculum

**Purpose:** With the rapid development in business and industry in Virginia, there is a great demand for qualified personnel in business administration to provide leadership for this economic growth. The Associate in Science Degree curriculum in Business Administration is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in business administration.

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Business Administration program requires the satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English; 3 units of mathematics (algebra and geometry); 1 unit of laboratory science; and 1 unit of social studies. Students with deficiencies will require Developmental Studies. Students are urged to check the mathematics requirements of the four-year college or university to which they plan to transfer to determine the proper mathematics courses to be taken in the community college.

**Program Requirements:** The modern business world demands that its staff be knowledgeable in fields over and beyond every-day business technology. Thus, this curriculum requires courses in the humanities, natural sciences, and social sciences in addition to the principles of economics and accounting usually required in the first two years of a baccalaureate business administration curriculum. Students are urged to acquaint themselves with the requirements of the major department in the institution to which transfer is contemplated and also to consult with the counseling office of the community college in planning their program and selecting electives. In order to prepare for junior class standing at a four-year college or university, the student usually must complete a program at the community college which is comparable in length and course content to the first two years of the program at the four-year institution.

## BUSINESS ADMINISTRATION

### Associate in Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ENGL 111	English Composition	3	0	3
GENL 100	Orientation	1	1	1
HIST	American History or Hist. of West. Civ.	3	0	3
MATH 161	Mathematics	3	0	3
	Natural Science (Lab.)	3	3	4
	Elective <sup>1</sup>	3	0	<u>3</u>
<b>Total</b>				<b>17</b>

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

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**SECOND QUARTER**

ENGL	112	English Composition II	3	0	3
HIST		American History or Hist. of West. Civ.	3	0	3
MATH	162	Mathematics	3	0	3
		Natural Science (Lab.)	3	3	4
		Elective <sup>1</sup>	3	0	3
		Health or Physical Education	0-3	0-3	<u>1-3</u>
Total					17-19

**THIRD QUARTER**

ENGL	113	English Composition III	3	0	3
HIST		American History or Hist. of West. Civ.	3	0	3
MATH	163	Mathematics	3	0	3
		Natural Science (Lab.)	3	3	4
		Elective <sup>1</sup>	3	0	3
		Health or Physical Education			<u>1-3</u>
Total					17-19

**FOURTH QUARTER**

ACCT	211	Principles of Accounting I	3	0	3
ECON	211	Principles of Economics I <sup>2</sup>	3	0	3
ENGL		Literature	3	0	3
		Electives <sup>1</sup>	6	0	6
		Health or Physical Education			<u>1-3</u>
Total					16-18

**FIFTH QUARTER**

ACCT	212	Principles of Accounting II	3	0	3
ECON	212	Principles of Economics II <sup>2</sup>	3	0	3
ENGL		Literature	3	0	3
		Electives <sup>1</sup>	6	0	<u>6</u>
Total					15

**SIXTH QUARTER**

ACCT	213	Principles of Accounting III	3	0	3
ECON	213	Principles of Economics III <sup>2</sup>	3	0	3
		Literature or Speech	3	0	3
		Electives <sup>1</sup>	6	0	<u>6</u>
Total					15

Total Minimum Credits for the Business Administration 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.

## CLERK-TYPIST CERTIFICATE PROGRAM

**Degree:** Clerk-Typist Certificate

**Length:** Four-quarter (one-year) program

**Purpose:** The one-year clerk-typist course of study and practice is to provide training in the art and skills of clerical practice.

**Occupational Objectives:** Clerk-Typist

Receptionist

Typist

General Office Work

File Clerk

**Admission Requirements:** Applicant must meet the general requirements for admission to the College.

**Program Requirements:** This curriculum requires the student to take English, and speech, in addition to required courses needed by qualified clerks or general office personnel.

### CLERK-TYPIST CERTIFICATE

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
MATH	50	Business Math I (or MATH 151)	3	0	3
BUAD	100	Introduction to Business	3	0	3
ENGL	101	Communication Skills I	3	0	3
GENL	100	Orientation	1	1	1
GOVT	180	American Constitutional Government*	3	0	3
SECR	111	Typewriting 1 <sup>1</sup>	2	3	<u>3</u>
<b>Total</b>					<b>16</b>
<b>SECOND QUARTER</b>					
ENGL	102	Communication Skills II	3	0	3
PSYC	128	Human Relations*	3	0	3
SECR	112	Typewriting II	2	3	3
SECR	138	Office Recordkeeping	3	0	3
SPDR	137	Speech	3	0	<u>3</u>
<b>Total</b>					<b>15</b>
<b>THIRD QUARTER</b>					
BUAD	108	Business Machines (or MATH 153)	1	2	2
DAPR		DAPR Elective (or BUAD/SECR Elective)	3	0	3
SECR	113	Typewriting III	2	3	3
SECR	136	Filing & Records Management	3	0	3
SECR	139	Clerical Procedures	2	2	<u>3</u>
<b>Total</b>					<b>14</b>
<b>FOURTH QUARTER</b>					
ECON	160	American Economics*	3	0	3
SECR	114	Typewriting <sup>1</sup>	2	3	3
SECR	157	Machine Transcription	2	2	3
SECR	198	Seminar & Project			<u>3</u>
<b>Total</b>					<b>12</b>
<b>Total Minimum Credits for Clerk-Typist Certificate</b>					<b>57</b>

<sup>1</sup> Student may petition for waiver by examination.

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

# DATA PROCESSING TECHNOLOGY

## Computer Programming

**Degree:** Business Technology (Data Processing) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** The Data Processing Technology curriculum with specialization in computer programming is designed to provide the types of education and training which will be required by both industry and business. Specifically, this includes the skills, knowledges, attitudes, and abilities which will enable employees to function in positions of responsibility in the current employment market. Education of the student will include the use of data processing devices and equipment, and formal instruction which will provide an understanding of the employment environment.

**Occupational Objectives:** Computer Programming, Business  
Computer Programming, Trainee  
Related Data Processing Occupations

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Data Processing Technology curriculum requires a minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Students with deficiencies will require Developmental Studies.

**Program Requirements:** The curriculum will include technical courses in data processing, courses in related areas, general education, and electives. Instruction will include both theoretical concepts and practical applications needed for future success in data processing technology. Students are urged to consult with the counseling office and their faculty advisor in planning their program and selecting electives.

## DATA PROCESSING TECHNOLOGY

### (Computer Programming)

#### Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ACCT 111*	Accounting I	3	2	4
PSYC	Psychology <sup>1</sup>	3	0	3
DAPR 106	Principles of Data Processing	3	0	3
ENGL 101	Communication Skills I (or ENGL 111)	3	0	3
GENL 100	Orientation	1	1	1
MATH 151	Intr. to Bus. Math I (or MATH 161)	3	0	<u>3</u>
<b>Total</b>				<b>17</b>

\* ACCT 211-212-213 may be substituted.

<sup>1</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>SECOND QUARTER</b>				
ACCT 112*	Accounting II	3	2	4
BUAD 164	Principles of Business Management	3	0	3
DAPR 144	Computer Programming (Computer Concepts I)	2	3	3
ENGL 102	Communication Skills II (or ENGL 112)	3	0	3
MATH 152	Intr. to Bus. Math II (or MATH 162)	3	0	3
	Health or Physical Education			<u>1-3</u>
Total				17-19
<b>THIRD QUARTER</b>				
ACCT 113*	Accounting III	3	2	4
DAPR 147	Computer Programming (Cobol)	2	3	3
MATH 153	Bus. Math by Machines (or MATH 163)	3	0	3
DAPR 130	Operating Systems	2	3	3
ENGL	English Elective	3	0	3
	Health or Physical Education			<u>1-3</u>
Total				17-19
<b>FOURTH QUARTER</b>				
ACCT 234	Cost Accounting	3	0	3
BUAD 241	Business Law I	3	0	3
DAPR 256	Computer Programming (Advanced Cobol)	3	2	4
DAPR 281	Systems Analysis I	3	0	3
ECON	Economics <sup>1</sup>	3	0	3
	Health or Physical Education			<u>1-3</u>
Total				17-19
<b>FIFTH QUARTER</b>				
BUAD 254	Applied Business Statistics I	3	0	3
DAPR 282	Systems Analysis II	3	0	3
DAPR 269	Computer Programming (Assembler)	3	2	4
BUAD	Elective (BUAD-ACCT-MKTG)	3	0	3
GOVT	Government <sup>1</sup>	3	0	<u>3</u>
Total				16
<b>SIXTH QUARTER</b>				
DAPR 298	Seminar and Project	3	0	3
DAPR 266	Computer Programming (Fortran)	3	2	4
DAPR	DAPR Elective	3	2	4
	Electives	6	0	<u>6</u>
Total				17
Total Minimum Credits for the Data Processing Technology (Computer Programming) Degree				97

\* ACCT 211-212-213 may be substituted.

<sup>1</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

# HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT

**Major:** Food Service Management

**Degree:** Business Technology (Hotel, Restaurant and Institutional Management) (AAS)

**Length:** Eight quarters (two years)

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

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

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

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

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

## HOTEL, RESTAURANT AND INSTITUTIONAL MANAGEMENT

(Food Service)

### Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ENGL 101	Communication Skills I	3	0	3
GENL 100	Orientation	1	1	1
HLTH 110	Concepts of Personal & Community Health	3	0	3
HRIM 111	Food Science I	3	0	3
HRIM 124	Principles of Food Preparation I	3	3	4
MATH 151	Introduction to Business Mathematics	3	0	3
<b>Total</b>				<b>17</b>

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>SECOND QUARTER</b>					
BUAD	164	Principles of Business Management	3	0	3
ENGL	102	Communication Skills II	3	0	3
HRIM	112	Food Science II	3	0	3
HRIM	125	Principles of Food Preparation II	3	3	4
MATH	152	Introduction to Business Mathematics II	3	0	<u>3</u>
Total					16
<b>THIRD QUARTER</b>					
BUAD	165	Principles of Business Management II	3	0	3
HRIM	113	Food Science III	3	0	3
HRIM	140	Principles of Baking	3	3	4
MATH	153	Introduction to Business Mathematics III	3	0	3
SPDR	137	Speech Communications	3	0	<u>3</u>
Total					16
<b>SUMMER SESSION</b>					
HRIM	197	Cooperative Education			5
<b>FOURTH QUARTER</b>					
BUAD	241	Business Law I	3	0	3
DRFT	111	Technical Drafting	1	3	2
ECON**	160	American Economics	3	0	3
HRIM	221	Quantity Food Preparation	3	6	5
HRIM	236	Sanitation	3	0	<u>3</u>
Total					16
<b>FIFTH QUARTER</b>					
HRIM	222	Quantity Food Preparation II	3	6	5
HRIM	264	Food & Beverage Cost Control	3	0	3
HRIM	266	Food Purchasing	3	0	3
PSYC**	128	Human Relations	3	0	3
SECR	138	Office Record Keeping	2	2	<u>3</u>
Total					17
<b>SIXTH QUARTER</b>					
GOVT**	180	American Constitutional Government	3	0	3
HRIM	223	Quantity Food Preparation III	3	6	5
HRIM	286	Catering	2	3	3
INDT	127	Safety & Health Standards, Regulation & Codes	3	0	3
SECR	111	Typewriting	2	3	<u>3</u>
Total					17
<b>SUMMER SESSION</b>					
HRIM	297	Cooperative Education			5
Total Minimum Credits for the Business Technology Degree.....					109

\*\*A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.



# MANAGEMENT

**Majors:** Management  
Real Estate  
Banking and Finance

**Degree:** Business Technology (Banking and Finance) (AAS)  
Business Technology (Management) (AAS)  
Business Technology (Real Estate) (AAS)

**Length:** Six-quarter (two-year) curriculum

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

**Occupational Objectives:**

Management Trainee	Real Estate Sales
Supervisor	Real Estate Broker
Department Head	Real Estate Planning
Office Manager	Real Estate Finance
Manager of Small Business	Financial Management
Branch Manager	Retail Credit
Administrative Assistant	

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Management program requires a minimum of two units of high school math (one of which must be algebra) or the equivalent and proficiency in high school English. Students with deficiencies will require Development Studies.

**Program Requirements:** The first three quarters of the curriculum in Management are similar to other curriculums in business. However, in the second year each student will include technical courses in business, courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in business. Students are urged to consult with the counseling office and their faculty advisor in planning their program and selecting electives.

## MANAGEMENT

### Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ACCT 111*	Accounting I	3	2	4
BUAD 100	Introduction to Business	3	0	3
ECON	Economics*	3	0	3
ENGL 101	Communication Skills I (or ENGL 111)	3	0	3
GENL 100	Orientation	1	1	1
MATH 151	Introduction to Business Mathematics I	3	0	<u>3</u>
<b>Total</b>				<b>17</b>

\* ACCT 211-212-213 may be substituted.

2 A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>SECOND QUARTER</b>				
ACCT 112*	Accounting II	3	2	4
BUAD 164	Principles of Business Management I	3	0	3
ENGL 102	Communication Skills (or ENGL 112)	3	0	3
MATH 152	Introduction to Business Mathematics II	3	0	3
SECR 111	Typewriting I* (or Business Elective)	2	3	3
	Health or Physical Education			<u>1-3</u>
Total				17-19
<b>THIRD QUARTER</b>				
ACCT 113*	Accounting III	3	2	4
BUAD 165	Principles of Business Management II	3	0	3
MATH 153	Business Math by Machines	3	0	3
MKTG 100	Principles of Marketing	3	0	3
SPDR 137	Public Speaking	3	0	3
	Health or Physical Education			<u>1-3</u>
Total				17-19
<b>FOURTH QUARTER</b>				
BUAD 241	Business Law I	3	0	3
DAPR 106	Principles of Data Processing	3	0	3
ENGL 180	Business English	3	0	3
GOVT	Government*	3	0	3
	Business Elective	3	0	3
	Health or Physical Education			<u>1-3</u>
Total				16-18
<b>FIFTH QUARTER</b>				
ACCT 244	Business Taxes I	3	0	3
BUAD 242	Business Law II	3	0	3
BUAD 254	Applied Business Statistics	3	0	3
DAPR 144	Computer Concept I (or Business Elective)	2	3	3
	Business Elective	3	0	<u>3</u>
Total				15
<b>SIXTH QUARTER</b>				
BUAD 246	Business Finance	3	0	3
BUAD 276	Personnel Management	3	0	3
BUAD 298	Seminar and Project	3	0	3
PSYC	Psychology*	3	0	3
	Electives	6	0	<u>6</u>
Total				18
Total Minimum Credits for the Business Technology Degree .....				97

\* ACCT 211-212-213 may be substituted.

† Students who have completed prior training in typewriting may petition for course waiver.

‡ A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

**MANAGEMENT****(Real Estate)****Associate in Applied Science Degree**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>FIRST QUARTER</b>				
ACCT 111*	Accounting I	3	2	4
BUAD 100	Introduction to Business	3	0	3
ECON	Economics*	3	0	3
ENGL 101	Communication Skills (or ENGL 111)	3	0	3
GENL 100	Orientation	1	1	1
MATH 151	Introduction to Business Math I	3	0	<u>3</u>
<b>Total</b>				<b>17</b>
<b>SECOND QUARTER</b>				
ACCT 112*	Accounting II	3	2	4
BUAD 164	Principles of Business Management I	3	0	3
ENGL 102	Communication Skills II (or ENGL 112)	3	0	3
MATH 152	Introduction to Business Math II	3	0	3
MKTG 164	Principles of Real Estate	3	0	3
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>17-19</b>
<b>THIRD QUARTER</b>				
ACCT 113*	Accounting III	3	2	4
BUAD 165	Principles of Business Management	3	0	3
MATH 153	Business Math by Machines	3	0	3
MKTG 100	Principles of Marketing	3	0	3
MKTG 165	Principles of Real Estate	3	0	3
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>17-19</b>
<b>FOURTH QUARTER</b>				
BUAD 241	Business Law I	3	0	3
DAPR 106	Principles of Data Processing	3	0	3
ENGL 180	Business English	3	0	3
GOVT	Government*	3	0	3
SECR 111	Typewriting I <sup>1</sup> (or Business Elective)	2	3	3
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>16-18</b>

\* ACCT 211-212-213 may be substituted.

<sup>1</sup> Students who have completed prior training in typewriting may petition for course waiver.<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIFTH QUARTER</b>					
ACCT	244	Business Taxes I	3	0	3
BUAD	242	Business Law II	3	0	3
BUAD	254	Applied Business Statistics	3	0	3
MKTG	268	Property Management (or Marketing Elective)	3	0	3
SPDR	137	Public Speaking	3	0	<u>3</u>
Total					15
<b>SIXTH QUARTER</b>					
BUAD	246	Business Finance	3	0	3
BUAD	276	Personnel Management	3	0	3
BUAD	298	Seminar and Project	3	0	3
PSYC		Psychology <sup>2</sup>	3	0	3
MKTG	277	Real Estate Law (or Marketing Elective)	3	0	3
MKTG	150	Insurance (or Marketing Elective)	3	0	<u>3</u>
Total					18
Total Minimum Credits for the Business Technology (Management) Degree .....					97

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

## MANAGEMENT

### (Banking & Finance)

#### Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ACCT 111*	Accounting I	3	2	4
BUAD 100	Introduction to Business	3	0	3
ECON	Economics <sup>2</sup>	3	0	3
ENGL 101	Communication Skills I (or ENGL 111)	3	0	3
GENL 100	Orientation	1	1	1
MATH 151	Introduction to Business Math I	3	0	<u>3</u>
Total				17
<b>SECOND QUARTER</b>				
ACCT 112*	Accounting II	3	2	4
BUAD 164	Principles of Business Management I	3	0	3
ENGL 102	Communication Skills II (or ENGL 112)	3	0	3
MATH 152	Introduction to Business Math II	3	0	3
SECR 111	Typewriting 1 <sup>1</sup> (or Business Elective)	2	3	3
	Health or Physical Education			<u>1-3</u>
Total				17-19
<b>THIRD QUARTER</b>				
ACCT 113*	Accounting III	3	2	4
BUAD 165	Principles of Business Management	3	0	3
MATH 153	Business Math by Machines	3	0	3
MKTG 100	Principles of Marketing	3	0	3
SPDR 137	Public Speaking	3	0	3
	Health or Physical Education			<u>1-3</u>
Total				17-19
<b>FOURTH QUARTER</b>				
BUAD 241	Business Law I	3	0	3
DAPR 106	Principles of Data Processing	3	0	3
ENGL 180	Business English	3	0	3
GOVT	Government <sup>2</sup>	3	0	3
BUAD 117	Principles of Security Investments	3	0	3
	Health or Physical Education			<u>1-3</u>
Total				16-18

<sup>1</sup> Students who have completed prior training in typewriting may petition for course waiver.

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

\* ACCT 211-212-213 may be substituted.

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIFTH QUARTER</b>					
ACCT	244	Business Taxes I	3	0	3
BUAD	242	Business Law II	3	0	3
BUAD	157	Principles of Bank Operation	3	0	3
BUAD	254	Applied Business Statistics	3	0	3
BUAD	258	Installment Credit (or Business Elective)	3	0	<u>3</u>
Total					15
<b>SIXTH QUARTER</b>					
BUAD	246	Business Finance	3	0	3
BUAD	276	Personnel Management	3	0	3
BUAD	298	Seminar and Project	3	0	3
PSYC		Psychology <sup>2</sup>	3	0	3
BUAD	256	Trust Functions (or Business Elective)	3	0	3
ECON	246	Money & Banking	3	0	<u>3</u>
Total					18
Total Minimum Credits for the Business Technology (Management) Degree .....					97

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

## MERCHANDISING

**Degree:** Business Technology (Merchandising) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** With the rapid development of business in Virginia, there is a great demand for qualified personnel to assist management in this economic growth. The Associate in Applied Science Degree curriculum in Merchandising is a middle management program designed for persons who seek full-time employment in merchandising and related occupations immediately upon completion of the curriculum.

**Occupational Objectives:** Manager or Manager Trainee  
Sales Supervisor  
Assistant Manager  
Department Manager  
Sales Representative  
Buyer and Assistant Buyer

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Merchandising program requires a minimum of two units of high school math (one of which must be algebra) or the equivalent and proficiency in high school English. Students with deficiencies will require Developmental Studies.

**Program Requirements:** The first three quarters of the curriculum in Merchandising are similar to other curriculums in business. However, in the second year each student will pursue his specialty in Merchandising. The curriculum will include technical courses in merchandising, courses in related area, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in merchandising occupations. Students are urged to consult with the counseling office and their faculty advisor in planning their program and selecting electives.

## MERCHANDISING

### Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ACCT 111*	Accounting I	3	2	4
BUAD 100	Introduction to Business	3	0	3
ECON	Economics <sup>2</sup>	3	0	3
ENGL 101	Communication Skills I (or ENGL 111)	3	0	3
GENL 100	Orientation	1	1	1
MATH 151	Introduction to Business Math I	3	0	<u>3</u>
<b>Total</b>				<b>17</b>

\* ACCT 211-212-213 may be substituted.

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
SECOND QUARTER					
ACCT	112*	Accounting II	3	2	4
BUAD	164	Principles of Business Management I	3	0	3
ENGL	102	Communication Skills II (or ENGL 112)	3	0	3
MATH	152	Introduction to Business Math II	3	0	3
SECR	111	Typewriting I (or Business Elective)	2	3	3
		Health or Physical Education			<u>1-3</u>
Total					17-19
THIRD QUARTER					
ACCT	113*	Accounting III	3	2	4
MKTG	136	Retail Organization & Management	3	0	3
MATH	153	Business Math by Machines	3	0	3
MKTG	100	Principles of Marketing	3	0	3
SPDR	137	Public Speaking	3	0	3
		Health or Physical Education			<u>1-3</u>
Total					17-19
FOURTH QUARTER					
BUAD	241	Business Law I	3	0	3
DAPR	106	Principles of Data Processing	3	0	3
MKTG	109	Salesmanship	3	0	3
GOVT		Government <sup>2</sup>	3	0	3
MKTG	226	Merchandising Buying & Control			
		(or Marketing Elective)	3	0	3
		Health or Physical Education			<u>1-3</u>
Total					16-18
FIFTH QUARTER					
ACCT	244	Business Taxes I (or Business Elective)	3	0	3
BUAD	242	Business Law II	3	0	3
BUAD	254	Applied Business Statistics	3	0	3
MKTG	225	Principles of Advertising	3	0	3
MKTG	290	Coordinated Internship <sup>3</sup>		5-25	<u>1-5</u>
Total					13-17
SIXTH QUARTER					
MKTG		Marketing Elective	3	0	3
BUAD	276	Personnel Management	3	0	3
BUAD	298	Seminar and Project	3	0	3
PSYC		Psychology <sup>2</sup>	3	0	3
MKTG	290	Coordinated Internship <sup>3</sup>		5-25	<u>1-5</u>
Total					13-17
Total Minimum Credits for the Merchandising Degree .....					97

\* ACCT 211-212-213 may be substituted.

<sup>1</sup> Students who have completed prior training in typewriting may petition for course waiver.

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

<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.



# SECRETARIAL SCIENCE

**Specializations:** Executive Secretary  
Legal Secretary  
Medical Secretary

**Degree:** Business Technology (Secretarial Science) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** With the rapid development of business, industry, and government in Virginia, there is a great demand for qualified personnel in office occupations. The Associate in Applied Science Degree curriculum in Secretarial Science is designed to prepare persons for full-time employment immediately upon completion of the community college program. Both persons who are seeking their first employment in an office position and those who are seeking promotion may benefit from this curriculum.

**Occupational Objectives:**

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

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Secretarial Science program requires a minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Students with deficiencies will require Developmental Studies. In addition, students who have completed training in shorthand and advanced typewriting, may petition for advance placement.

**Program Requirements:** The two-year curriculum in Secretarial Science combines instruction in the many areas required for competence as a secretary in business, government, industry, law office, and other organizations. The curriculum will include courses in secretarial science, related areas, general education and electives. Students will be required to repeat shorthand or typewriting courses in which grades lower than "C" are received. The first year of the Secretarial Science curriculum is similar for all students. In the second year, students may select a specialty in either the Executive, Legal, or Medical Secretary curriculums. Students are advised to consult with their faculty advisor and the counseling office in planning their program and selecting electives.

## SECRETARIAL SCIENCE

### (Executive Secretary)

#### Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
BUAD 100	Introduction to Business	3	0	3
ENGL 101	Communication Skills I (or ENGL 111)	3	0	3
GENL 100	Orientation	1	1	1
MATH 151	Introduction to Business Mathematics I	3	0	3
SECR 111	Typewriting I <sup>1</sup>	2	3	3
SECR 121	Shorthand I <sup>1</sup>	3	2	<u>4</u>
<b>Total</b>				<b>17</b>

<sup>1</sup> Students who have completed prior training in shorthand or typewriting may petition for advanced placement.

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>SECOND QUARTER</b>					
BUAD	164	Principles of Business Management	3	0	3
ENGL	102	Communication Skills II (or ENGL 112)	3	0	3
MATH	152	Introduction to Business Mathematics II	3	0	3
SECR	112	Typewriting II	2	3	3
SECR	122	Shorthand II	3	2	4
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>17-19</b>
<b>THIRD QUARTER</b>					
ACCT	111	Accounting I	3	2	4
SECR	113	Typewriting III	2	3	3
SECR	123	Shorthand III	3	2	4
SECR	136	Filing & Records Management	3	0	3
SPDR	137	Public Speaking	3	0	3
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>18-20</b>
<b>FOURTH QUARTER</b>					
ENGL	180	Business English	3	0	3
MATH	153	Business Mathematics by Machines	3	0	3
PSYC		Psychology <sup>2</sup>	3	0	3
SECR	216	Executive Typewriting	2	2	3
SECR	221	Transcription I	2	2	3
SECR	241	Secretarial Procedures	2	2	<u>3</u>
<b>Total</b>					<b>18</b>
<b>FIFTH QUARTER</b>					
BUAD	241	Business Law I	3	0	3
ECON		Economics <sup>2</sup>	3	0	3
SECR	222	Transcription II	2	2	3
SECR	242	Secretarial Procedures II	2	2	3
SECR	256	Machine Transcription	2	2	3
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>16-18</b>
<b>SIXTH QUARTER</b>					
GOVT	180	Government <sup>2</sup>	3	0	3
SECR	217	Skill Building (or Business Elective)	2	3	3
SECR	223	(General) Transcription	2	2	3
SECR	243	Secretarial Procedures III	2	2	3
SECR	298	Seminar and Project	3	0	<u>3</u>
<b>Total</b>					<b>15</b>

Total Minimum Credits for the Secretarial Science  
 (Executive Secretary) Degree ..... 97

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

**SECRETARIAL SCIENCE****(Legal Secretary)****Associate in Applied Science Degree**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
BUAD 100	Introduction to Business	3	0	3
ENGL 101	Communication Skills I	3	0	3
GENL 100	Orientation	1	1	1
MATH 151	Introduction to Business Mathematics I	3	0	3
SECR 111	Typewriting I	2	3	3
SECR 121	Shorthand I	3	2	<u>4</u>
Total				17
<b>SECOND QUARTER</b>				
BUAD 164	Principles of Business Management	3	0	3
ENGL 102	Communication Skills II	3	0	3
MATH 152	Introduction to Business Mathematics II	3	0	3
SECR 112	Typewriting II	2	3	3
SECR 122	Shorthand II	3	2	4
	Health or Physical Education			<u>1-3</u>
Total				17-19
<b>THIRD QUARTER</b>				
ACCT 111	Accounting I	3	2	4
SECR 113	Typewriting III	2	3	3
SECR 123	Shorthand III	3	2	4
SECR 136	Filing & Records Management	3	0	3
SPDR 137	Public Speaking	3	0	<u>3</u>
Total				17
<b>FOURTH QUARTER</b>				
BUAD 241	Business Law I	3	0	3
ECON	Economics*	3	0	3
ENGL 180	Business English	3	0	3
SECR 216	Executive Typewriting	2	2	3
SECR 221	Transcription I	2	2	3
SECR 241	Secretarial Procedures I	2	2	<u>3</u>
Total				18

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

2 A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIFTH QUARTER</b>					
BUAD	242	Business Law II	3	0	3
GOVT		Government*	3	0	3
SECR	224	Legal Transcription I (or SECR 222)	2	2	3
SECR	256	Machine Transcription	2	2	3
SECR	264	Legal Secretarial Procedures I (or SECR 242)	2	2	3
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>16-18</b>
<b>SIXTH QUARTER</b>					
BUAD	243	Business Law III (or Business Elective)	3	0	3
PSYC		Psychology*	3	0	3
SECR	225	Legal Transcription II (or SECR 223)	2	2	3
SECR	265	Legal Secretarial Procedures II (or SECR 243)	2	2	3
SECR	298	Seminar and Project	3	0	3
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>16-18</b>
<b>Total Minimum Credits for the Secretarial Science</b>					
<b>(Legal Secretary) Degree .....</b>					<b>97</b>

\* A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

## SECRETARIAL SCIENCE (Medical Secretary)

### Associate in Applied Science Degree

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
BUAD	100	Introduction to Business	3	0	3
ENGL	101	Communication Skills I	3	0	3
GENL	100	Orientation	1	1	1
MATH	151	Introduction to Business Mathematics	3	0	3
SECR	111	Typewriting I <sup>1</sup>	2	3	3
SECR	121	Shorthand I <sup>1</sup>	3	2	<u>4</u>
Total					17
<b>SECOND QUARTER</b>					
BUAD	164	Principles of Business Management I	3	0	3
ENGL	102	Communication Skills II	3	0	3
MATH	152	Introduction to Business Mathematics II	3	0	3
SECR	112	Typewriting II	2	3	3
SECR	122	Shorthand II	3	2	4
Health or Physical Education					<u>1-3</u>
Total					17-19
<b>THIRD QUARTER</b>					
ACCT	111	Accounting I	3	2	4
SECR	113	Typewriting III	2	3	3
SECR	123	Shorthand III	3	2	4
SECR	136	Filing & Records Management	3	0	3
SPDR	137	Public Speaking	3	0	3
Health or Physical Education					<u>1-3</u>
Total					18-20
<b>FOURTH QUARTER</b>					
BIOL	154	Human Anatomy and Physiology I	3	3	4
ENGL	180	Business English	3	0	3
GOVT		Government <sup>2</sup>	3	0	3
MATH	153	Business Math by Machines	3	0	3
SECR	221	Transcription I	2	2	3
SECR	241	Secretarial Procedures I	2	2	<u>3</u>
Total					19

<sup>1</sup> Students who have completed prior training in shorthand or typewriting may petition for advanced placement.

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIFTH QUARTER</b>					
BUAD	241	Business Law I	3	0	3
PSYC		Psychology <sup>2</sup>	3	0	3
SECR	222	Transcription II	2	2	3
SECR	256	Machine Transcription	2	2	3
SECR	274	Medical Secretarial Procedures I (or SECR 242)	2	2	4
		Health or Physical Education			<u>1-3</u>
		<b>Total</b>			<b>16-18</b>
<b>SIXTH QUARTER</b>					
ECON		Economics <sup>2</sup>	3	0	3
SECR	227	Medical Transcription (or SECR 223)	2	2	3
SECR	275	Medical Secretarial Procedures II (or SECR 243)	2	2	3
SECR	298	Seminar and Project	3	0	3
		Elective	3	0	<u>3</u>
		<b>Total</b>			<b>15</b>
<b>Total Minimum Credits for Secretarial Science</b>					
<b>(Medical Secretary) Degree</b>					<b>97</b>

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

## STENOGRAPHIC CERTIFICATE PROGRAM

**Degree:** Stenographic Certificate

**Length:** Four-quarter (one-year) program

**Purpose:** The one-year stenographic course of study and practice is to provide training in the art and skills of clerical and stenographic practice.

**Occupational Objectives:** Stenographer  
Typist  
File Clerk  
General Office Work

**Admission Requirements:** Applicant must meet the general requirements for admission to the College.

**Program Requirements:** This curriculum requires the student to take English and mathematics in addition to required courses needed by qualified stenographers.

## STENOGRAPHIC CERTIFICATE PROGRAM

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
BUAD 100	Introduction to Business	3	0	3
ENGL 101	Communications Skills I	3	0	3
GENL 100	Orientation	1	1	1
MATH 50	Business Mathematics I (or Math 151)	2	2	3
SECR 111	Typewriting I <sup>1</sup>	2	3	3
SECR 121	Shorthand I <sup>1</sup>	3	2	<u>4</u>
<b>Total</b>				<b>17</b>
<b>SECOND QUARTER</b>				
ENGL 102	Communications Skills II	3	0	3
PSYC 128	Human Relations <sup>2</sup>	3	0	3
SECR 112	Typewriting II	2	3	3
SECR 136	Filing and Records Management	3	0	3
SECR 122	Shorthand II	3	2	<u>4</u>
<b>Total</b>				<b>16</b>
<b>THIRD QUARTER</b>				
BUAD 108	Business Machines (or MATH 153)	1	2	2
SECR 113	Typewriting III	2	3	3
SECR 123	Shorthand III	3	2	4
SECR 139	Clerical Office Procedures	2	2	3
GOVT 180	American Constitutional Government <sup>2</sup>	3	0	<u>3</u>
<b>Total</b>				<b>15</b>
<b>FOURTH QUARTER</b>				
ECON 160	American Economics <sup>1</sup>	3	0	3
SECR 114	Typewriting <sup>1</sup>	2	3	3
SECR 124	Shorthand IV	3	2	4
SECR 157	Machine Transcription	2	2	<u>3</u>
<b>Total</b>				<b>13</b>
<b>Total Minimum Credits for Stenographic Certificate</b>				<b>61</b>

<sup>1</sup> Student may petition for waiver by examination.

<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

## TRAFFIC AND TRANSPORTATION MANAGEMENT

**Degree:** Business Technology (Traffic & Transportation) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** With the rapid development of business and industry in Virginia, there is great demand by carriers and by companies using transportation services for qualified personnel to assist business management in this growth. Transportation represents 20% of the gross national product, and the traffic profession has become a highly skilled and specialized area since World War II. The Associate in Applied Science Degree curriculum in Traffic and Transportation Management is designed both for persons who seek full-time employment in transportation upon completion of the community college curriculum and for those already employed who seek promotion.

**Occupational Objectives:**

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

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Traffic and Transportation Management curriculum requires a minimum of two units of high school mathematics, one of which must be algebra or the equivalent, and proficiency in high school English. Students with deficiencies will require Developmental Studies.

**Program Requirements:** The first three quarters of the Traffic and Transportation Management curriculum fulfills the basic requirements common to all curricula in business, but are supplemented with introductory courses in Traffic and Transportation and the Economics of Transportation. In the second year, students will develop greater expertise in their specialty. Instruction will include both the theoretical concepts and the practical applications needed for future success in traffic and transportation occupations. Students are urged to consult with the counseling office and their faculty advisor in planning their program and selecting electives.

## TRAFFIC AND TRANSPORTATION MANAGEMENT

### Associate in Applied Science Degree

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
ACCT	111	Accounting I	3	2	4
BUAD	100	Introduction to Business	3	0	3
ENGL	101	Communication Skills I (or ENGL 111)	3	0	3
GENL	100	Orientation	1	1	1
MATH	151	Introduction to Business Mathematics	3	0	3
MKTG	131	Traffic and Transportation I	3	0	<u>3</u>
<b>Total</b>					<b>17</b>



Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>SECOND QUARTER</b>					
BUAD	164	Principles of Business Management	3	0	3
ECON		Economics <sup>2</sup>	3	0	3
ENGL	102	Communication Skills II (or ENGL 112)	3	0	3
MKTG	132	Traffic and Transportation II	3	0	3
SECR	111	Typewriting I <sup>1</sup> (or Business Elective)	2	3	3
		Health or Physical Education			<u>1-3</u>
Total					16-18
<b>THIRD QUARTER</b>					
DAPR	106	Principles of Data Proc. (or DAPR Elective)	3	0	3
SPDR	137	Public Speaking	3	0	3
MKTG	100	Principles of Marketing	3	0	3
MKTG	133	Traffic and Transportation III	3	0	3
MKTG	134	Economics of Transportation I	3	0	3
		Health or Physical Education			<u>1-3</u>
Total					16-18
<b>FOURTH QUARTER</b>					
BUAD	254	Applied Business Statistics I	3	0	3
MKTG	135	Economics of Transportation II	3	0	3
MKTG	231	Interstate Commerce Law I	3	0	3
MKTG	236	Physical Distribution (or Business Elective)	3	0	3
		Elective			3
		Health or Physical Education			<u>1-3</u>
Total					16-18
<b>FIFTH QUARTER</b>					
BUAD	276	Personnel Management (or Business Elective)	3	0	3
GOVT		Government <sup>2</sup>	3	0	3
MKTG	232	Interstate Commerce Law II	3	0	3
MKTG	238	Traffic Management	3	0	3
PSYC		Psychology <sup>2</sup>	3	0	3
		Elective	3	0	<u>3</u>
Total					18
<b>SIXTH QUARTER</b>					
MKTG	233	Interstate Commerce Law III	3	0	3
MKTG	239	Problems in Transportation	3	0	3
MKTG	298	Seminar and Project			3
		Electives	6	0	<u>6</u>
Total					15
Total Minimum Credits for a Traffic and Transportation Management Degree .....					97

<sup>1</sup> Students who have completed prior training in typewriting may petition for course waiver.<sup>2</sup> A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

**\*AIR CONDITIONING AND REFRIGERATION****Degree:** Certificate in Air Conditioning and Refrigeration**Length:** Six-quarter (part-time) program

**Purpose:** With the rapid growth of industry in Virginia, there is a growing demand for trained personnel in the Air Conditioning and Refrigeration field. This certificate program is designed to meet the needs of persons employed full-time and who wish to improve their competency in the Air Conditioning and Refrigeration field.

**Occupational Objectives:** Air Conditioning Service Technician  
Refrigeration Service Technician  
Controls Service Technician  
Air Conditioning Installation Technician  
Refrigeration Installation Technician

**Admission Requirements:** In addition to the admission requirements established for the College, entry into the Air Conditioning and Refrigeration program requires proficiency in high school English, mathematics and sciences including one unit of algebra. Students entering the program are also required to show satisfactory mechanical aptitude as measured by appropriate tests.

**Program Requirements:** This course is designed to provide both the practical experience and technical knowledge required for competence as a servic technician in the air conditioning and refrigeration industry. Laboratory experiences give the student the skill and know-how that he needs in order to plan, install and service air conditioning and refrigeration systems. The related classes include electricity and trouble shooting as applied to air conditioning and refrigeration equipment. The curriculum also includes basic courses in humanities to assist the student in social and business communications and to prepare the student to meet the obligations of the citizen in our democratic society.

**AIR CONDITIONING AND REFRIGERATION****\*Certificate Program**

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
AIRC	11	Air Conditioning I	2	2	3
MATH	01	Developmental Mathematics	5	0	<u>5</u>
Total					8
<b>SECOND QUARTER</b>					
AIRC	12	Air Conditioning II	2	2	3
ELEC	11	Electricity I	4	0	4
PHYS	14	Applied Physics	2	0	<u>2</u>
Total					9

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\* Requires part-time enrollment over a two-year period.

**ENGINEERING/INDUSTRIAL &  
HEALTH TECHNOLOGIES DIVISION**

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Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**THIRD QUARTER**

AIRC	13	Air Conditioning III	2	2	3
ELEC	12	Electricity II	4	0	<u>4</u>
Total					7

**FOURTH QUARTER**

AIRC	14	Air Conditioning IV	2	2	3
ELEC	74	Electric Power	4	0	<u>4</u>
Total					7

**FIFTH QUARTER**

AIRC	15	Air Conditioning V	2	2	3
ELEC	75	Electrical & Control Systems	4	0	<u>4</u>
Total					7

**SIXTH QUARTER**

AIRC	16	Air Conditioning VI	2	2	3
ELEC	17	Electronic Controls	4	0	<u>4</u>
Total					7

**Additional required courses that may be taken any quarter:**

ECON	160	Survey of American Economics*	3	0	3
ENGL	101	Communication Skills I	3	0	3
GOVT	180	American Constitutional Government*	3	0	3
PSYC	128	Human Relations*	3	0	3

Total Minimum Credits for Air Conditioning Refrigeration Certificate . . . . 55

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\* A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180, and PSYC 128.

## \*ARCHITECTURAL DRAFTING

**Degree:** Certificate in Architectural Drafting

**Length:** Six-quarter (part-time) program

**Purpose:** The certificate program in Architectural Drafting is designed to train persons for full-time employment immediately upon completion of the Community College program.

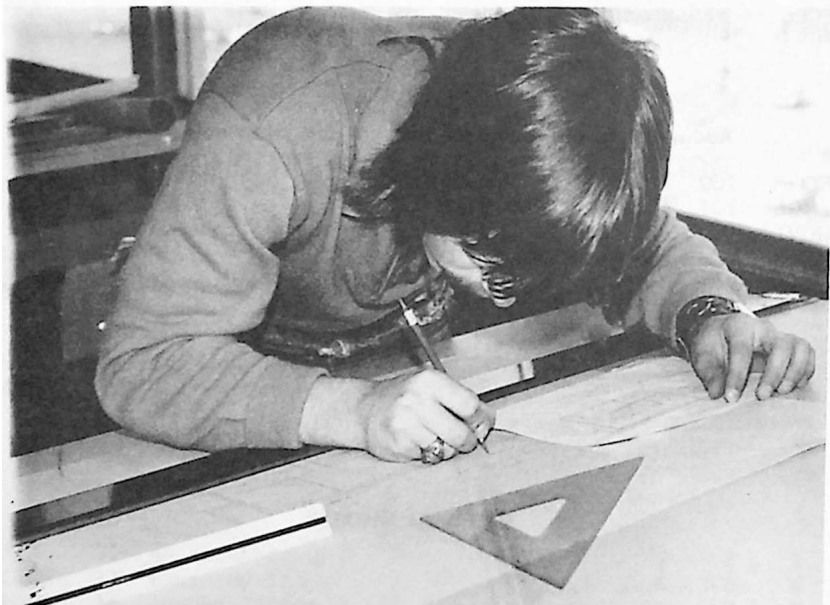
**Occupational Objectives:** Architectural Aide  
Architectural Draftsman

**Admission Requirements:** In addition to the admission requirements established for the College, entry into the Architectural Drafting program requires proficiency in high school English, mathematics including one unit of algebra and science.

**Program Requirements:** This program is designed to provide both the practical experience and technical knowledge required for entry into a career in Architectural Drafting. The curriculum includes Architectural Drafting and related technical courses, and basic courses in humanities, the social sciences and business communications.

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\* Requires part-time enrollment over a two-year period.



# ARCHITECTURAL DRAFTING

## \*Certificate Program

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
ARCH	111	Architectural Drafting I	1	6	3
MATH	111	Technical Mathematics I	3	0	<u>3</u>
Total					6
<b>SECOND QUARTER</b>					
ARCH	112	Architectural Drafting II	1	6	3
MATH	112	Technical Mathematics II	3	0	<u>3</u>
Total					6
<b>THIRD QUARTER</b>					
ARCH	113	Architectural Drafting III	1	6	3
MATH	113	Technical Mathematics III	3	0	<u>3</u>
Total					6
<b>FOURTH QUARTER</b>					
ARCH	211	Architectural Drafting IV	1	6	3
		Technical Elective			<u>3-4</u>
Total					6-7
<b>FIFTH QUARTER</b>					
ARCH	212	Architectural Drafting V	1	6	3
		Technical Elective			<u>3-4</u>
Total					6-7
<b>SIXTH QUARTER</b>					
ARCH	213	Architectural Drafting VI	1	6	3
		Technical Elective			<u>3-4</u>
Total					6-7

### Additional required courses that may be taken any quarter:

**ECON 160	Survey of American Economics	3	0	3
ENGL 101	Communication Skills I	3	0	3
**GOVT 180	American Constitutional Government	3	0	3
**PSYC 128	Human Relations	3	0	3

Total Minimum Credits for Architectural Drafting Certificate . . . . . 48

\*Requires part-time enrollment for a two-year period.

\*\*A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

## ARCHITECTURAL TECHNOLOGY

**Degree:** Engineering Technology (Architecture) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** The program in Architectural Technology is both creative and practical; students are exposed to design, construction details and methods, and working drawings. Emphasis is placed on development of drafting ability and comprehension of construction methodology. The program is primarily designed to prepare students for full-time employment immediately upon completion of the community college program.

**Occupational Objectives:** Successful graduates of this program are presented with varied job opportunities in architectural offices, with building contractors, as factory representatives, and with industries related to Architectural Technology.

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Architectural Technology curriculum requires completion of the following high school units or their equivalent as a minimum: 4 units of English, 3 units of mathematics (2 units of algebra and 1 unit of geometry or trigonometry), 1 unit of laboratory science (preferably physical science), and 1 unit of social studies. Students with deficiencies will require Developmental Studies.

**Program Requirements:** The two-year curriculum in Architectural Technology combines instruction in the many areas required for competence as a draftsman and as an assistant to an architect. Approximately one-half of the curriculum will include courses in architectural technology with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in architectural technology. The program is structured to meet variable needs of students including those who wish to continue their education beyond the Associate Degree level. Students are advised to consult with the counseling office and their faculty advisor early in planning a program suitable to their individual needs.

## ARCHITECTURAL TECHNOLOGY

### Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ARCH 100	Introduction to Architecture	3	0	3
ARCH 111	Architectural Drafting I	1	6	3
ENGL	English	3	0	3
ENGR 100	Introduction to Engr. Technology	1	2	2
GENL 100	Orientation	1	1	1
MATH 121	Engineering Technical Mathematics I			
	(or MATH 141 or MATH 161)			3-5
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>16-20</b>

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>SECOND QUARTER</b>					
ARCH	112	Architectural Drafting II	1	6	3
ARCH	141	Materials & Methods of Construction	2	3	3
ENGL		English	3	0	3
MATH	122	Engineering Technical Mathematics II (or MATH 142 or MATH 162)			3-5
PHYS	111	Technical Physics I (or PHYS 121) Health or Physical Education	3	3	4 <u>1-3</u>
Total					17-21
<b>THIRD QUARTER</b>					
ARCH	113	Architectural Drafting III	1	6	3
ARCH	142	Materials & Methods of Construction II	3	0	3
MATH	123	Engineering Technical Mathematics III (or MATH 143 or MATH 163)			3-5
PHYS	112	Technical Physics II (or PHYS 122) English or Speech Health or Physical Education	3 3	3 0	4 3 <u>1-3</u>
Total					17-21
<b>FOURTH QUARTER</b>					
ARCH	211	Architectural Drafting IV	1	6	3
ARCH	276	Construction Estimating (or *Technical Elective)			3-4
CIVL	181	Surveying I	3	3	4
ENGR	151	Mechanics I (Statics) Technical Elective	4	0	4 <u>3-4</u>
Total					17-19
<b>FIFTH QUARTER</b>					
ARCH	212	Architectural Drafting V	1	6	3
ARCH	278	Building Codes (or *Technical Elective)			3-4
ECON		Economics**	3	0	3
ENGR	152	Mechanics II (Strength of Materials)	3	0	3
ENGR	154	Mechanics Laboratory *Technical Elective	0	3	1 <u>3-4</u>
Total					16-18
<b>SIXTH QUARTER</b>					
ARCH	213	Architectural Drafting VI	1	6	3
ARCH	237	Building Mechanical Equipment (or *Technical Elective)			3-4
ARCH	298	Seminar and Project (or ARCH 290)			3-5
GOVT		Government**	3	0	3
PSYC		Psychology**	3	0	<u>3</u>
Total					15-18
Total Minimum Credits for a Degree in Architectural Technology					98

\* Requires departmental approval.

\*\*A year sequence in Social Science may be taken in lieu if ECON, GOVT and PSYC.

## AUTOMOTIVE TECHNOLOGY

**Degree:** Diploma

**Length:** Six-quarter (two-year) program

**Purpose:** Complexity in automotive vehicles increases each year because of scientific discovery, new engineering and new federal regulations. There is a great demand for qualified automotive technicians and diagnosticians to help service the growing number of automobiles in our society.

The curriculum is designed to provide a two-phase approach to automotive career development for persons who seek full-time employment in the automotive field upon completion of the program. The first develops his knowledge of the operating principles of automobile components, repair techniques, and operation of an automotive repair business. The second phase develops his ability to intelligently and effectively analyze automobile defects, repair and adjustment needs, along with the estimation of customer cost for the repairs and adjustments.

**Occupational Objectives:**

Automotive Diagnostician	Repair Service Salesman
Automotive Technician	Repair Service Writer
Auto Parts Sales and Service	Repair Technician
Customer Service Representative	Service Manager
Repair Service Estimator	Tune-up Specialist

**Admission Requirements:** In addition to the requirements for general admissions to the college (as listed in the section on admission requirements in Part II of this catalog), the student should show satisfactory aptitude for the automotive service field as measured by appropriate tests administered through the college counseling office. Academic deficiencies may be corrected by additional studies in the Developmental Studies Program.

**Program Requirements:** The program includes general education courses along with special courses in the field of automotive service. The purchase of hand tools and personal safety equipment are the financial responsibility of the individual student. Students are advised to consult with their faculty advisor and the counseling office in planning their program.

## AUTOMOTIVE TECHNOLOGY

### Two-Year Diploma Program

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
AUTO 111	Automotive Engines I	3	3	4
AUTO 136	Automotive Lubrication & Cooling Systems	2	3	3
DRFT 144	Automotive Drawing Interpretation I	2	0	2
ENGL 101	Communication Skills I	3	0	3
GENL 100	Orientation	1	1	1
MATH 199	Supervised Study			3
WELD 100	Fundamentals of Welding	1	3	2
<b>Total</b>				<b>18</b>



**ENGINEERING/INDUSTRIAL &  
HEALTH TECHNOLOGIES DIVISION**

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Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**SECOND QUARTER**

AUTO	112	Automotive Engines II	3	3	4
AUTO	121	Automotive Fuel Systems I	3	3	4
ENGL	102	Communication Skills II (optional)			0.3
MATH	199	Supervised Study			3
PHYS	14	Applied Physics I	2	0	2
WELD	101	Welding I (Oxyacetylene)	1	3	2
<b>Total</b>					<b>15-18</b>

**THIRD QUARTER**

AUTO	122	Automotive Fuel Systems II	3	3	4
AUTO	154	Automotive Power Trains I	3	3	4
AUTO	199	Supervised Study			2
PHYS	16	Applied Physics III	3	0	3
MECH	131	Machine Laboratory	1	3	2
SPDR	137	Public Speaking (optional)			<u>0.3</u>
<b>Total</b>					<b>15-18</b>

**FOURTH QUARTER**

AUTO	241	Automotive Electricity I	3	3	4
AUTO	254	Automatic Transmissions I	3	3	4
AUTO	267	Automotive Suspension & Braking Systems	3	3	4
AUTO	287	Shop Management I	3	0	3
GOVT	180	American Constitutional Government*	3	0	<u>3</u>
<b>Total</b>					<b>18</b>

**FIFTH QUARTER**

AUTO	242	Automotive Electricity II	3	3	4
AUTO	255	Automatic Transmissions II	3	3	4
AUTO	284	Automotive Service Procedures & Tune Up I	2	3	3
AUTO	288	Shop Management II	3	0	3
ECON	160	Survey of American Economics*	3	0	3
		Health or Physical Education			<u>1.3</u>
<b>Total</b>					<b>18-20</b>

**SIXTH QUARTER**

AUTO	238	Automotive Air Conditioning	3	0	3
AUTO	268	Automotive Alignment	1	3	2
AUTO	285	Automotive Service Procedures & Tune Up II	2	3	3
AUTO	290	Coordinated Internship (or AUTO 298)			3
PSYC	128	Human Relations*	3	0	3
		Health or Physical Education			<u>2.3</u>
<b>Total</b>					<b>16-17</b>

**Total Minimum Credits for Automotive Technology Diploma . . . . . 100**

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\* A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

**CIVIL ENGINEERING TECHNOLOGY****Degree:** Engineering Technology (Civil) (AAS)**Length:** Six-quarter (two-year) program

**Purpose:** The Associate in Applied Science Degree program in Civil Engineering Technology is designed to develop qualified engineering technicians for the field of civil technology. The technician will learn to communicate mathematically, scientifically, and linguistically with craftsmen to supplement and assist in the work of the engineer and scientist. Typical among the array of semiprofessional functions performed by the technologist are: drafting, design, development, research, supervision, technical sales, testing, and engineering aide. Opportunities are also available for the graduate who wishes to transfer to appropriate Bachelor of Technology Programs offered by some four-year universities.

**Occupational Objective:** Civil Engineering Technician

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Civil Engineering Technology curriculum requires completion of the following high school units or their equivalent as a minimum: 4 units of English, 3 units of mathematics (2 units of algebra and 1 unit of geometry or trigonometry), 1 unit of laboratory science (preferably physical science), and 1 unit of social studies. Students with deficiencies will require Developmental Studies.

**Program Requirements:** Approximately one-half of the curriculum will include courses in Civil Engineering Technology with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in civil engineering technology. Students are advised to consult with their faculty advisor and the counseling office in planning their program and selecting electives.

**CIVIL ENGINEERING TECHNOLOGY****Associate in Applied Science Degree**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>FIRST QUARTER</b>				
CIVL 140	Construction Planning	3	0	3
DRFT 111	Technical Drafting I	1	3	2
ENGL 101	Communication Skills I	3	0	3
ENGR 100	Introduction to Engineering Technology	1	2	2
GENL 100	Orientation	1	1	1
MATH 121	Engineering Technical Mathematics I	5	0	5
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>17-19</b>

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<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
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**SECOND QUARTER**

CIVL	124	Civil Engineering Drafting I	1	3	2
ENGL	102	Communication Skills II	3	0	3
GOVT	180	American Constitutional Government*	3	0	3
MATH	122	Engineering Technical Mathematics II	5	0	5
PHYS	111	Technical Physics I	3	3	4
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>18-20</b>

**THIRD QUARTER**

CIVL	125	Civil Engineering Drafting II	1	3	2
ENGR	151	Mechanics I (Statics)	4	0	4
MATH	123	Engineering Technical Mathematics III	5	0	5
PHYS	112	Technical Physics II	3	3	4
ENGL	137	Technical Writing or SPDR 137	3	0	<u>3</u>
<b>Total</b>					<b>18</b>

**FOURTH QUARTER**

CIVL	181	Surveying I	3	3	4
CIVL	254	Civil Materials I (Concrete)	3	0	3
CIVL	257	Concrete Laboratory	0	3	1
ENGR	152	Mechanics II (Strength of Materials)	3	0	3
ENGR	154	Mechanics Laboratory	0	3	1
MECH	267	Fluid Mechanics	3	3	4
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>17-19</b>

**FIFTH QUARTER**

CIVL	182	Surveying II	3	3	4
CIVL	230	Structural Analysis	3	0	3
ECON	160	Survey of American Economics*	3	0	3
		Technical Electives			<u>6-8</u>
<b>Total</b>					<b>16-18</b>

**SIXTH QUARTER**

PSYC	128	Human Relations*	3	0	3
		Technical Electives			<u>15-16</u>
<b>Total</b>					<b>18-19</b>

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\* A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

## Technical Electives

## Fifth Quarter

CIVL	246	Soil Mechanics (3 cr.)
CIVL	247	Soil Mechanics Laboratory (1 cr.)
CIVL	268	Water and Sewage Systems (3 cr.)
MATH	221	Advanced Engineering Technical Mathematics I (4 cr.)
		Others with Departmental Approval

## Sixth Quarter

CIVL	217	Structural Steel Design (4 cr.)
CIVL	218	Reinforced Concrete Design (4 cr.)
CIVL	255	Civil Materials II (3 cr.)
CIVL	258	Bituminous Laboratory (1 cr.)
CIVL	284	Route Surveying and Highway Design (4 cr.)
MATH	222	Advanced Engineering Technical Mathematics II (4 cr.)
		Others with Departmental Approval

Total Minimum Credits for Civil Engineering Technology Degree . . . . . 104



## **ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY**

**Degree:** Engineering Technology (Electrical/Electronics) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** The rapidly expanding electronics industries have created a great demand for qualified engineering technicians. In recent years the fields of electrical science and electronics have overlapped until today the two are extremely similar. Because of this similarity the educational requirements for students entering these fields are similar.

In order to provide the flexibility required by the large variety of positions available in the electronics industries, the curriculum offers a solid foundation in mathematics, science, and electronics. The Electrical/Electronics Engineering Technology curriculum is designed for persons seeking employment in electrical and electronics engineering technology immediately upon completion of the community college program. Opportunities are also available for the graduate who wishes to transfer to appropriate Bachelor of Technology Programs offered by some four-year universities.

**Occupational Objectives:** Communication Electronics  
Electrical/Electronics Engineering Technician  
Industrial Electrical/Electronics

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the curriculum in Electrical/Electronics Engineering Technology requires the satisfactory completion of the following high school units or their equivalent as a minimum: 4 units of English, 3 units of mathematics (2 units of algebra, 1 unit of geometry or trigonometry), 1 unit of laboratory science (preferably a physical science), and 1 unit of social studies. Students with deficiencies will require Developmental Studies.

**Program Requirements:** Approximately one-half of the curriculum will include courses in electrical/electronics engineering technology with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in electrical and electronics engineering technology. Students are advised to consult with their faculty advisor and the counseling office in planning their program and selecting electives.

In order to specialize in the second year each student may select an option as follows: Communications (ELEC 241-242-243), or Power (ELEC 211-212-213).

**ELECTRICAL/ELECTRONICS ENGINEERING  
TECHNOLOGY****Associate in Applied Science Degree Program**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>FIRST QUARTER</b>				
ELEC 111	Electrical Circuits I	3	3	4
ENGL 101	Communication Skills I	3	0	3
ENGR 100	Introduction to Engineering	1	2	2
GENL 100	Orientation	1	1	1
GOVT 180	American Constitutional Government*	3	0	3
MATH 121	Engineering Technical Mathematics I	5	0	<u>5</u>
<b>Total</b>				<b>18</b>
<b>SECOND QUARTER</b>				
ELEC 112	Electrical Circuits II	5	3	6
ENGL 102	Communication Skills II	3	0	3
MATH 122	Engineering Technical Mathematics II	5	0	5
PHYS 111	Technical Physics I	3	3	<u>4</u>
<b>Total</b>				<b>18</b>
<b>THIRD QUARTER</b>				
ELEC 125	Introduction to Electronics	4	3	5
ENGL 137	Technical Report Writing (or SPDR 137)	3	0	3
MATH 123	Engineering Technical Mathematics III	5	0	5
PHYS 112	Technical Physics II	3	3	4
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>18-20</b>
<b>FOURTH QUARTER</b>				
DRFT 158	Electrical/Electronics Drafting	1	3	2
ELEC 118	Electrical Shop	0	3	1
ELEC 201	Electrical Engineering Technology I	5	3	6
ELEC 276	Instruments and Measurements	3	3	4
	Technical Option	3	3	4
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>18-20</b>
<b>FIFTH QUARTER</b>				
ELEC 119	Electrical Shop II	0	3	1
ELEC 202	Electrical Engineering Technology II	5	6	7
PSYC 128	Human Relations*	3	0	3
	Technical Option	3	3	4
	Technical Elective			<u>3-4</u>
<b>Total</b>				<b>18-19</b>

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\* A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**SIXTH QUARTER**

ECON	160	Survey of American Economics*	3	0	3
ELEC	203	Electrical Engineering Technology III	5	3	6
ELEC	298	Seminar and Project	0	0	1
		Technical Option	3	3	4
		Technical Elective			3-4
		Health or Physical Education			<u>1-3</u>
		Total			18-21

**Technical Options**

ELEC	241	Communications I (4 cr.)			
ELEC	242	Communications II (4 cr.)			
ELEC	243	Communications Systems (4 cr.)			
ELEC	211	Electrical Machines (4 cr.)			
ELEC	212	Electrical Machines and Industrial Controls (4 cr.)			
ELEC	213	Advanced Industrial Controls (4 cr.)			

**Technical Electives**

ELEC	248	Microwave Techniques (3 cr.)			
ENGR	206	Engineering Economy (3 cr.)			
MATH	221	Advanced Engineering Technical Mathematics I			
MATH	222	Advanced Engineering Technical Mathematics II			
		Others with departmental approval			

**Total Minimum Credits for Electrical/Electronics Engineering  
Technology Degree . . . . . 108**

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\* A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

**\*ELECTROMECHANICAL TECHNOLOGY****Degree:** Associate in Applied Science**Length:** Twelve-quarter (part-time) program

**Purpose:** Recent developments in industrial techniques have created certain occupations in which a knowledge of the electronics and mechanical interrelationships is compulsory. The Electromechanical Technology curriculum is designed to afford specialized training by providing a broad base of mathematics and science with applications in both the electronics and mechanical fields.

**Occupational Objectives:** The Electromechanical Technician has employment opportunities with industry and business in maintenance, production, research or sales as a field service engineer, sales representative, engineering technician or quality control technician.

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the curriculum in Electromechanical Technology requires the satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English; 2 units of mathematics (other than general mathematics).

**Program Requirements:** The Electromechanical Technology curriculum has been developed with emphasis on electrical and mechanical principles rather than on specific applications of these principles. Where applications have been incorporated in the course, electrical and mechanical systems are studied together and not as separate entities. Basic courses in the humanities are included to assist the student to meet the obligations of the citizen in our democratic society. Approximately one-half of the curriculum will include courses in Electromechanical Technology with the remaining courses in related areas, general education, and electives. Students are advised to consult with their faculty advisor and the counseling office in planning their program and selecting electives.

**ELECTROMECHANICAL TECHNOLOGY****Associate in Applied Science Degree**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>FIRST QUARTER</b>				
ENGR 100	Introduction to Engineering Technology	1	2	2
GENL 100	Orientation	1	1	1
MATH 111	Technical Mathematics	3	0	<u>3</u>
Total				6
<b>SECOND QUARTER</b>				
MATH 112	Technical Mathematics II	3	0	3
PHYS 111	Technical Physics I	3	3	<u>4</u>
Total				7
<b>THIRD QUARTER</b>				
MATH 113	Technical Mathematics III	3	0	3
PHYS 112	Technical Physics II	3	3	<u>4</u>
Total				7

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\* Offered on a part-time evening basis.



**ENGINEERING/INDUSTRIAL &  
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<b>Course Number</b>		<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>FOURTH QUARTER</b>					
ELEC	131	Electrical/Electronic Calculations I	4	0	4
ENGR	151	Mechanics I (Statics)	4	0	<u>4</u>
		Total			8
<b>FIFTH QUARTER</b>					
ELEC	111	Electrical Circuits I	3	3	4
ENGR	152	Mechanics II (Strength of Materials)	3	0	<u>3</u>
		Total			7
<b>SIXTH QUARTER</b>					
ELEC	112	Electrical Circuits II	5	3	6
ENGR	154	Mechanics Laboratory	0	3	<u>1</u>
		Total			7
<b>SEVENTH QUARTER</b>					
ELEC	125	Introduction to Electronics	4	3	5
MECH	156	Mechanisms	1	3	<u>2</u>
		Total			7
<b>EIGHTH QUARTER</b>					
MECH	237	Machine Design I	3	3	4
DRFT	158	Electrical/Electronics Drafting	1	3	<u>2</u>
		Total			6
<b>NINTH QUARTER</b>					
ELEC	118	Electrical Shop	0	3	1
MECH	269	Hydraulics and Pneumatics	3	3	<u>4</u>
		Total			5
<b>TENTH QUARTER</b>					
ELEC	261	Electromechanical Systems I	3	3	4
MECH	264	Thermodynamics I	4	0	<u>4</u>
		Total			8
<b>ELEVENTH QUARTER</b>					
ELEC	262	Electromechanical Systems II	3	3	4
WELD	100	Fundamentals of Welding	1	3	<u>2</u>
		Total			6
<b>TWELFTH QUARTER</b>					
ELEC	263	Electromechanical Systems II	4	3	5
<b>Additional required courses that may be taken any quarter:</b>					
*ECON	160	Survey of American Economics	3	0	3
ENGL	101	Communication Skills I	3	0	3
ENGL	102	Communication Skills II	3	0	3
ENGL	137	Technical Writing or SPDR 137			
		Public Speaking	3	0	3
*GOVT	180	American Constitutional Government	3	0	3
HLTH	110	Concepts of Personal and Community Health	3	0	3
*PSYC	128	Human Relations	3	0	3
<b>Total Minimum Credits for Electromechanical Technology</b>					<b>99</b>

\* A year sequence of Social Science may be taken in lieu of the Government-Economics-Psychology requirements.

## ENGINEERING

**Degree:** Associate in Science (Engineering) (AS)

**Length:** Six-quarter (two-year) program

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

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

Aerospace	Chemical	Mechanical
Agriculture	Civil	Metallurgical
Architecture	Electrical	Mining
Ceramics	Industrial	Nuclear

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Engineering curriculum requires satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English; 4 units of mathematics (2 units of algebra, 1 unit of plane geometry, 1 unit of advanced math or trigonometry and solid geometry); 1 unit of a laboratory science; and 1 unit of social studies. Students with deficiencies will require Developmental Studies.

**Program Requirements:** This program includes the courses usually required in the first two years of a baccalaureate engineering curriculum. 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.

### \*ENGINEERING

#### Associate in Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
CHEM 111	General Inorganic Chemistry I	3	3	4
ENGL 111	English Composition	3	0	3
ENGR 101	Introduction to Engineering	1	2	2
ENGR 121	Engineering Graphics I	1	3	2
GENL 100	Orientation	1	1	1
MATH 141	Introductory Mathematical Analysis	5	0	5
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>18-20</b>

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

**ENGINEERING/INDUSTRIAL &  
HEALTH TECHNOLOGIES DIVISION**

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<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
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**SECOND QUARTER**

CHEM	112	General Inorganic Chemistry II	3	3	4
ENGL	112	English Composition	3	0	3
ENGR	102	Introduction to Engineering Methods	1	2	2
ENGR	122	Engineering Graphics II	1	3	2
MATH	142	Introductory Mathematics Analysis II	5	0	5
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>17-19</b>

**THIRD QUARTER**

CHEM	113	General Inorganic Chemistry III	3	3	4
ENGL	113	English Composition	3	0	3
ENGR	103	Conceptual Design and Analysis	1	2	2
ENGR	123	Engineering Graphics III	1	3	2
MATH	143	Introductory Mathematical Analysis III	5	0	5
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>17-19</b>

**FOURTH QUARTER**

ECON		Economics**	3	0	3
ENGR	201	Mechanics of Particles	5	0	5
ENGR	206	Engineering Economy	3	0	3
MATH	241	Advanced Mathematical Analysis I	4	0	4
		Humanities or Social Science Elective			<u>3</u>
<b>Total</b>					<b>18</b>

**FIFTH QUARTER**

GOVT		Government**	3	0	3
ENGR	203	Dynamics of Rigid Bodies	3	0	3
MATH	242	Advanced Mathematical Analysis II	4	0	4
PHYS	222	General University Physics II	3	3	4
		Humanities or Social Science Elective			<u>3</u>
<b>Total</b>					<b>17</b>

**SIXTH QUARTER**

ENGR	202	Mechanics of Deformable Solids	5	0	5
MATH	243	Advanced Mathematical Analysis III	4	0	4
PHYS	223	General University Physics III	3	3	4
PSYC		Psychology*	3	0	3
		Humanities or Social Science Elective			<u>0-3</u>
<b>Total</b>					<b>16-19</b>

**Total Minimum Credits for Engineering Degree . . . . . 103**

\*\* A year sequence of Social Science is recommended in lieu of the Government-Economics-Psychology requirement.

## ENGINEERING/TECHNICAL ASSISTANT

**Degree:** Certificate

**Length:** Three-quarter (one-year) program

**Purpose:** The program is designed with adequate flexibility to provide an opportunity for the student to specialize in specific engineering/technical areas. With an appropriate selection of technical electives, the student may major in a variety of disciplines including Electrical/Electronic Technology, Civil Technology, Industrial Management, Manufacturing Technology, Mechanical Technology and others. Upon successful completion of the program, 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 program offered by the college.

**Admission Requirements:** In addition to the requirements for general admission to the college, entry into the Engineering/Technical Assistant program requires that the student show satisfactory aptitude for the engineering technology field as measured by aptitude tests administered by the college counseling office.

**Program Requirements:** Approximately one-half of the curriculum will include courses in engineering technology subjects and the remaining courses in related subjects and general education. Technical electives should be reviewed with the student's counselor/advisor to insure that they are appropriate for a specific area of specialization.

# ENGINEERING/TECHNICAL ASSISTANT

## One-Year Certificate Program

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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### FIRST QUARTER

DRFT	111	Technical Drafting I (or Technical Elective)			2-3
ECON	160	Survey of American Economics*	3	0	3
ENGL	101	Communication Skills I	3	0	3
MATH		Mathematics			3-5
		Technical Elective			<u>3-4</u>
Total					14-18

### SECOND QUARTER

DRFT	112	Technical Drafting II (or Technical Elective)			2-3
ENGL	102	Communication Skills II	3	0	3
GOVT	180	American Constitutional Government*	3	0	3
MATH		Mathematics			3-5
		Technical Elective			<u>3-4</u>
Total					14-18

### THIRD QUARTER

DRFT	113	Technical Drafting (or Technical Elective)			2-3
ENGL	137	Technical Writing	3	0	3
ENGR	100	Introduction to Engineering Technology	1	2	2
MATH		Mathematics			3-5
PSYC	128	Human Relations*	3	0	3
		Technical Elective			<u>3-4</u>
Total					16-20

Total Minimum Credits for Engineering/Technical Assistant Certificate . . 45

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\* A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

## MECHANICAL ENGINEERING TECHNOLOGY

**Degree:** Engineering Technology (Mechanical) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** The Associate in Applied Science Degree curriculum in Mechanical Engineering Technology is designed to prepare young men and women for industrial employment as mechanical engineering technicians immediately upon the completion of the community college program. Opportunities are also available for the graduate who wishes to transfer to appropriate Bachelor of Technology Programs offered by some four-year universities. The field embraces the manufacture and production of mechanical products and the tools, machines, and processes by which they are made. In a broad sense, mechanical technology is the creation and utilization of mechanical power which enters into every business, industrial, and community activity.

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

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Mechanical Engineering Technology program requires satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English; 3 units of mathematics (2 units of algebra and 1 unit of geometry or trigonometry); 1 unit of laboratory science (preferably a physical science); and 1 unit of social studies. Students with deficiencies will require Developmental Studies.

**Program Requirements:** Approximately one-half of the curriculum will include courses in Mechanical Engineering Technology with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in mechanical engineering technology. Students are advised to consult with their faculty advisor and the counseling office in planning their program and selecting electives.

**MECHANICAL ENGINEERING TECHNOLOGY****Associate in Applied Science Degree**

<b>Course Number</b>	<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>FIRST QUARTER</b>				
DRFT 111	Technical Drafting I	1	3	2
ENGL 101	Communication Skills I	3	0	3
ENGR 100	Introduction to Engineering Technology	1	2	2
GENL 100	Orientation	1	1	1
INDT 111	Materials and Processes of Industry	3	0	3
MATH 121	Engineering Technical Mathematics	5	0	5
MECH 131	Machine Laboratory	1	3	<u>2</u>
<b>Total</b>				<b>18</b>
<b>SECOND QUARTER</b>				
DRFT 112	Technical Drafting II	1	3	2
ENGL 102	Communication Skills II	3	0	3
INDT 112	Materials and Processes of Industry II (or INDT Elective)	3	0	3
MATH 122	Engineering Technical Mathematics II	5	0	5
PHYS 111	Technical Physics I	3	3	4
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>18-20</b>
<b>THIRD QUARTER</b>				
DRFT 113	Technical Drafting III	1	3	2
ENGL 137	Technical Writing or SPDR 137	3	0	3
ENGR 151	Mechanics I (Statics)	4	0	4
MATH 123	Engineering Technical Mathematics III	5	0	5
PHYS 112	Technical Physics II	3	3	<u>4</u>
<b>Total</b>				<b>18</b>
<b>FOURTH QUARTER</b>				
ECON 160	Survey of American Economics*	3	0	3
ELEC 214	Electricity	3	3	4
ENGR 152	Mechanics II (Strength of Materials)	3	0	3
ENGR 154	Mechanics Laboratory	0	3	1
MECH 156	Mechanisms	1	3	2
MECH 267	Fluid Mechanics	3	3	4
	Health or Physical Education			<u>1-3</u>
<b>Total</b>				<b>18-20</b>

\* A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

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Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**FIFTH QUARTER**

MECH	237	Machine Design I	3	3	4
MECH	246	Metallurgy	3	3	4
MECH	264	Thermodynamics I	3	3	4
PSYC	128	Human Relations <sup>u</sup>	3	0	3
		Technical Elective			<u>3-4</u>
Total					18-19

**SIXTH QUARTER**

GOVT	180	American Constitutional Government*	3	0	3
MECH	298	Seminar and Project			2
		Technical Electives			11-12
		Health or Physical Education			<u>1-3</u>
Total					12-20

**Technical Electives**

**Fifth Quarter**

ENGR	206	Engineering Economy (3 cr.)
MATH	221	Advanced Engineering Technical Mathematics I (4 cr.)
		Others with Departmental Approval

**Sixth Quarter**

MATH	222	Advanced Engineering Technical Mathematics II (4 cr.)
MECH	238	Machine Design II (4 cr.)
MECH	265	Thermodynamics II (4 cr.)
WELD	115	Arc and Gas Welding (4 cr.)
		Others with Departmental Approval

Total Minimum Credits for the Mechanical Engineering Technology Degree	107
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\* A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.



## RADIO AND TELEVISION PRODUCTION TECHNOLOGY

**Degree:** Public Service Technology (Radio & Television Production) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** With the growth of commercial and educational broadcasting in Virginia, the need for personnel trained in radio and television is expanding. The purpose of this program is to meet this growing need. 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 Producer  
Television Director  
Television Studio Technician

**Admission Requirements:** In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of this catalog), entry into the curriculum requires a proficiency in high school English and some artistic orientation. Students who are not proficient in English will be required to correct their deficiencies in Development Studies.

Students are required to have personal interviews with the broadcasting faculty before being considered for acceptance into the curriculum.

**Program Requirements:** Approximately two-thirds of the curriculum will include courses in broadcasting with the remaining courses in related subjects, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in the broadcasting industry. Each student is advised to consult with his faculty advisor and the Counseling Department in planning his program and selecting his electives.



**RADIO AND TELEVISION PRODUCTION TECHNOLOGY****Associate in Applied Science Degree**

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
BCST	110	Introduction to Radio/TV	3	0	3
BCST	121	Radio/TV Production I	0	6	3
ENGL		English	3	0	3
GENL	100	Orientation	1	1	1
SECR	111	Typewriting I (or Approved Elective)	2	3	3
SPDR	137	Public Speaking	3	0	3
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>17-19</b>
<b>SECOND QUARTER</b>					
BCST	122	Radio/TV Production II	0	6	3
BCST	134	Speech for Radio/TV I	2	3	3
BCST	138	TV Studio Art I	2	3	3
ECON		Economics*	3	0	3
ENGL		English	3	0	3
SOCI		Sociology	3	0	<u>3</u>
<b>Total</b>					<b>18</b>
<b>THIRD QUARTER</b>					
BCST	123	Radio/TV Production III	0	6	3
BCST	135	Speech for Radio/TV II	2	3	3
ENGL		English	3	0	3
GOVT		Government*	3	0	3
PSYC		Psychology	3	0	3
		Elective			<u>3</u>
<b>Total</b>					<b>18</b>
<b>FOURTH QUARTER</b>					
BCST	214	Technical Problems of Radio/TV I	2	3	3
BCST	216	Radio/TV Management & Operation	3	0	3
BCST	226	Writing for Radio/TV	3	0	3
BCST	281	Advanced Radio/TV Production	3	6	5
ENGL	121	Journalism I	3	0	3
		Health or Physical Education			<u>1</u>
<b>Total</b>					<b>18</b>

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\* A year sequence in Social Science may be taken in lieu of ECON, GOVT and PSYC.

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Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**FIFTH QUARTER**

ARTS	180	Introduction to Photography	1	3	2
BCST	215	Technical Problems of Radio/TV II	2	3	3
BCST	236	Broadcast Advertising & Sales	3	0	3
BCST	282	Advanced Radio/TV Production II	3	6	5
BUAD	100	Introduction to Business	3	0	<u>3</u>
Total					16

**SIXTH QUARTER**

BCST	217	Radio/TV News	3	0	3
BCST	257	Social Problems in American Broadcasting	3	0	3
BCST	283	Advanced Radio/TV Production III	3	6	5
BCST	298	Seminar and Project (or BCST 290 or 299) Health or Physical Education	1	3	2
					<u>1·3</u>
Total					14·16

Total Minimum Credits for Radio and Television Production				
Technology Degree ..... 101				

## DENTAL ASSISTANT

**Degree:** Certificate in Dental Assisting

**Length:** Four-quarter (one-year) program

**Purpose:** The program will enable the student to become a Trained Dental Assistant. In addition to specialized preclinical science courses, the student will receive instruction in clinical science courses. The students will have access to clinical facilities where they will work with dentists, learning the newer techniques of four-handed dentistry and expanded duties.

**Occupational Objective:** Employment opportunities for the dental assistant include:

Private Dental Practice

Group Dental Practice

Dental Specialty Practice

Hospital Dental Service

Government Service

Dental Assisting Education

**Admission Requirements:** In addition to the admission requirements established for the College (as listed in the section on admission requirements in Part II of the catalog), entry into the Certificate curriculum in Dental Assisting requires the satisfactory completion of the following high school units or their equivalent as a minimum:

4 units English

1 unit Mathematics

2 units Social Studies

1 unit of Laboratory Science (preferably Biology)

One unit of high school chemistry is also strongly recommended.

Students who do not meet these requirements may be permitted to correct their deficiencies in Developmental Studies. Satisfactory performance on the appropriate test battery is required. A personal interview by the Counseling Department and Dental faculty is required. Dental and medical examinations required prior to acceptance must indicate good general health and a satisfactory dental condition.

**Program Requirements:** Upon admission, and during the course of the program the dental faculty will carefully observe and evaluate a student's suitability for dental assisting.

Students will be totally responsible for transportation to and from the College and health agencies utilized for clinical experiences. The purchase of items such as uniforms and accessories, Dental Student Liability Insurance are the financial responsibility of the individual student.

# DENTAL ASSISTANT

## One-Year Certificate Program

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
DENT	100	Introduction to Dental Auxiliaries	2	3	3
DENT	101	Dental Science I	2	4	4
DENT	110	Introduction to Dental Materials	2	4	4
ENGL	101	Communication Skills I	3	0	3
GENL	100	Orientation	1	1	1
HLTH	100	Orientation to Allied Health Careers	1	0	1
HLTH	110	Personal and Community Health	3	0	<u>3</u>
Total					19
<b>SECOND QUARTER</b>					
DENT	102	Dental Science II	2	4	4
DENT	111	Clinical Procedures I	2	4	4
DENT	121	Chairside Assisting I	2	6	4
GOVT	180	American Constitutional Government**	3	0	3
SPDR	137	Public Speaking	3	0	<u>3</u>
Total					18
<b>THIRD QUARTER</b>					
DENT	103	Dental Science III	2	4	4
DENT	112	Clinical Procedures II	2	4	4
DENT	122	Chairside Assisting II	2	6	4
PSYC	128	Human Relations**	3	0	3
SECR	138	Office Recordkeeping	2	2	<u>3</u>
Total					18
<b>FOURTH QUARTER</b>					
DENT	190	Coordinated Practice	2	15	5
DENT	198	Seminar & Project	2	3	3
ECON	160	American Economics**	3	0	3
SECR	111	Typewriting I*	2	3	3
SECR	139	Clerical Procedures	2	2	<u>3</u>
Total					17
Total Minimum Credits for Dental Assistant Certificate					72

\*With typing proficiency demonstrated, elective may be substituted.

\*\*A year sequence in Social Science may be taken in lieu of ECON 160, GOVT 180 and PSYC 128.

**\*DENTAL HYGIENE**

Degree: Health Technology (Dental Hygiene) (AAS)

Length: Seven-quarter (two-year) program

Purpose: The Association in Applied Science Degree 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: Employment opportunities for the Registered Dental Hygienist include:

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

Admission Requirements: In addition to the admission requirements established for the college entry into the Dental Hygiene Program includes the following High School Courses:

4 units English	1 unit Chemistry
2 units Social Studies	2 units Algebra and/or Geometry
1 unit Biology	

High School transcript (close scrutiny of grades in Science-Chemistry, Biology; Algebra and Geometry).

Dental Hygiene Aptitude Test

ACT—American College Test

Dental and medical examinations are required prior to acceptance and must indicate good general health and a satisfactory dental condition. A personal interview by the Counseling Department and the Dental Hygiene full-time faculty will be required before being accepted into the program.

The program is open to both male and female applicants. Students with academic deficiencies will be required to take Development Studies.

Students who plan to apply for admission are encouraged to apply early in the fall semester of their senior year in high school. A later application may find enrollment quotas filled.

Program Requirements: Upon admission and during the course of the program, the Dental Hygiene Faculty will carefully observe and evaluate the student's suitability for dental hygiene.

Each student is responsible for his transportation to and from agencies utilized for clinical experience. The purchase of items such as student uniforms and accessories, complete instrument kit, and Liability Insurance are the financial responsibility of the individual student.

**\*DENTAL HYGIENE****Associate in Applied Science Degree**

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
BIOL	154	Human Anatomy & Physiology	3	3	4
CHEM	101	General Chemistry I	3	3	4
DENT	126	Oral Anatomy	2	3	3
DENT	130	Introduction to Preventive Dentistry	2	1	2
ENGL	111	English Composition	3	0	3
GENL	100	Orientation	1	1	1
HLTH	100	Orientation to Allied Health Careers	1	0	<u>1</u>
<b>Total</b>					<b>18</b>

\* Accreditation Pending

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<b>Course Number</b>		<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>SECOND QUARTER</b>					
BIOL	155	Human Anatomy & Physiology	3	3	4
CHEM	102	General Chemistry II	3	3	4
DENT	127	General & Oral Histology	2	3	3
DENT	144	Dental Hygiene I	3	6	5
ENGL	112	English Composition	3	0	<u>3</u>
<b>Total</b>					<b>19</b>
<b>THIRD QUARTER</b>					
BIOL	176	Microbiology	3	3	4
CHEM	103	General Chemistry III	3	3	4
DENT	128	Head and Neck Anatomy	2	0	2
DENT	145	Dental Hygiene II	2	9	5
DENT	146	Oral Radiology	2	3	<u>3</u>
<b>Total</b>					<b>18</b>
<b>FOURTH QUARTER</b>					
DENT	116	Dental Laboratory Materials	3	3	4
DENT	150	General & Oral Pathology	3	0	3
DENT	154	Periodontics for Dental Hygiene I	2	0	2
DENT	261	Dental Hygiene III	2	12	<u>6</u>
<b>Total</b>					<b>15</b>
<b>FIFTH QUARTER</b>					
DENT	138	Community Dental Health	3	3	4
DENT	147	Nutrition	3	0	3
DENT	155	Periodontics for Dental Hygiene II	2	0	2
DENT	262	Dental Hygiene IV	1	12	5
SPDR	137	Public Speaking	3	0	<u>3</u>
<b>Total</b>					<b>17</b>
<b>SIXTH QUARTER</b>					
DENT	136	Pharmacology	2	0	2
DENT	139	Dental Assisting for Dental Hygienists	1	2	2
DENT	263	Dental Hygiene V	1	12	5
ECON	160	Survey of American Economics	3	0	3
PSYC	110	Principles of Psychology	3	0	<u>3</u>
<b>Total</b>					<b>15</b>
<b>SEVENTH QUARTER</b>					
DENT	148	Office Practice & Ethics	2	0	2
DENT	264	Dental Hygiene VI	1	12	5
GOVT	180	American Constitutional Government	3	0	3
HLTH	104	First Aid I	2	0	2
SOCI	101	Introduction to Sociology	3	0	<u>3</u>
<b>Total</b>					<b>15</b>
<b>Total Minimum Credits for Dental Hygiene Degree .....</b>					<b>117</b>

\* Accreditation Pending

## MENTAL HEALTH TECHNOLOGY

**Degree:** Health Technology (Mental Health) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** The two-year Associate in Applied Science Degree curriculum in Mental Health Technology is designed to prepare selected students to qualify as contributing members to the mental health team as generalist "people-workers" who counsel and guide patients/clients through educational, therapeutic and rehabilitative treatment activities.

**Occupational Objectives:** Employment opportunities for the Mental Health Technologist include staff positions in: community mental health centers; consultation and education programs; day care programs, halfway houses; institutions for the mentally retarded; mental health associations; psychiatric clinics; psychiatric units of general hospitals; sheltered workshops; and state mental hospitals.

**Admission Requirements:** In addition to the admission requirements for the college, entry into the Mental Health Technology program requires evidence that the applicant possesses intellectual, emotional and physical capacity indicative of successful performance as a mental health worker and an interest in or aptitude for relating comfortably to others in a therapeutic manner. Satisfactory performance in the appropriate test battery is required.

The program is open to both male and female applicants. Students with academic deficiencies will be required to take Developmental Studies. Applicants are required to submit a health certificate signed by a physician and to have a personal interview with the MHT faculty prior to acceptance into the program.

Students who plan to apply for admission are encouraged to apply early in the fall semester of their senior year in high school. A later application may find enrollment quotas filled.

**Program Requirements:** During the course of the program, the MHT faculty will observe and evaluate students.

Any student who receives a final grade lower than "C" in First Aid I (Health 100) cannot begin coordinated clinical practice.

Any student who receives a final grade lower than "C" in the mental health sequence must obtain permission from the program director to continue the major in mental health and must then repeat the course and earn a final grade of "C" or higher before taking the next course in the sequence.

Coordinated practice will be provided in various local educational, social and health agencies in the community college region. Each student is responsible for his transportation to and from the agencies utilized for clinical experiences.

The purchase of items such as identification pins and Mental Health Liability Insurance are the financial responsibility of the individual student.



**MENTAL HEALTH TECHNOLOGY****Associate in Applied Science Degree**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**FIRST QUARTER**

BIOL	154	Human Anatomy & Physiology	3	3	4
ENGL		English	3	0	3
GENL	100	Orientation	1	1	1
HLTH	100	Orient. to All. Hlth. Careers	1		1
HLTH	104	First Aid I	1	2	2
MENT	101	Intro. to Mental Hlth.	2	3	3
PSYC	128	Human Relations*	3	0	3
<b>Total</b>					<b>17</b>

**SECOND QUARTER**

BIOL	155	Human Anatomy & Physiology II	3	3	4
ECON	160	Survey of American Economics*	3	0	3
ENGL		English	3	0	3
MENT	102	Intro. to Mental Hlth. II	2	3	3
MENT	190	Coordinated Practice			<u>3</u>
<b>Total</b>					<b>16</b>

**THIRD QUARTER**

ENGL		English	3	0	3
GOVT	180	American Const. Government*	3	0	3
MENT	103	Intro. to Mental Hlth. III	2	3	3
MENT	116	Activities Therapies	2	2	3
MENT	190	Coordinated Practice			3
PSYC	130	Child Growth and Development	3	0	<u>3</u>
<b>Total</b>					<b>18</b>

**FOURTH QUARTER**

MENT	221	Mental Health I	3	0	3
MENT	236	Problems in Adolescence	3	0	3
MENT	290	Coordinated Practice			3
SOCI	101	Introductory Sociology	3	0	3
		Elective			<u>3</u>
<b>Total</b>					<b>15</b>

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\* A 3-quarter sequence in Psychology 201, 202, 203 may be taken in lieu of PSYC 128, ECON 160 and GOVT 180.

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIFTH QUARTER</b>					
MENT	222	Mental Health II	3	0	3
MENT	237	Problems in Aging	3	0	3
MENT	290	Coordinated Practice			4
SOCI	246	Cultural Anthropology	3	0	3
		Elective			<u>3</u>
		Total			16
<b>SIXTH QUARTER</b>					
MENT	223	Mental Health III	3	0	3
MENT	290	Coordinated Practice			5
MENT	298	Seminar and Project			4
SOCI	236	Marriage and the Family	3	0	<u>3</u>
		Total			15
Total Minimum Credits for the Mental Health Technology Degree -----					97

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\* A 3-quarter sequence in Psychology 201, 202, 203 may be taken in lieu of PSYC 128, ECON 160 and GOVT 180.

## NURSING

**Degree:** Health Technology (Nursing) (AAS)

**Length:** Seven-quarter (two-year) program

**Purpose:** The Associate in Applied Science Degree curriculum is designed to prepare selected students to qualify as contributing members of the health team rendering direct patient care as beginning practitioners of nursing in a variety of health service facilities. At the successful completion of the program, students will be eligible to take the 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.

**Admission Requirements:** High school courses must include 1 unit of biology and 1 unit of algebra. One unit of high school chemistry is also considered an entrance requirement and an equivalent course in chemistry will be offered by the college during the summer quarter so certain students may complete entrance requirements prior to starting the fall quarter. The student's high school record of achievement must reflect a minimum "C" average in academic courses excluding foreign language. Students with deficiencies will require Developmental Studies. Satisfactory performance on the appropriate test battery is required.

The Nursing program is open to both male and female applicants. Applicants must demonstrate intellectual, emotional and physical capacity indicative of successful performance as a nurse practitioner.

Applicants are required to submit a health certificate signed by a physician and to have a personal interview with the Nursing faculty before being accepted into the program.

Students who plan to apply for admission are encouraged to apply early in the fall semester of their senior year in high school. A later application may find enrollment quotas filled.

**Program Requirements:** Upon admission, and during the course of the program the nursing faculty will carefully observe and evaluate a student's suitability for nursing.

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

Selected learning experiences will be provided in a number of health agencies located within the geographical area served by the college such as general hospitals, nursing homes, clinics, nursery schools and day care centers. The student is expected to provide transportation to these facilities. The purchase of items such as student uniforms and accessories and Nursing Student Liability Insurance are the financial responsibility of the individual student.

**NURSING****Associate in Applied Science Degree**

<b>Course Number</b>		<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>FIRST QUARTER</b>					
ENGL	111	English Composition I	3	0	3
GENL	100	Orientation	1	1	1
HLTH	100	Orientation to Allied Health Careers	1	0	1
BIOL	154	Anatomy and Physiology I	3	3	4
NURS	111	Fundamentals of Nursing I	3	6	5
PSYC	201	General Psychology I	3	0	<u>3</u>
<b>Total</b>					<b>17</b>
<b>SECOND QUARTER</b>					
ENGL	112	English Composition II	3	0	3
BIOL	155	Anatomy and Physiology II	3	3	4
NURS	112	Fundamentals of Nursing II	3	9	6
PSYC	202	General Psychology II	3	0	<u>3</u>
<b>Total</b>					<b>16</b>
<b>THIRD QUARTER</b>					
ENGL	113	English Composition III	3	0	3
BIOL	176	Microbiology	3	3	4
NURS	113	Fundamentals of Nursing III	4	12	8
PSYC	203	General Psychology III	3	0	<u>3</u>
<b>Total</b>					<b>18</b>
<b>FOURTH QUARTER</b>					
NURS	221	Nursing in Major Health Problems Elective (Optional)	4	12	8 <u>0.5</u>
<b>Total</b>					<b>8-13</b>
<b>FIFTH QUARTER</b>					
NURS	222	Nursing in Major Health Problems II	4	12	8
SOCI	101	Introductory Sociology I	3	0	3
ECON	160	Survey of American Economics	3	0	<u>3</u>
<b>Total</b>					<b>14</b>
<b>SIXTH QUARTER</b>					
NURS	223	Nursing in Major Health Problems III	4	12	8
SOCI	102	Introductory Sociology II	3	0	3
GOVT	180	American Constitutional Government	3	0	<u>3</u>
<b>Total</b>					<b>14</b>
<b>SEVENTH QUARTER</b>					
NURS	224	Nursing in Major Health Problems IV	4	12	8
SOCI	103	Introductory Sociology III	3	0	3
NURS	299	Supervised Study Elective	3	0	3 <u>3</u>
<b>Total</b>					<b>17</b>
<b>Total Minimum Credits for the Nursing Degree</b>					<b>104</b>

## RADIOLOGIC TECHNOLOGY PROGRAM

**Degree:** Health Technology (Radiology) (AAS)

**Length:** Seven-quarter program with an additional six (6) months of practical experience in a radiology department to complete requirements for certification.

**Purpose:** 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. Successful completion of the program and experience will qualify the student to gain employment as a Radiologic Technologist. Upon completion of the program, the student is eligible to write the National Registry Examination leading to certification as a Registered Radiologic Technologist.

**Occupational Objectives:** Employment opportunities for the well-trained registered radiologic technologist are excellent at this time in many areas of the profession. Technologists who have properly prepared themselves are in great demand for various positions in hospitals, education, industry, government agencies and private offices.

**Admission Requirements:** Applicants must be high school graduates or the equivalent, and must reflect a "C" average in academic courses. To meet the general requirements, the applicant must have 2 units of science (Biology, Chemistry, or Physics), and 2 units of math (Algebra I, Algebra II, or Geometry). Special consideration will be given to students who have high academic grades and scores, but do not meet the general requirements. Students who have deficiencies may be required to take Development Studies. Satisfactory performance on the appropriate test battery is required.

Applicants are required to submit a health certificate signed by a physician and to have a personal interview with the radiologic faculty before being considered for acceptance into the program.

Students who plan to apply for admission are encouraged to apply early in the fall semester of their senior year in high school. A later application may find enrollment quotas filled.

**Program Requirements:** Upon admission, and during the course of the program, the radiologic faculty will carefully observe and evaluate the student's suitability for the profession.

Students who receive a final grade lower than "C" in any of the courses in the radiologic technology sequence must obtain permission from the instructional department to continue the major in radiologic technology.

Selected learning experiences will be provided at the cooperating hospitals within the geographic area served by the college for a total of 2400 hours of practicum. The student is expected to provide transportation to such facilities.

The purchase of items such as student uniforms and accessories and Liability Insurance are the financial responsibility of the individual student. Upon satisfactory completion of the seven-quarter program, the graduate must satisfactorily complete an additional 16 quarter hours of coordinated practice to be eligible to write the National Registry Examination. This internship will be supervised by the radiology faculty and will consist of an additional six months of coordinated practice at affiliated hospitals. To fulfill this requirement, interested students must register for and successfully complete two additional quarters of RADL 290 for eight credits each quarter.

# RADIOLOGIC TECHNOLOGY

## Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ENGL	English	3	0	3
GENL 100	Orientation	1	1	1
HLTH 100	Orientation to Allied Health Careers	1	0	1
HLTH 124	Medical Terminology	3	0	3
MATH 111	Mathematics I	3	0	3
RADL 100	Introduction to Radiology & Protection	2	0	2
RADL 136	Patient Care Procedures	2	0	<u>2</u>
Total				15
<b>SECOND QUARTER</b>				
BIOL 154	Human Anatomy and Physiology I	3	3	4
ENGL	English	3	0	3
MATH 112	Mathematics II	3	0	3
RADL 114	Principles of Exposure I	3	3	4
RADL 124	Radiographic Positioning I	3	3	<u>4</u>
Total				18
<b>THIRD QUARTER</b>				
BIOL 155	Human Anatomy and Physiology II	3	3	4
ENGL	English	3	0	3
MATH 113	Mathematics III	3	0	3
RADL 115	Principles of Exposure II	3	3	4
RADL 125	Radiographic Positioning II	3	3	<u>4</u>
Total				18
<b>FOURTH QUARTER</b>				
BUAD 276	Personnel Management	3	0	3
ECON	Economics*	3	0	3
GOVT	Government*	3	0	3
PSYC	Psychology*	3	0	3
RADL 190	Coordinated Practice			<u>3</u>
Total				15
<b>FIFTH QUARTER</b>				
PHYS	Physics	3	3	4
RADL 210	Protection & Patient Safety	2	0	2
RADL 256	Special Procedures	3	0	3
RADL 290	Coordinated Practice			5
	Elective			<u>0-3</u>
Total				14-17

\* A year sequence of Social Science may be taken in lieu of the Government-Economics-Psychology requirement.

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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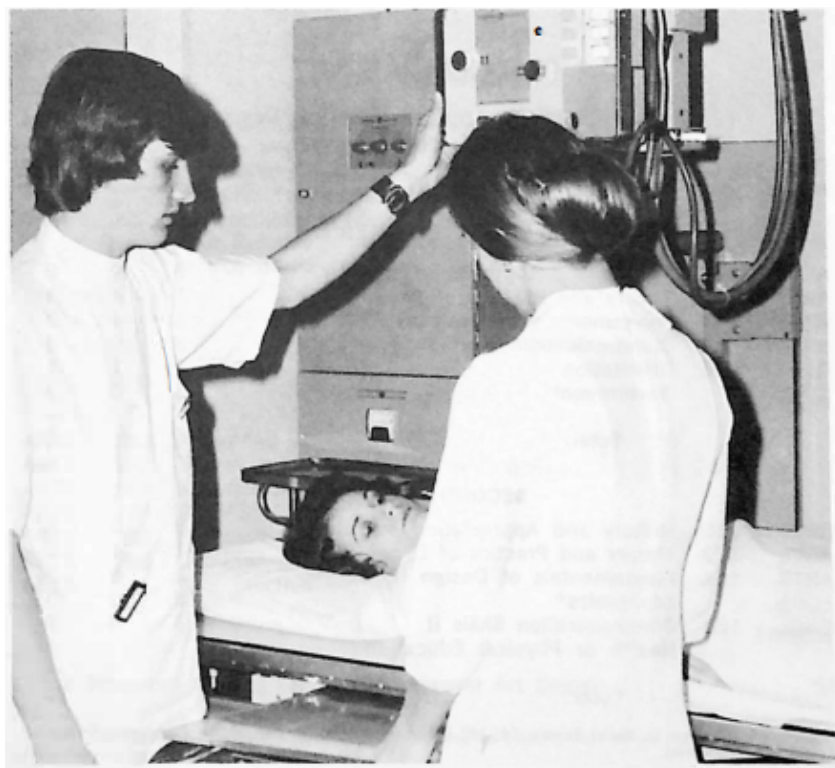
### SIXTH QUARTER

PHYS	Physics	3	3	4
RADL 240	Introduction to Radionuclides	2	0	2
RADL 276	Departmental Administration	2	0	2
RADL 290	Coordinated Practice			5
	Elective			<u>0-3</u>
Total				13-16

### SEVENTH QUARTER

RADL 216	Radiation Physics	3	3	4
RADL 246	Introduction to Therapy	2	0	2
RADL 298	Seminar and Project	3	0	3
RADL 290	Coordinated Practice			5
	Elective			<u>0-3</u>
Total				14-17

Total Minimum Credits for Radiologic Technology Degree 107



## COMMERCIAL ART

**Degree:** Arts & Design Technology (Commercial Art) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** The Associate in Applied Science Degree curriculum in Commercial Art is designed primarily for persons who seek full-time employment in the commercial art fields (such as advertising, illustrating, printing, and packaging) immediately upon completion of the community college program.

**Occupational Objectives:** Commercial Artist  
Designer  
Illustrator  
Photographer

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Commercial Art curriculum requires proficiency in high school English and a satisfactory aptitude for drawing. Applicants may be required to submit for approval several sample drawings before final admission is granted. Students with deficiencies will require Developmental Studies.

**Program Requirements:** Approximately one-half of the curriculum will include courses in commercial art with the remaining courses in related areas, general concepts and practical applications needed for future success in commercial art. Students are urged to consult with the counseling office and their faculty advisor in planning their program and selecting electives.

## COMMERCIAL ART

### Associate in Applied Science Degree

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ARTS 111	History and Appreciation of Art I	3	0	3
ARTS 121	Theory and Practice of Drawing I	1	4	3
ARTS 151	Fundamentals of Design I	1	4	3
ENGL 101	Communication Skills I	3	0	3
GENL 100	Orientation	1	1	1
GOVT	Government*	3	0	<u>3</u>
Total				16
<b>SECOND QUARTER</b>				
ARTS 112	History and Appreciation of Art II	3	0	3
ARTS 122	Theory and Practice of Drawing II	1	4	3
ARTS 152	Fundamentals of Design II	1	4	3
ECON	Economics*	3	0	3
ENGL 102	Communication Skills II	3	0	3
	Health or Physical Education			<u>1</u>
Total				16

\* A year sequence in Social Science 101-102-103 may be taken in lieu of the Government-Economics-Psychology requirement.



## HUMANITIES DIVISION

107

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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## THIRD QUARTER

ARTS	113	History and Appreciation of Art III	3	0	3
ARTS	123	Theory and Practice of Drawing III	1	4	3
ARTS	166	Fundamentals of Lettering	1	4	3
ARTS	180	Introduction to Photography	1	3	2
PSYC		Psychology*	3	0	3
		English or Speech	3	0	<u>3</u>
Total					17

## FOURTH QUARTER

ARTS	221	Advanced Drawing I	0	6	2
ARTS	231	Theory and Practice of Painting	1	4	3
ARTS	261	Advertising Design I	2	3	3
ARTS	271	Graphic Techniques I	1	4	3
ARTS	281	Photography Workshop	0	3	1
ARTS		Arts Elective			3
		Health or Physical Education			<u>1</u>
Total					16

## FIFTH QUARTER

ARTS	222	Advanced Drawing II	0	6	2
ARTS	232	Theory and Practice of Painting II	1	4	3
ARTS	262	Advertising Design II	2	3	3
ARTS	272	Graphic Techniques II	1	4	3
ARTS	282	Photography Workshop II	0	3	1
		Arts Elective			3
		Health or Physical Education			<u>1</u>
Total					16

## SIXTH QUARTER

ARTS	223	Advanced Drawing III	0	6	2
ARTS	233	Theory and Practice of Painting III	1	4	3
ARTS	263	Advertising Design III	2	3	3
ARTS	273	Graphic Techniques III	1	4	3
ARTS	283	Photography Workshop III	0	3	1
ARTS	298	Seminar and Project			1-5
ARTS		Arts Elective			<u>3</u>
Total					16-20

Total Minimum Credits for the Commercial Art Degree ..... 97

\* A year sequence in Social Science 101-102-103 may be taken in lieu of the Government-Economics-Psychology requirement.

## LIBERAL ARTS

**Degree:** Associate in Arts (Liberal Arts) (AA)

**Length:** Six-quarter (two-year) program

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

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

**Admission Requirements:** In addition to the admission requirements established for the College, entry into the Associate in Arts Degree program in Liberal Arts requires the satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English; 2 units of 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 requirements of the four-year college or university to which they plan to transfer to determine the proper mathematics courses to be taken in the community college. Students with deficiencies will require Developmental Studies.

**Program Requirements:** This curriculum consists of courses in the humanities including a foreign language, natural sciences, and social sciences usually required in the first two years of a baccalaureate liberal arts curriculum. Students are urged to acquaint themselves with the requirements of the major department in the institution to which transfer is contemplated and also to consult with the counseling office of VWCC in planning their programs and selecting electives. To prepare for junior class standing at a four-year institution, students usually must complete a program at VWCC which is comparable in length and course content to the first two years of the program at the four-year college or university.

## LIBERAL ARTS

## Associate in Arts Degree

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
FIRST QUARTER					
ENGL	111	English Composition I	3	0	3
GENL	100	Orientation	1	1	1
HIST		American History (or Hist. of West. Civ.)	3	0	3
MATH		Mathematics I (MATH 161 or 181)	3	0	3
		Foreign Language <sup>†</sup>	3	2	4
		Natural Science (Lab.)	3	3	<u>4</u>
		Total			18
SECOND QUARTER					
ENGL	112	English Composition II	3	0	3
HIST		American History (or Hist. of West. Civ.)	3	0	3
MATH		Mathematics II (MATH 162 or 182)	3	0	3
		Foreign Language <sup>†</sup>	3	2	4
		Natural Science (Lab.)	3	3	4
		Health or Physical Education			<u>1-3</u>
		Total			18-20
THIRD QUARTER					
ENGL	113	English Composition III	3	0	3
HIST		American History (or Hist. of West. Civ.)	3	0	3
MATH		Mathematics III (MATH 163 or 183)	3	0	3
		Foreign Language <sup>†</sup>	3	2	4
		Natural Science (Lab.)	3	3	<u>4</u>
		Total			17
FOURTH QUARTER					
ENGL		English or American Literature	3	0	3
GOVT		Government <sup>‡</sup>	3	0	3
		Foreign Language	3	2	4
		Electives	6	0	6
		Health or Physical Education			<u>1-3</u>
		Total			17-19

<sup>†</sup> Students who have satisfactorily completed two years of a foreign language in high school may petition for advanced placement into the second year of the foreign language at the college.

<sup>‡</sup> A year sequence of Social Science is recommended in lieu of the Government-Economics-Psychology requirement.

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIFTH QUARTER</b>				
ENGL	English or American Literature	3	0	3
PSYC	Psychology*	3	0	3
	Foreign Language	3	2	4
	Speech	3	0	3
	Electives	3	0	3
	Health or Physical Education			<u>1-3</u>
Total				17-19
<b>SIXTH QUARTER</b>				
ECON	Economics*	3	0	3
ENGL	English or American Literature	3	0	3
	Foreign Language	3	2	4
	Electives			<u>0-6</u>
Total				10-16

Total Minimum Credits for the Liberal Arts Degree ..... 97

\* A year sequence of Social Science is recommended in lieu of the Government-Economics-Psychology requirement.



## MUSIC

**Degree:** Associate in Arts (Music) (AA)

**Length:** Six-quarter (two-year) program

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

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

**Program Requirements:** The major emphasis in the Music curriculum is on performance and basic musical knowledge. All music majors must demonstrate the ability to sight read simple piano accompaniments, play scales, arpeggios and cadences in all major and minor keys, and play pieces equivalent in difficulty to standard classical sonatas and the little preludes of Bach. These requirements may be satisfied by successfully completing six quarter hours of Applied Music 147 and 247, or by satisfactorily completing a proficiency examination. A student satisfying the piano requirements in less than six quarter hours may either continue in Applied Music, or use the remaining hours as music electives. Applied Music students will be required to demonstrate performance proficiency before the music faculty at the end of each quarter. This may be in the form of a jury examination and/or a student recital at the discretion of the instructor.

In order to prepare for junior class standing at a four-year college or university, the student usually must complete a program at VWCC which is comparable in length and course content to the first two years of the program at the four-year institution. Students are urged to acquaint themselves with the requirements of the major department in the institution to which transfer is contemplated and also to consult with the counseling office of VWCC in planning their program and selecting electives.

Since the program was begun in 1970, graduates of VWCC Music program have transferred successfully to Madison College, Radford College, Virginia Commonwealth University, Hollins College and the Berkelee School of Music (Boston).

**MUSIC****Associate in Arts Degree**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>				
ENGL 111	English Composition	3	0	3
GENL 100	Orientation	1	1	1
HIST	History	3	0	3
MATH	Mathematics	3	0	3
MUSC 111	Music Theory I	3	2	4
MUSC	Applied Music (Major instrument)			2
MUSC	Applied Music (Minor instrument)			1
MUSC	Ensemble (Vocal or Instrument)	0	3	<u>1</u>
Total				18
<b>SECOND QUARTER</b>				
ENGL 112	English Composition II	3	0	3
HIST	History	3	0	3
MATH	Mathematics	3	0	3
MUSC 112	Music Theory II	3	2	4
MUSC	Applied Music (Major instrument)			2
MUSC	Applied Music (Minor instrument)			1
MUSC	Ensemble (Vocal or Instrumental)	0	3	1
	Health or Physical Education			<u>1-3</u>
Total				18-20
<b>THIRD QUARTER</b>				
ENGL 113	English Composition III	3	0	3
HIST	History	3	0	3
MATH	Mathematics	3	0	3
MUSC 113	Music Theory III	3	2	4
MUSC	Applied Music (Major instrument)			2
MUSC	Applied Music (Minor instrument)			1
MUSC	Ensemble (Vocal or Instrumental)	0	3	1
	Health or Physical Education			<u>1-3</u>
Total				18-20
<b>FOURTH QUARTER</b>				
ECON	Economics*	3	0	3
MUSC 211	Advanced Music Theory I	3	2	4
MUSC	Applied Music (Major instrument)			2
MUSC	Applied Music (Minor instrument)			1
MUSC	Ensemble (Vocal or Instrumental)	0	3	1
	Natural Science (Lab)	3	3	4
	Health or Physical Education			<u>1-3</u>
Total				16-19

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\* Foreign language degree requirement optional.

\* A year of Social Science recommended for Economics-Government-Psychology.

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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## FIFTH QUARTER

GOVT	Governments <sup>a</sup>	3	0	3
MUSC 212	Advanced Music Theory II	3	2	4
MUSC	Applied Music (Major instrument)			2
MUSC	Applied Music (Minor instrument)			1
MUSC	Ensemble (Vocal or Instrumental)	0	3	1
	Natural Science (Lab)	3	3	<u>4</u>
Total				15

## SIXTH QUARTER

MUSC 213	Advanced Music Theory III	3	2	4
MUSC	Applied Music (Major instrument)			2
MUSC	Applied Music (Minor instrument)			1
MUSC	Ensemble (Vocal or Instrumental)	0	3	1
PSYC	Psychology <sup>a</sup>	3	0	3
	Natural Science (Lab)	3	3	<u>4</u>
Total				15

Total Minimum Credits for the Music Degree ..... 100

<sup>a</sup> A year of Social Science recommended for Economics-Government-Psychology.



## SCIENCE

**Degree:** Associate in Science (Science) (AS)

**Length:** Six-quarter (two-year) program

**Purpose:** The Associate in Science Degree Program in Science is designed for persons who are interested in a pre-professional or scientific program and who plan to transfer to a four-year college or university to complete a baccalaureate degree program with a major in one of the following fields:

Agriculture	Geology	Pharmacy
Biology	Home Economics	Physical Therapy
Chemistry	Mathematics	Physics
Pre-Dentistry	Pre-Medicine	Science Education
Forestry	Nursing	Pre-Veterinary

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Science program requires satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English, 3 units of college preparatory mathematics, 1 unit of laboratory science, and 1 unit of social science. Students with deficiencies will require Developmental Studies.

**Program Requirements:** Although the major emphasis in this curriculum is on mathematics, the biological sciences, and the physical sciences, the curriculum also includes courses in humanities and social sciences. Electives are provided so that the student can select the appropriate courses for his pre-professional or scientific program as required in the first two years of the four-year college or university. 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.



**SCIENCE****Associate in Science Degree**

<b>Course Number</b>		<b>Course Title</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Course Credits</b>
<b>FIRST QUARTER</b>					
ENGL	111	English Composition I	3	0	3
GENL	100	Orientation	1	1	1
HIST	101	History of West. Civ. (or HIST 111)	3	0	3
MATH	161	College Mathematics (or MATH 141)	3-5	0	3-5
		Science with Laboratory	3	3	4
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>15-19</b>
<b>SECOND QUARTER</b>					
ENGL	112	English Composition II	3	0	3
HIST	102	History of West. Civ. (or HIST 112)	3	0	3
MATH	162	College Mathematics (or MATH 142)	3-5	0	3-5
		Science with Laboratory	3	3	4
		Health or Physical Education			<u>1-3</u>
<b>Total</b>					<b>14-18</b>
<b>THIRD QUARTER</b>					
ENGL	113	English Composition III	3	0	3
HIST	103	History of West. Civ. (or HIST 113)	3	0	3
MATH	163	College Mathematics (or MATH 143)	3-5	0	3-5
		Science with Laboratory	3	3	4
		Health or Physical Education			1-3
		Elective	3	0	<u>3</u>
<b>Total</b>					<b>17-20</b>
<b>FOURTH QUARTER</b>					
MATH	271	Calculus I (or MATH 241) (or Elective)	4	0	4
		Science with Laboratory	3	3	4
		Social Science	3	0	3
		Elective	3	0	3-4
		English, Humanities or Speech Elective	3	0	<u>3</u>
<b>Total</b>					<b>17-18</b>

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A year sequence of Social Science is recommended in lieu of the Government, Economics and Psychology requirement. Students are advised to check this requirement at the four-year school to which they plan to transfer.

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIFTH QUARTER</b>				
MATH 272	Calculus II (or MATH 242) (or Elective)	4	0	4
	Science with Laboratory	3	3	4
	Social Science <sup>1</sup>	3	0	3
	Electives			<u>6-7</u>
	Total			17-18
<b>SIXTH QUARTER</b>				
MATH 273	Calculus III (or MATH 243) (or Elective)	4	0	4
	Science with Laboratory	3	3	4
	Social Science <sup>1</sup>	3	0	3
	Electives			<u>6-7</u>
	Total			17-18
Total Minimum Credits for the Associate in Science Degree .....				97

<sup>1</sup> A year sequence of Social Science is recommended in lieu of the Government, Economics and Psychology requirement. Students are advised to check this requirement at the four-year school to which they plan to transfer.

## CHILD CARE

**Degree:** Certificate in Child Care

**Length:** Three-quarter (one-year) program

**Purpose:** There is an increasing demand for persons to work in the field of child care. The program is designed to introduce interested students to the field of child care and to afford an opportunity for individuals presently working in the field to improve their knowledge and skills.

**Occupational Objectives:** Training is for positions in Day Care Centers, Head Start programs, nurseries, playground programs, foster homes, hospital playrooms and other facilities offering services involving pre-school children.

**Admission Requirements:** General admission to the College and an interest in some phase of service to children.

**Curriculum Requirements:** In addition to certain specialized education and psychology courses related to this field, there are also general education courses and supervised practical experiences designed to help the student apply what he learns as he goes along.



## CHILD CARE

### One-Year Certificate Program

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
ECON	160	Survey of American Economics	3	0	3
EDUC	110	Introduction to Child Care	3	0	3
ENGL	101	Communication Skills I	3	0	3
GENL	100	Orientation	1	1	1
PHED	108	Physical Activities for Children	2	2	3
PSYC	130	Child Growth and Development	3	0	3
		Elective (Optional)	3	0	<u>0-3</u>
Total					16-19
<b>SECOND QUARTER</b>					
EDUC	106	Language Arts for Pre-School	3	0	3
EDUC	190	Coordinated Internship			3-5
HLTH	156	Child Growth and Nutrition	3	0	3
MUSC	109	Music for Children	2	2	3
PSYC	110	Prin. of Applied Psychology	3	0	<u>3</u>
Total					15-17
<b>THIRD QUARTER</b>					
EDUC	136	Materials and Equipment for Instructional Aids	2	2	3
EDUC	186	Child Study	3	3	3
EDUC	187	Activity Programming for Children	2	0	2
EDUC	190	Coordinated Internship			3-5
GOVT	180	American Constitutional Govt.	3	0	3
HLTH	104	First Aid I	1	2	2
Total					16-18
Total Minimum Credits for Child Care Certificate .....					47

## **FIRE FIGHTING AND PREVENTION**

**Degree:** Certificate in Fire Fighting & Prevention

**Length:** Three quarters (one-year)

**Purpose:** The certificate program is designed for practitioners in fire science occupations who wish to upgrade and broaden their professional abilities and for others who are preparing themselves to enter the fire science field.

**Occupational Objectives:** Training for positions in fire prevention and suppression, fire protection engineering, safety engineering, insurance inspection and investigation, industrial safety, and building inspection.

**Admission Requirements:** In addition to requirements for general admission to the College, a personal interview with an official member of a regional fire department is recommended.

**Curriculum Requirements:** The program combines training in advanced fire protection and fire fighting techniques and management with selected arts and science courses which have direct application to fire sciences and others which contribute to the advancement of social understanding and communication.

**FIRE FIGHTING & PREVENTION****One-Year Certificate Program**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**FIRST QUARTER**

ENGL		3	0	3
FIRE 106	Fire Protection Organization	3	0	3
FIRE 108	Fundamentals of Fire Suppression	3	0	3
**GOVT 180	American Constitutional Government	3	0	3
*ELECTIVE		3		<u>3-4</u>
Total				15-16

**SECOND QUARTER**

**PSYC 128	Human Relations	3		3
FIRE 107	Blueprint Reading for Fire Science	3	0	3
FIRE 111	Hazardous Materials I	3	0	3
FIRE 137	Fire Fighting Tactics and Strategy	3	0	3
*ELECTIVE				<u>3-4</u>
Total				15-16

**THIRD QUARTER**

FIRE 146	Fire Administration and Law	3	0	3
FIRE 216	Fire Hydraulics and Equipment	3	2	4
FIRE 237	Arson Detection and Investigation	3	0	3
**ECON 160	Survey of American Economics	3	0	3
*ELECTIVE		3		<u>3-4</u>
Total				16-17

Total Minimum Credits required for the Fire Fighting &  
Prevention Certificate ..... 46

\* Electives offered will be based upon individual needs of the student. Those who may wish to eventually consider an Associate Degree program should select electives which would be compatible to such a program (additional English—6 cr., Chemistry—8 cr., Mathematics—6 cr., or Physics—4 cr.). Students interested only in the Certificate Program might wish to consider additional courses in Fire Science as well as courses in other subject areas.

\*\* A year sequence in Social Science may be taken in lieu of GOVT 180, ECON 160 and PSYC 128.

## POLICE SCIENCE

**Degree:** Public Service Technology (Police Science) (AAS)

**Length:** Six-quarter (two-year) program

**Purpose:** The curriculum in Police Science has been designed to prepare individuals for career services in law enforcement and related occupations. Supported by a broad general education, training is given to develop professional competence in the fields of law enforcement administration, police science, the prevention and control of delinquency and crime, correctional administration, industrial security administration, and traffic administration. This curriculum is applicable to both the preparatory student and the experienced officer.

**Occupational Objectives:** Commercial and Industrial Security Officer  
Local, State, and Federal Enforcement Officers  
Police Officer  
Private or Government Investigator

**Admission Requirements:** In addition to the general requirements for admission to the college, entry into the Police Science program requires the following:

1. A written statement from the city or county law enforcement agency having jurisdiction in the applicant's area of residence as to the applicant's record Satisfactory results on required tests.
2. **Special Requirements:** For employment with law enforcement agencies, the following qualifications are prerequisites: (a) Excellent physical condition free from any physical or mental condition which might adversely affect acceptance or performance as a law enforcement officer; (b) Normal hearing, color vision, and eye functions with visual acuity not less than 20/40 in either eye without correction; (c) Weight in proportion to height. (Very few law enforcement agencies will accept male applicants who are less than 5'8" in height); and (d) Excellent moral character—no convictions in any crime involving moral turpitude or any felony and no excessive number of traffic citations. (Background investigation will be conducted by the employing agency to confirm the foregoing.)

**Program Requirements:** Approximately one-half of the curriculum will include courses in law enforcement with the remaining courses in related areas, general education, and electives. Instruction will include both the theoretical concepts and practical applications needed for future success in law enforcement or related activities. Students are urged to consult with their faculty advisor and the counseling office in planning their program and selecting electives.

**POLICE SCIENCE****Associate in Applied Science Degree**

Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**FIRST QUARTER**

ENGL	111	English Composition I	3	0	3
GENL	100	Orientation	1	1	1
GOVT	281	U. S. Government I	3	0	3
LWNF	100	Introduction to Law Enforcement	3	0	3
LWNF	134	Criminal Law I	3	0	3
SOCI	101	Introductory Sociology	3	0	<u>3</u>

Total				16
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**SECOND QUARTER**

ENGL	112	English Composition II	3	0	3
GOVT	282	U. S. Government II	3	0	3
LWNF	114	Police Organization & Administration	3	0	3
LWNF	126	Prevention & Control of Juvenile Delinquency	3	0	3
LWNF	135	Criminal Law II	3	0	3
SOCI	102	Introductory Sociology II	3	0	<u>3</u>

Total				18
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**THIRD QUARTER**

ENGL	113	English Composition III	3	0	3
GOVT	283	U. S. Government III	3	0	3
LWNF	115	Police Organization & Administration II	3	0	3
LWNF	240	Constitutional Law for Police	3	0	3
SOCI	103	Introductory Sociology III	3	0	3
		Elective*	3	0	<u>3</u>

Total				18
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**FOURTH QUARTER**

HLTH	110	Concepts of Personal and Community Health	3	0	3
LWNF	110	Patrol Administration	3	0	3
LWNF	176	Criminology	3	0	3
LWNF	228	Law Enforcement and the Community	3	0	3
		Elective*	3	0	<u>3</u>

Total				15
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\* Free Electives may be taken in areas of student interest with departmental approval.



SOCIAL SCIENCE &  
PUBLIC SERVICE TECHNOLOGY DIVISION

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Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
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**FIFTH QUARTER**

BIOL	154	Human Anatomy and Physiology	3	3	4
LWNF	120	Introduction to Corrections (or Elective)	3	0	3
LWNF	246	Principles of Criminal Investigation	3	0	3
PSYC	128	Human Relations	3	0	3
		Elective*	3	0	<u>3</u>

Total				16
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**SIXTH QUARTER**

BIOL	155	Human Anatomy and Physiology II	3	3	4
LWNF	247	Advanced Criminal Investigation	3	0	3
LWNF	299	Supervised Study			3
SPDR	137	Public Speaking	3	0	3
LWNF		Elective	3	0	<u>3</u>

Total				16
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Total Minimum Credits for the Police Science Degree ..... 99

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\* Free Electives may be taken in areas of student interest with departmental approval.

## PRE-TEACHER EDUCATION

**Degree:** Associate in Science (Education) (AS)

**Length:** Six-quarter (two-year) program

**Purpose:** With the rapid development and emphasis on education in Virginia, there is a great demand for qualified teachers and other educational specialists to help provide leadership for the schools. The Associate in Science Degree program in Pre-Teacher Education is designed for persons who plan to transfer to a four-year college or university to complete a baccalaureate degree program in Teacher Education.

**Admission Requirements:** In addition to the admission requirements established for the college, entry into the Pre-Teacher Education program requires the satisfactory completion of the following high school units or equivalent as a minimum: 4 units of English; 2 units of college preparatory mathematics; 1 unit of laboratory science; and 1 unit of social science. Students are urged to check the mathematics requirements of the four-year college or university to which they plan to transfer to determine the proper mathematics courses to be taken in the community college. Students with deficiencies will require Developmental Studies. Eligible students may qualify for the State Teacher's Scholarships.

**Program Requirements:** The world of modern education demands that its teachers and staff be knowledgeable both in their teaching field and in general education. Thus, this curriculum requires courses in the humanities, natural sciences, mathematics, social sciences, and health and physical education in addition to general psychology usually required in the first two years of a baccalaureate teacher education curriculum. Students are urged to acquaint themselves with the requirements of the major department in the college or university to which transfer is contemplated and to consult with the counseling office of the community college in planning their program and selecting electives. In order to prepare for junior class standing at a four-year college or university, the student usually must complete a program at the community college which is comparable in length and course content to the first two years of the program at the four-year institution.

## PRE-TEACHER EDUCATION

### Associate in Science Degree

Course Number		Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIRST QUARTER</b>					
ENGL	111	English Composition I	3	0	3
GENL	100	Orientation	1	0	1
HIST	111	American History I (or HIST 101)	3	0	3
MATH		Mathematics (MATH 161 or 181)	3	0	3
		Natural Science (Lab)	3	3	4
		Elective	3	0	<u>3</u>
		Total			17
<b>SECOND QUARTER</b>					
ENGL	112	English Composition II	3	0	3
HIST	112	American History II (or HIST 102)	3	0	3
MATH		Mathematics (MATH 162 or 182)	3	0	3
		Natural Science (Lab)	3	3	4
		Elective	3	0	<u>3</u>
		Total			16
<b>THIRD QUARTER</b>					
ENGL	113	English Composition III	3	0	3
HIST	113	American History III (or HIST 103)	3	0	3
MATH		Mathematics (MATH 163 or 183)	3	0	3
		Natural Science (Lab)	3	3	4
		Elective	3	0	3
		Health or Physical Education			<u>1.3</u>
		Total			17.19
<b>FOURTH QUARTER</b>					
ENGL		Literature	3	0	3
GOVT		Government <sup>1</sup>	3	0	3
PSYC	201	General Psychology I (or PSYC 231)	3	0	3
		Humanities Elective	3	0	3
		Elective	3	0	3
		Health or Physical Education			<u>1.3</u>
		Total			16.18

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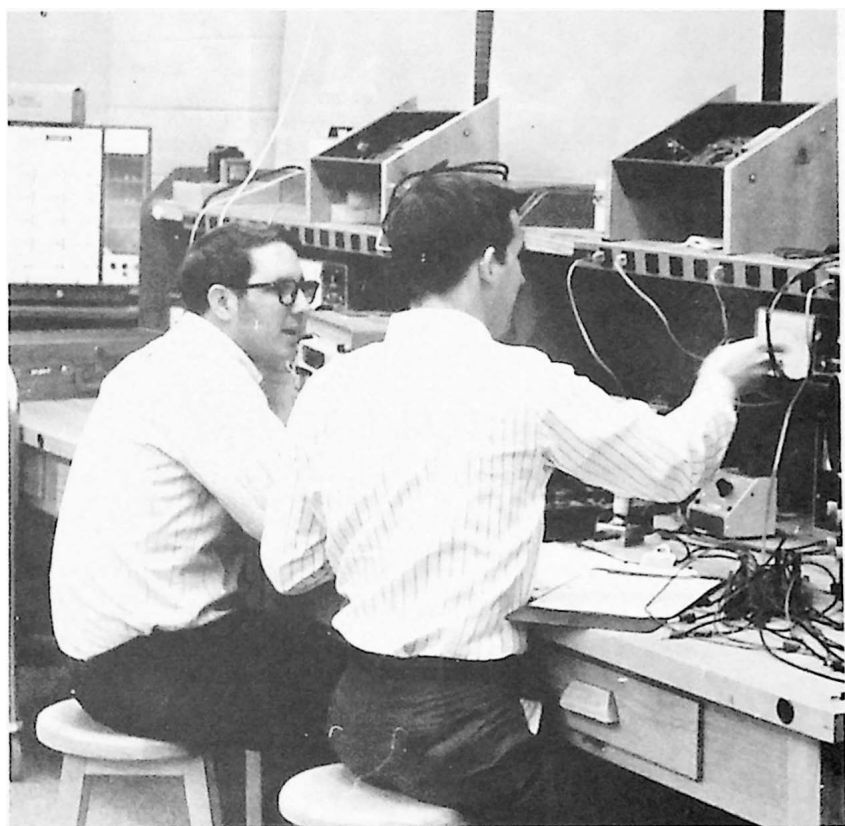
<sup>1</sup> In addition to the Psychology requirements, students will be advised to complete a Government and Economics course or a full year of sophomore level social science if required by the four-year college or university to which they plan to transfer.

SOCIAL SCIENCE &  
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Course Number	Course Title	Lecture Hours	Lab Hours	Course Credits
<b>FIFTH QUARTER</b>				
ENGL	Literature	3	0	3
ECON	Economics <sup>1</sup>	3	0	3
PSYC 202	General Psychology II (or PSYC 232)	3	0	3
	Elective	3	0	3
	Health or Physical Education			<u>1-3</u>
	<b>Total</b>			<b>13-15</b>
<b>SIXTH QUARTER</b>				
ENGL	Literature (or Elective)	3	0	3
PSYC 203	Gen. Psych. III (or PSYC 233)	3	0	3
SOCI	Sociology (or Elective)	3	0	3
SPDR 137	Public Speaking (or Elective)	3	0	3
	Elective	3	0	3
	Elective	3	0	<u>3</u>
	<b>Total</b>			<b>18</b>
<b>Total Minimum Credits for a Pre-Teacher Education Degree . . . . .</b>				<b>97</b>

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<sup>1</sup> In addition to the Psychology requirements, students will be advised to complete a Government and Economics course or a full year of sophomore level social science if required by the four-year college or university to which they plan to transfer.



Student and Special Training Division instructor work in Electronics Lab at Virginia Western Community College in Roanoke.



# 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 non-credit 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 non-credit 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 re-register for these courses in subsequent quarters as necessary until the course objectives are completed.

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

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

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

### Course Credits

The credit for each course is indicated after the title in the course description. One credit is equivalent to one collegiate quarter hour credit or two-thirds of a collegiate semester hour credit.

### Course Hours

The number of lecture hours in class each week (including lecture, seminar and discussion hours) and/or the number of laboratory hours in class each week (including laboratory, shop, supervised study, and cooperative work experiences) are indicated for each course in the course description. The number of lecture and laboratory hours in class each week are also "contact" hours because it is time spent under the direct supervision of a faculty member. In addition to the lecture and laboratory hours in class each week, as listed in the course description, each student also must spend some time on out-of-class assignments under his own direction. Usually each credit hour per course requires an average of three hours of in-class and out-of-class study each week.

## Course Prerequisites

If any prerequisites are required before enrolling in a course, these prerequisites will be identified in the course description. Courses in special sequences (usually identified by the numerals I-II-III) require that prior courses or their equivalent be completed before enrolling in the advanced courses in the sequence. When corequisites are required for a course, usually the corequisites must be taken at the same time. The prerequisites or their equivalent must be completed satisfactorily before enrolling in a course unless special permission is obtained from the Dean of Instruction and instructional department.

## ACCOUNTING

**ACCT 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 111-112-113 ACCOUNTING I-II-III (4 cr.) (4 cr.) (4 cr.)**—Fundamentals of accounting. The accounting cycle, journals, ledgers, working papers, and the preparation of financial statements under the various forms of business ownership. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**ACCT 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 211-212-213 PRINCIPLES OF ACCOUNTING I-II-III (3 cr.) (3 cr.) (3 cr.)**—Accounting principles and their application to various forms of business inventory valuation, internal control systems, manufacturing processes, budgeting, and analysis of financial statements. Lecture 3 hours per week.

**ACCT 221-222-223 INTERMEDIATE ACCOUNTING I-II-III (4 cr.) (4 cr.) (4 cr.)**—Prerequisite ACCT 111-112-113. Extensive analysis of the principle elements of accounting systems and statements. Lecture 4 hours per week.

**ACCT 227 MANAGERIAL ACCOUNTING (3 cr.)**—Prerequisite Acct. 222. Preparation, analysis, and interpretation of accounting and financial data for managerial purposes. Lecture 3 hours per week.

**ACCT 229 AUDITING (3 cr.)**—Prerequisite ACCT 111-112-113. Purposes of audit, relationships of auditor and client, kinds of audits, working papers, internal controls and examination of accounting systems, audit reports. Lecture 3 hours per week.

**ACCT 234-235 COST ACCOUNTING I-II (3 cr.) (3 cr.)**—Prerequisite ACCT 111-112-113. 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 298, 299**—See General Usage Courses page 154.



## 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, evaporators, expansion valves and capillary tubes used in refrigeration systems. Freezing process of foods and refrigeration load calculators are included. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

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

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

## ARCHITECTURAL TECHNOLOGY

**ARCH 100 INTRODUCTION TO ARCHITECTURE (3 cr.)**—An intensive course outlining the history and impact of architecture. Emphasis on the dynamics and social aspects of architecture and society. Lecture 3 hours per week.

**ARCH 111 ARCHITECTURE DRAFTING I (3 cr.)**—Designed to provide the fundamental knowledge of the principles of drafting. Skills and techniques of drafting including use of drafting equipment, lettering, freehand orthographic and pictorial sketching, geometric construction, and orthographic drawing. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

**ARCH 112 ARCHITECTURAL DRAFTING II (3 cr.)**—Prerequisite ARCH 111 or equivalent. An introduction to complex one and two-point perspectives, basic techniques of shade and shadow construction in orthographic drawings, development of construction details using appropriate materials, indications and symbols, study of model construction, and drafting techniques with pen and ink. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

**ARCH 113 ARCHITECTURAL DRAFTING III (3 cr.)**—Prerequisite ARCH 112. An approach in depth to the study of architectural drafting. Development of techniques in architectural lettering, dimensioning, freehand sketching and instrument drawing. Drawings of construction details, using appropriate material symbols and conventions. Working drawings including plans, elevations, sections, scale details and full size details prepared from preliminary sketches. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

**ARCH 141 MATERIALS AND METHODS OF CONSTRUCTION I (3 cr.)**—Designed to introduce the materials used in erection of structures, the physical properties and the architecture and characteristics of steel, concrete, timber, glass, related materials and the methods used in testing materials. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**ARCH 142 MATERIALS AND METHODS OF CONSTRUCTION II (3 cr.)**—Prerequisite ARCH 141. Designed to introduce the practical use of materials and methods of structures. The architectural and structural relationship of concrete, steel, and timber structures are analyzed with an introduction to cost analysis and the economic aspect involved in construction. Lecture 3 hours per week.

**ARCH 211 ARCHITECTURAL DRAFTING IV (3 cr.)**—Prerequisite ARCH 113. Preparation of structural plans, elevations, 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 mill-work drawings. Lecture 1 hour, Laboratory 6 hours, Total 7 hours per week.

**ARCH 237 BUILDING MECHANICAL EQUIPMENT (3 cr.)**—Study of heating, air conditioning, plumbing and electrical equipment, materials and symbols. Building code interpretation of working drawings by mechanical engineers; coordination of mechanical and electrical features with structural and architectural design. Lecture 3 hours per week.

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

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

**ARCH 290, 298—See General Usage Courses on page 154.**

## **ARTS**

**ARTS 111-112-113 HISTORY AND APPRECIATION OF ART I-II-III (3 cr.) (3 cr.) (3 cr.)**—The history and interpretation of architecture, sculpture and painting beginning with prehistoric art and following the main stream of western civilization to the present. Lecture 3 hours per week.

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

**ARTS 151-152 FUNDAMENTALS OF DESIGN I-II (3 cr.) (3 cr.)**—Experimentation and practice on design problems relating to visual communications with emphasis on techniques and solution. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

**ARTS 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 180 INTRODUCTION TO PHOTOGRAPHY (2 cr.)**—An introduction to the basic principles of photography with laboratory work related to the student's major field of interest. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

**ARTS 187 COLOR PHOTOGRAPHY (2 cr.)**—Prerequisite ARTS 180 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.

**ARTS 221-222-223 ADVANCED DRAWING I-II-III (2 cr.) (2 cr.) (2 cr.)**—The structure and forms of the environment (nature and human) memorized as a language to free the student's interpretation for creative graphic illustration. Laboratory 6 hours per week.

**ARTS 231-232-233 THEORY AND PRACTICE OF PAINTING I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite ARTS 103 or 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 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 silk screen intaglio and lithography. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

**ARTS 281-282-283 PHOTOGRAPHY WORKSHOP I-II-III (1 cr.) (1 cr.) (1 cr.)**—Prerequisite ARTS 180. Advanced practical study in the photography laboratory. Black and white photography and color slides. Laboratory 3 hours per week.

**ARTS 298**—See General Usage Courses on page 154.

**AUTOMOTIVE TECHNOLOGY**

**AUTO 106 AUTO MECHANICS FOR THE LAYMAN (2 cr.)**—A brief study of the automobile with emphasis on operation and maintenance. Topics include tires, brakes, cooling, lubrication, ignition, fuel system, and suspension. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

**AUTO 111-112-113 AUTOMOTIVE ENGINES I-II-III (4 cr.) (4 cr.) (4 cr.)**—Analysis of power, cylinder condition, valves, and bearings in the automotive engine to establish the present condition, repairs or adjustments. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**AUTO 121-122-123 AUTOMOTIVE FUEL SYSTEMS I-II-III (4 cr.) (4 cr.) (4 cr.)**—Analysis of automotive fuel systems to include carburetors, fuel injection, superchargers, fuel pumps, filters, instruments, tanks and connecting lines. Complete overhaul, repairs and adjustment of fuel system components. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**AUTO 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 154-155 POWER TRAIN 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 199**—See General Usage Courses on page 154.

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

**AUTO 241-242-243 AUTOMOTIVE ELECTRICITY I-II-III (4 cr.) (4 cr.) (4 cr.)**—Electricity and magnetism, symbols and circuitry as applies to the automotive electrical system. Includes the storage battery, generators, alternators, regulators, starters, lighting systems, instruments and gauges. Troubleshooting through use of modern test equipment. Lecture 3 hours, Laboratory 3 hours. Total 6 hours per week.

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

**AUTO 267 AUTOMOTIVE SUSPENSION & 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 of 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, 298**—See General Usage Courses on page 154.

## 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.)—Two quarter sequence covering BIOL 101-102-103. Lecture 4-5 hours, Laboratory 6-3 hours, Total 10-8 hours per week.

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

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

**BIOL 154-155 HUMAN ANATOMY AND PHYSIOLOGY I-II** (4 cr.) (4 cr.)—Structure and functioning of the normal human body. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**BIOL 176 MICROBIOLOGY** (4 cr.)—The characteristics and activities of microorganisms, showing their essential relation to diagnosis, treatment, and prevention of disease. Fundamentals of bacteriology, mycology, and parasitology, emphasizing their relationships to individual community health. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**BIOL 198, 199**—See General Usage Courses on page 154.

**BIOL 206 BIOLOGICAL PROBLEMS IN CONTEMPORARY SOCIETY** (3 cr.)—Prerequisite BIOL 103 or divisional permission. Designed to develop soundly-based understanding of some of the major problems of today's living. Contemporary readings will include such topics as overpopulation, pollution, drug abuse, famine, ecology, conservation, and others. Lecture 3 hours per week.

**BIOL 214 INTRODUCTION TO NON-VASCULAR PLANTS** (4 cr.)—Prerequisites

BIOL 103 or equivalent (not open to students having had BIOL 114). Designed to cover the lower plants including the algae, fungi, and bryophytes. Studies of major taxonomic groups—their morphology, life cycles, ecology, physiology, economic importance. Sight recognition and collections may be required. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**BIOL 215 INTRODUCTION TO VASCULAR PLANTS (4 cr.)**—Prerequisites BIOL 103 or equivalent (not open to students having had BIOL 114). Designed to cover the higher plants beginning with those that have vascular tissue, and including flowering and non-flowering 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 220 INTRODUCTORY VERTEBRATE ZOOLOGY (4 cr.)**—Prerequisite BIOL 103 or equivalent (not open to students having had BIOL 124). Fundamentals of vertebrate anatomy, physiology, embryology, classification and evolution. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

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

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

**BIOL 256 INTRODUCTORY GENETICS (5 cr.)**—Prerequisite BIOL 103 or equivalent, or departmental permission. History and development of the science of genetics, with emphasis on Mendelian concepts, their modification, and application to human problems. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

**BIOL 267 GENERAL ECOLOGY (5 cr.)**—Prerequisite BIOL 103 or divisional permission. This course is a study of the interrelationships between organisms and the natural and cultural environments with emphasis on human influences on ecological structures, survey of populations, communities and ecosystems. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

**BIOL 268 MICROBIOLOGY (6 cr.)**—Prerequisites BIOL 103 and one year of college chemistry or divisional permission. Introduction to microbiology, morphology and activities of microorganisms. Control of microorganisms, infection, immunity and other antibody reactions; study of infections and infectious diseases. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

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

**BIOL 298, 299**—See General Usage Courses on page 154.

## 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 121-122-123 RADIO/TV PRODUCTION I-II-III (3 cr.) (3 cr.) (3 cr.)**—Radio and television production and direction through sequentially arranged studio exercises. Laboratory 6 hours per week.

**BCST 134-135 SPEECH FOR RADIO/TV I-II (3 cr.) (3 cr.)**—Prerequisites BCST 121 and SPDR 137. Broadcast announcing including technical problems, techniques and modes of articulatory expression in varied broadcast situations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

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

**BCST 214-215 TECHNICAL PROBLEMS OF RADIO/TV I-II (3 cr.) (3 cr.)**—Prerequisite BCST 123. 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 2 hours, Laboratory 3 hours, Total 5 hours per week.

**BCST 216 RADIO/TV STATION MANAGEMENT AND OPERATION (3 cr.)**—Prerequisite BCST 123. Broadcast management responsibility; simulated decision making; the roles of government, public interest and programming in radio and television management and operation. Lecture 3 hours per week.

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

**BCST 226 WRITING FOR RADIO/TV (3 cr.)**—Prerequisites BCST 123 and ENGL 102. The written communications process; writing and planning of continuity for radio and television; documentary writing. Lecture 3 hours per week.

**BCST 236 BROADCAST ADVERTISING & SALES (3 cr.)**—Prerequisites BCST 123 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 123. 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 281-282-283 ADVANCED RADIO/TV PRODUCTION I-II-III (5 cr.) (5 cr.) (5 cr.)**—Prerequisite BCST 123. 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 154.

## **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 and adding machines. 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 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 157 PRINCIPLES OF BANK OPERATIONS (3 cr.)**—The economic importance of banks, the receiving functions, processing of cash items, book-keeping 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 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 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 111-112-113. Problems involved in the acquisition and use of funds necessary to the conduct of business. Sources and instruments of capital and finance, financial organizations, and financing of operations and adjustment. Lecture 3 hours per week.

**BUAD 251 BUSINESS STATISTICS I (3 cr.)**—Prerequisite MATH 183 or MATH 163. Aspects of statistical methodology such as the collection, organization, presentation and analysis of data; specific concentration with measures of central tendency, dispersion, probability concepts, the normal distribution, and basic hypothesis testing such as T-test, Z-test, and Chi-Square. Lecture 3 hours per week.

**BUAD 252 BUSINESS STATISTICS II (3 cr.)**—Prerequisite BUAD 251. Estimation of parametric values, advanced methods and techniques of hypothesis testing and experiment design. Statistical quality control, analysis of variance, linear regression and correlation analysis both simple and multiple measurement of business and economics activity through index numbers, seasonal and secular variation; computer application where practical. Lecture 3 hours per week.

**BUAD 253 BUSINESS STATISTICS III (3 cr.)**—Prerequisite BUAD 252. The applications of statistical techniques and methodology in business. Includes expedited payoff, game theory, linear programming, transportation models, queuing theory, and demand estimations. Lecture 3 hours per week.

**BUAD 254 APPLIED BUSINESS STATISTICS I (3 cr.)**—Prerequisite MATH 152. An introductory course in statistics. Collection, presentation, and analysis of data through ratios, percentages, and averages. Emphasis on the practical application of statistical measures to business situations. Lecture 3 hours per week.

**BUAD 255 APPLIED BUSINESS STATISTICS II (3 cr.)**—Prerequisite BUAD 254. A continuation of the application of principles taught in BUAD 254 with emphasis on the graphic presentation of data concerning business activity and some advanced statistical concepts such as probability and sampling. Lecture 3 hours per week.

**BUAD 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 269 PURCHASING AND MATERIALS MANAGEMENT (3 cr.)**—Principles of purchasing and management of inventories including determination of requirements, pricing, source selection, and inventory policy and control. Lecture 3 hours per week.

**BUAD 276 PERSONNEL MANAGEMENT (3 cr.)**—The problems and issues in the administration of personnel actions. Includes organization and tasks of personnel development, significant personnel considerations and an appraisal of the position of labor in business today. Lecture 3 hours per week.

**BUAD 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 298, 299**—See General Usage Courses on page 154.

## CHEMISTRY

**CHEM 100 INTRODUCTION TO CHEMISTRY (4 cr.)**—An introductory survey of chemistry for students not intending to specialize in chemistry. Lectures will emphasize basic principles of inorganic chemistry; laboratory will be illustrative of the principles considered. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

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

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

**CHEM 114-115 GENERAL INORGANIC CHEMISTRY I-II (6 cr.) (6 cr.)**—Two quarter sequence covering CHEM 111-112-113. Lecture 4-5 hours, Laboratory 6-3 hours, Total 10-8 hours per week.

**CHEM 198, 199**—See General Usage Courses on page 154.

**CHEM 241-242-243 ORGANIC CHEMISTRY I-II-III (4 cr.) (4 cr.) (4 cr.)**—Prerequisite CHEM 103 or 113, or equivalent. The fundamentals of organic chemistry. The structure, physical properties, synthesis, and typical reactions of the various series of aliphatic, alicyclic and aromatic compounds with attention to reaction mechanisms. Representative carbon compounds are synthesized with emphasis on basic laboratory techniques. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**CHEM 298, 299**—See General Usage Courses on page 154.

**CIVIL ENGINEERING TECHNOLOGY**

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

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

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

**CIVL 181-182 SURVEYING I-II (4 cr.) (4 cr.)**—Prerequisite Algebra, Plane Geometry, Basic Trigonometry, or MATH 121. 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 217 STRUCTURAL STEEL DESIGN (4 cr.)**—Prerequisite ENGR 152 or equivalent. Design, investigation, and detailing of basic structural steel members of steel frame structures. Lecture 4 hours per week.

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

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

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

**CIVL 247 SOIL MECHANICS LABORATORY (1 cr.)**—Corequisite CIVL 246 or equivalent. Practical soil sampling, classification by Unified Soil Classification System and by ASTM and 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 255 CIVIL MATERIALS II (ASPHALT) (3 cr.)**—Properties of bituminous materials, particularly asphalt cement used in construction, methods of mix design, use and placement of asphalt. 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 258 BITUMINOUS LABORATORY (1 cr.)**—Corequisite CIVL 255. Testing and quality control of bituminous materials. Mixing, testing and quality controls of asphalt cements. Laboratory 3 hours per week.

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

**CIVL 276 TRAFFIC AND TRANSPORTATION TECHNOLOGY I (4 cr.)**—Introduction to the techniques of traffic and transportation surveys. The application of survey data to the planning, design and operation of modern transportation systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**CIVL 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, 298**—See General Usage Courses on page 154.

### 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 106 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 144 COMPUTER PROGRAMMING (COMPUTER CONCEPTS I) (3 cr.)**—Prerequisite DAPR 106 or equivalent. Programming techniques and the various characteristics of computers. Practical experience in programming a series of problems in machine, assembler, or manufacturer's higher level language. Course objective is to provide a proper foundation for materials in subsequent courses rather than providing specific skills in any computer language. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**DAPR 147 COMPUTER PROGRAMMING (COBOL) (3 cr.)**—Prerequisite DAPR 144. Experience in using programming techniques with a high level language. Students will be required to program, debug, and test specified business oriented problems using Cobol. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**DAPR 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 (ADVANCED COBOL) (4 cr.)**—Prerequisite DAPR 147. Experience in programming in an operating system environment. The characteristics of OS, use of job control language, files, utility programs, and analysis of error messages. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**DAPR 266 COMPUTER PROGRAMMING (FORTRAN) (4 cr.)**—Prerequisite DAPR 144 or equivalent. The business applications of Fortran including input/output, floating point arithmetic, loop control, and functions. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**DAPR 267 COMPUTER PROGRAMMING (RPG) (4 cr.)**—Prerequisite DAPR 144 or equivalent. The study and development of programming capabilities in the business computer language Report Program Generator (RPG). Includes program logic, block diagramming, coding techniques, documentation, advantages and disadvantages of RPG as a high-level language in small and medium scale installations. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**DAPR 268 COMPUTER PROGRAMMING (P/L 1) (4 cr.)**—Prerequisite DAPR 144. The study and development of programming capability in the IBM System 360 computer language P/L 1. Provides student capability to program in this language. Includes relative advantages and disadvantages of this higher level language in installations using medium scale and large scale computer systems and continuation of the study of magnetic tape and random access programming. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**DAPR 269 COMPUTER PROGRAMMING (ASSEMBLER) (4 cr.)**—Prerequisite DAPR 144 or equivalent. The study and development of a manufacturer's assembly language. The student will write and debug programs in an assembler language, and also be capable of employing this language in a total programming system. The principles of 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 or equivalent. A study of the overall computer based systems analysis and design process; information problems of business organization and the inter-relationships of functions; nature of business problem isolation and definition; initial phase of systems analysis and evaluation. Lecture 3 hours per week.

**DAPR 282 SYSTEMS ANALYSIS II (3 cr.)**—Prerequisite DAPR 281. 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 286 COMPUTER PROGRAM APPLICATION (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 298, 299**—See General Usage Courses on page 154.

## DENTAL

**DENT 100 INTRODUCTION FOR DENTAL AUXILIARIES (3 cr.)**—Introduction to dentistry and dental auxiliaries; history and development of dentistry and its related fields; the roles of the dental auxiliaries in practice and in relation to other members of the dental health team; dental ethics and jurisprudence; professional and educational opportunities. Introduction to dental instruments and equipment. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**DENT 101-102-103 DENTAL SCIENCE I-II-III (4 cr.) (4 cr.) (4 cr.)**—Bacteriology, anatomy and physiology, gross and oral dental anatomy, oral pathology, pharmacology, diet and nutrition, and first aid and dental emergencies, and dental-health education as related to dental science and the role of the dental assistant. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

**DENT 110 INTRODUCTION TO DENTAL MATERIALS (4 cr.)**—Introduction to the physical and chemical characteristics, uses, and manipulation of materials used in dental procedures, clinical and laboratory. Emphasis on the general principles of physical properties and the specifications program of the American Dental Association. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

**DENT 111-112 CLINICAL PROCEDURES I-II (4 cr.) (4 cr.)**—Prerequisites DENT 100, 110, 101-102 or corequisite. Principles and procedures related to radiology, dental instruments and equipment; role of the dental assistant in general and specialty practice, and expanded duties limited to dental assistants. Lecture 2 hours, Laboratory 4 hours, Total 6 hours per week.

**DENT 116 DENTAL LABORATORY MATERIALS (4 cr.)**—A study of the chemical composition, physical properties, and uses of metallic and non-metallic 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 126 ORAL ANATOMY (3 cr.)**—The study of the anatomy, structure, morphology and function of the oral structures including primary and permanent dentition. Laboratory procedures to include identification eruption sequence, reproduction of tooth form through drawings, study of skulls, principles of occlusion and root anatomy with correlation of tooth form and position to intra-oral arch. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

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

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

**DENT 130 INTRODUCTION PREVENTIVE DENTISTRY (2 cr.)**—Orientation to the dental hygiene profession, its history, basic ethics, professional obligations, and professional organizations. Laboratory procedures will include introduction to preventive procedures, plaque control, dental caries, and periodontal disease. Lecture 2 hours, Laboratory 1 hour, 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 144 DENTAL HYGIENE I (5 cr.)**—The introduction to clinical knowledge and skills for the performance of dental hygiene services, and medical and dental emergencies, basic skill components, lab manikins, and patient practice. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

**DENT 145 DENTAL HYGIENE II (5 cr.)**—Prerequisite DENT 144. Clinical performance of dental hygiene services; includes the use and techniques of dental radiology. Lecture 2 hours, Laboratory 9 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 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 190, 199**—See General Usage Courses on page 154.

**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 seminars. Laboratory dental prophylaxis and oral hygiene preventive procedure to be performed on both children and adults in supervised clinic facilities. Care of patients with specific needs, nutrition counseling and plaque control. Expanded duties limited to dental hygiene. Lecture 1 hour, Laboratory 12 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. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

**DRFT 144-145 AUTOMOTIVE DRAWING INTERPRETATION I-II (2 cr.) (2 cr.)**—The reading and interpretation of automotive shop drawings, including assembly and exploded drawings of automotive assemblies. Lecture 2 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.

**DRFT 172 BLUEPRINT READING II (2 cr.)**—Prerequisite DRFT 171. Dimensioning, review and application techniques, changes and corrections, classes of fits, tolerances and allowances, sections and convention in blueprint reading, auxiliary views, pictorial drawings, simplified drafting procedures. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

**DRFT 173 BLUEPRINT READING III (2 cr.)**—Prerequisite DRFT 172. Industrial plants, production drawings, operation sheets, tool drawings, assembly drawings, and detail prints. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.



## ECONOMICS

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

**ECON 211-212-213 PRINCIPLES OF ECONOMICS I-II-III (3 cr.) (3 cr.) (3 cr.)**—The principles of economics and the bearing of these principles on present American conditions; structural and functional aspects of the economy. Analysis, problems and issues, relating to the organization of business, labor, and government institutions and their economic stability and growth. Measurements of economic activity. Private enterprise, economic growth and stabilization policies, monetary and fiscal policy. International economic relationships, alternative economic systems. Lecture 3 hours per week.

**ECON 214-215 PRINCIPLES OF ECONOMICS I-II (5 cr.) (4 cr.)**—Two quarter sequence covering ECON211-212-213. 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 298, 299**—See General Usage Courses on page 154.

## 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 story telling, and stresses use of audio-visual materials. Lecture 3 hours per week.

**EDUC 110 INTRODUCTION TO CHILD CARE (3 cr.)**—A course designed to instill in students the knowledge, attitude, and motivation requisite to successful participation and preparation for child-care functioning. Stresses awareness of the effect upon the child of adjusting to institutional life, family and cultural background factors, and understanding of the physical, social, and emotional needs of children. 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 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 187 ACTIVITY PROGRAMMING FOR CHILDREN (2 cr.)**—Recreational and creative activities as factors which change patterns of behavior in children. Techniques and methods for devising appropriate activities depending upon individual and group variables. Lecture 2 hours per week.

## **ELECTRICITY AND ELECTRONICS**

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

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

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

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

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

**ELEC 111-112 INTRODUCTION TO ELECTRICAL CIRCUITS I-II (4 cr.) (6 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 3-5 hours, Laboratory 3 hours, Total 6-8 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 112. The theory, properties, and application of vacuum tube and solid state devices. Lecture 4 hours, Laboratory 3 hours, Total 7 hours per week.

**ELEC 131 ELECTRICAL/ELECTRONIC CALCULATIONS I (4 cr.)**—A course dealing with calculations and fundamental applications as they apply to electrical/electronic problem solving. The basic calculations required in circuit analysis will be stressed. Problem solving utilizing the sliderule and calculators will be an integral part of the course. Lecture 4 hours.

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

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

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

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

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

**ELEC 241-242-243 COMMUNICATIONS I-II-III (4 cr.) (4 cr.) (4 cr.)**—Prerequisite 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. The study of microwave systems; microwave devices, waveguides, 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 276 INSTRUMENTS AND MEASUREMENTS (4 cr.)**—Prerequisite ELEC 125 or equivalent. 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 298, 299—See General Usage Courses on page 154.**

## ENGINEERING

**ENGR 100 INTRODUCTION TO ENGINEERING TECHNOLOGY (2 cr.)**—Co-requisite MATH 111, 121, or 161. Professional fields of engineering technology: work of the engineering technologist, requirements of training and character, professional ethics, and division of industrial practice and competition, engineering problems with slide-rule applications. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

**ENGR 101 INTRODUCTION TO ENGINEERING (2 cr.)**—Professional fields of engineering; work of the engineer, requirements and character, professional problems from the various schools of engineering and slide-rule applications. Lecture 1 hour, Laboratory 2 hours. Total 3 hours per week.

**ENGR 102 INTRODUCTION TO ENGINEERING METHODS (2 cr.)**—Prerequisite ENGR 101. An introduction to electronic computation and programming of the digital computer; field trips to a nearby computer center. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

**ENGR 103 CONCEPTUAL DESIGN AND ANALYSIS (2 cr.)**—Prerequisite ENGR 102. Engineering fundamentals and concepts in designing for production, prototype and laboratory models, automation, tape programming and verification; design problems, class reports, and visits to nearby four-year colleges. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

**ENGR 121 ENGINEERING GRAPHICS I (2 cr.)**—Drawing and theories of projection. Multiview drawings, pictorial drawings and sketching, geometrical construction, sectioning, lettering, dimensioning, auxiliary views, revolutions, assembly drawings. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

**ENGR 122 ENGINEERING GRAPHICS II (2 cr.)**—Prerequisite ENGR 121. Graphical methods used in engineering design, layout and calculation, 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 151 MECHANICS I (STATICS) (4 cr.)**—Corequisite MATH 122. Principles of statics; resultants and equilibrium of force systems; trusses and frames; structures containing three-force members; centroids; moments of inertia; dry friction. Lecture 4 hours per week.

**ENGR 152 MECHANICS II (STRENGTH OF MATERIALS) (3 cr.)**—Prerequisite ENGR 151. Strength of material concepts, stress and strain analysis, both elastic and plastic, with emphasis on elastic analysis of axially loaded members, connectors, beams, and columns. Lecture 3 hours per week.

**ENGR 154 MECHANICS LABORATORY (1 cr.)**—Prerequisite or corequisite ENGR 152. Tension, compression, torsion, bending, fatigue, and hardness of materials. Static and dynamic stresses and strains, stress concentration factors, and statistical evaluation of data. Experiments and/or demonstrations. Laboratory 3 hours per week.

**ENGR 201 MECHANICS OF PARTICLES (5 cr.)**—Corequisite MATH 241. Vector treatment of concepts of force, mass, space, time; gravitational systems of measurements; equilibrium of discrete force systems; centroids, dry friction, planar and three dimensional kinematics and kinetics of particles, relative motion, mass moments of inertia, Newton's laws, work and energy, impulse and momentum. Lecture 5 hours per week.

**ENGR 202 MECHANICS OF DEFORMABLE SOLIDS (5 cr.)**—Corequisite MATH 242. Structural mechanics applied to trusses, frames; introductory mechanics of continuous media; concepts of stress, strain, stress-strain relations; stress and deformation due to longitudinal loads, torsion, and bending; eccentric loads on short posts, Euler column theory. Lecture 5 hours per week.

**ENGR 203 DYNAMICS OF RIGID BODIES (3 cr.)**—Prerequisite ENGR 201. Corequisite MATH 242. 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 206 ENGINEERING ECONOMY (3 cr.)**—Economic decision process in the engineering design environment. Investment, financing, depreciation, manufacturing costs, economic selection replacement. Lecture 3 hours per week.

## ENGLISH

**ENGL 01 VERBAL STUDIES LABORATORY (1-5 cr.)**—A developmental course in composition designed for students who need help in all areas of writing to bring their proficiency to the level necessary for entrance into their respective curricula. Emphasis on individual instruction. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

**ENGL 05 ENGLISH AS A SECOND LANGUAGE (1-5 cr.)**—A developmental course in the English language for persons whose native language is not standard English. Emphasis on production of English phonemes, intonation patterns, structural patterns, grammar, vocabulary, and idioms. Students are expected to spend a minimum of 3 hours weekly in the language laboratory. Students may reregister for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

**ENGL 08 READING IMPROVEMENT (1-5 cr.)**—A developmental course using modern techniques, equipment, and materials to increase the student's comprehension, skill, and speed in reading. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

**ENGL 101-102-103 COMMUNICATION SKILLS I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite satisfactory score on appropriate English proficiency examination. Designed to teach the student to use the English language correctly and effectively and to develop skill in the preparation of reports, articles, essays, and correspondence related to technical fields. Attention to sentence structure and paragraph development to express thoughts in lucid, coherent, well-developed form. Reading selections provide material for discussion and supply topics for frequent writing assignments. Lecture 3 hours per week.

**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 114-115 ENGLISH COMPOSITION I-II (5 cr.) (4 cr.)**—Two quarter sequence covering ENGL 111-112-113. Lecture 5-4 hours per week.

**ENGL 118 ADVANCED READING AND STUDY DEVELOPMENT (3 cr.)**—A multi-level reading course with emphasis on structural analysis, critical reading, and study techniques for the development of individual skills; laboratory provides enrichment and application of techniques. Lecture 2 hours, Laboratory 3 hours, Total 5 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 102 or departmental approval. Designed to develop writing proficiency in technical fields. Emphasis on collecting, organizing, and presenting materials applicable to various specialized areas. Lecture 3 hours per week.

**ENGL 180 FUNDAMENTALS OF BUSINESS ENGLISH (3 cr.)**—Prerequisite ENGL 102. An intensive study of the qualities and techniques required in the preparation of business correspondence, reports, articles, and memoranda. A practical course in the reading and writing of business-related materials with emphasis on comprehension, analysis, and organization of ideas in a logical pattern. Lecture 3 hours per week.

**ENGL 199—See General Usage Courses on page 154.**

**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 271-272-273 SURVEY OF WORLD LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite ENGL 113 or equivalent. A course designed to familiarize the student with master works of world literature. Analytical reading and critical writing toward understanding of the periods, the writers, the literary works. Lecture 3 hours per week.

**ENGL 299—See General Usage Courses on page 154.**

## FIRE SCIENCE

**FIRE 106 FIRE PROTECTION ORGANIZATION (3 cr.)**—History and philosophy of fire service at the local, state and national level with emphasis on the organization of the individual fire department; analysis of the overall fire problem, communications, maintenance, training, company fire fighting capabilities, apparatus and equipment. Lecture 3 hours per week.

**FIRE 107 BLUEPRINT READING FOR FIREMEN (3 cr.)**—Blueprint reading with emphasis on building construction, fire prevention and preplanning fire tactics and strategy. Lecture 3 hours per week.

**FIRE 108 FUNDAMENTALS OF FIRE SUPPRESSION (3 cr.)**—Basic concepts involved in fire suppression including fire behavior, principles of fire fighting as applied to small and large scale fires, problems involving the use of tactics, size-up, strategy and employment of equipment and manpower at various echelons. Lecture 3 hours per week.

**FIRE 111 HAZARDOUS MATERIALS I (3 cr.)**—Identification and characteristics of materials contributing to fire hazards including chemicals, gases, flammable liquids, and radiological materials, and an examination of their storage, handling and transportation, and related fire science problems. Lecture 3 hours per week.

**FIRE 137 FIRE FIGHTING TACTICS AND STRATEGY (3 cr.)**—Prerequisite FIRE 106 and FIRE 108. Review of combustion and extinguishment. The problems during size-up; developing and implementing tactics and strategy during fires; and the leadership required on the fire ground. Lecture 3 hours per week.

**FIRE 146 FIRE ADMINISTRATION AND LAW (3 cr.)**—Application of guideposts relative to firemen and law. Includes introduction to law, the judicial system, city's liability for acts of the fire department, fire prevention bureaus, and general liabilities of firemen. Lecture 3 hours per week.

**FIRE 216 FIRE HYDRAULICS AND EQUIPMENT (4 cr.)**—Prerequisite FIRE 106. Review of basic mathematics; laws and formulas applied to fire service hydraulics, development of mental ability to solve fire flow requirements, water supply needs, and consideration of equipment standards. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**FIRE 237 ARSON DETECTION AND INVESTIGATION (3 cr.)**—Prerequisite FIRE 106. Introduction to arson laws and types of incendiary fires. Determining fire causes, recognizing and preserving evidence; interrogation of adults and juveniles; court procedures. Lecture 3 hours per week.

## 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 199**—See General Usage Courses on page 154.

**FREN 202-202-203 INTERMEDIATE FRENCH I-II-III (4 cr.) (4 cr.) (4 cr.)**—Prerequisite FREN 103 or successful completion of two years of high school French and departmental permission. Advanced study in the understanding, speaking, reading, and writing of French. French used in the classroom. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**FREN 231-232-233 INTRODUCTION TO FRENCH CIVILIZATION AND LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite FREN 203 or equivalent. An introduction to the background of French life and culture and to the outstanding contributions of France to world civilization from medieval times to the present. Reading is in the original French and French is used in the classroom. Lecture 3 hours per week.

**FREN 299**—See General Usage Courses on page 154.

## GENERAL

**GENL 100 ORIENTATION (1 cr.)**—This course, required of all beginning college students, is designed as an instrument of group counseling and deals with such problems as adjustment to college, purposes and functions of the college planning for the future, making the most of the college years, and what the college has to offer. Emphasis is placed on experiences designed to improve study habits and skills such as reading, listening, and library activities. Lecture 1 hour, Laboratory 1 hour, Total 2 hours per week.

## GENERAL USAGE COURSES

(Insert Appropriate Prefix) 90, 190, 290 **COORDINATED PRACTICE IN (Insert Appropriate Discipline) (1.5 cr.)**—Supervised practice in selected health agencies coordinated by the College. Credit/Practice Ratio maximum 1:5 hours. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 90, 190, 290 **COORDINATED INTERNSHIP IN (Insert Appropriate Discipline) (1.5 cr.)**—Supervised on-the-job training in selected business, industrial or service firms coordinated by the College. Credit/Work Ratio not to exceed 1:5 hours. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 97, 197, 297 **COOPERATIVE EDUCATION IN (Insert Appropriate Discipline) (1.5 cr.)**—Supervised on-the-job training for pay in approved business, industrial and service firms coordinated by the College's Cooperative Education Office. Applicable to all occupational-technical curricula at the discretion of the College. Credit/Work Ratio not to exceed 1.5 hours. May be repeated for credit. Variable hours.

(Insert Appropriate Prefix) 98, 198, 298 **SEMINAR AND PROJECT IN (Insert Appropriate Discipline) (1.5 cr.)**—Completion of a project or research report related to the student's occupational 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 INTRODUCTION TO PHYSICAL GEOGRAPHY (3 cr.)**—A study of the major elements of the natural environment such as land forms, weather and climate, natural vegetation, and soils. Lecture 3 hours per week.

**GEOG 250 INTRODUCTION TO CULTURAL GEOGRAPHY (3 cr.)**—A survey of landscape modification through human agencies and the relationships of culture and geography. Lecture 3 hours per week.



**GEOG 260 INTRODUCTION TO ECONOMIC GEOGRAPHY (3 cr.)**—A geographic survey of primary production, manufacturing, mining, and trade, covering agriculture, forestry, and fishing. Lecture 3 hours per week.

**GEOG 298, 299**—See General Usage Courses on page 154.

## **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 154.

## **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 199** See General Usage Courses on page 154.

**GERM 201-202-203 INTERMEDIATE GERMAN I-II-III (4 cr.) (4 cr.) (4 cr.)**—Prerequisite GERM 103 or successful completion of two years of high school German and departmental permission. Advanced study in the understanding, speaking, reading and writing of German. German is used in the classroom. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**GERM 231-232-233 INTRODUCTION TO GERMAN LITERATURE I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite GERM 203 or equivalent. Readings in selected works of German literature. German is used in the classroom. Lecture 3 hours per week.

**GERM 299**—See General Usage Courses on page 154.

## **GOVERNMENT**

**GOVT 180 AMERICAN CONSTITUTIONAL GOVERNMENT (3 cr.)**—An introductory course in American government including fundamental concepts and principles of our constitutional system at the national level. Lecture 3 hours per week.

**GOVT 256 INTRODUCTION TO INTERNATIONAL POLITICS (3 cr.)**—A study of principles and factors, affecting current international politics to promote an understanding of nations' 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.)**—Prerequisites 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.)**—Elements of political science, powers, organization, and functions of the legislative, executive, and judicial branches of the national, state and local governments in the United States; democracy, federalism, the Constitution, and civil liberties. Lecture 3 hours per week.

**GOVT 284-285 UNITED STATES GOVERNMENT I-II (5 cr.) (4 cr.)**—Two quarter sequence covering GOVT 281-282-283. Lecture 5-4 hours per week.

**GOVT 298, 299**—See General Usage Courses on page 154.

## HEALTH

**HLTH 100 ORIENTATION TO ALLIED HEALTH CAREERS (1 cr.)**—An orientation to the interrelated roles and functions of various members of the health team. Lecture 1 hour per week.

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

**HLTH 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 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 AMERICAN HISTORY I-II-III (3 cr.) (3 cr.) (3 cr.)**—A survey of United States history from its beginning in early colonial times to the present. 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 187-188-189 HISTORY OF THE AFRO-AMERICAN 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 154.

**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.

## **HOTEL, RESTAURANT & INSTITUTIONAL MANAGEMENT**

**HRIM 111-112-113 FOOD SCIENCE I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite high school chemistry or biology. Interrelationship of the physical, biological and chemical principles of food, food preparation, food equipment, and food manufacturing processes. Lecture 3 hours per week.

**HRIM 124-125 PRINCIPLES OF FOOD PREPARATION I-II (4 cr.) (4 cr.)**—Applications of scientific principles and techniques to food preparation. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**HRIM 140 PRINCIPLES OF BAKING (4 cr.)**—Application of scientific principles and techniques of baking. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**HRIM 146 HOTEL-MOTEL ORGANIZATION AND MANAGEMENT (3 cr.)**—A study of the past, present and future of the hospitality industry; organization as a modern tool of management; and the organization of hotel operations. Lecture 3 hours per week.

**HRIM 147 RESTAURANT—INSTITUTION ORGANIZATION AND MANAGEMENT (3 cr.)**—A thorough analysis of the nature and scope of departmental functions in the food service industry. Emphasis placed on operational practices and problems. Lecture 3 hours per week.

**HRIM 221-222-223 QUANTITY FOOD PREPARATION I-II-III (5 cr.) (5 cr.) (5 cr.)**—Prerequisites HRIM 124-125. Principles, standards and practices of cooking and baking applied in large quantity food production. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

**HRIM 236 SANITATION (3 cr.)**—Prerequisite high school general science, biology, or chemistry. The moral and legal responsibilities involved in assuring sanitary conditions in the food service establishment. Emphasis on the causes and prevention of food poisoning. Lecture 3 hours per week.

**HRIM 264 FOOD AND BEVERAGE COST CONTROL I (3 cr.)**—Pre-cost, pre-control methods relative to the menu, production control, purchasing, receiving, inventory control, and profit of food service system. Lecture 3 hours per week.

**HRIM 266 FOOD PURCHASING (3 cr.)**—Methods and procedures for purchasing food for hotels, restaurants and institutions; markets, federal and trade grades, governmental regulations, packaging, comparative versus price buying, yields and quality control. Lecture 3 hours per week.

**HRIM 286 CATERING (3 cr.)**—The systematic study of special functions in the hospitality industry. Lecture and demonstrations in banquet layout, menus, services, sales and supervision. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**HRIM 289 HOTEL AND MOTEL LAW (3 cr.)**—A study of the laws applicable to the ownership and operation of hotels and motels. The duties to guests, ejection of undesirables, liabilities for personal injuries, damage, arrest and detention of offenders. Lecture 3 hours per week.

## HUMANITIES

**HUMN 201-202-203 SURVEY OF WESTERN CULTURE I-II-III (3 cr.) (3 cr.) (3 cr.)**—A survey of the Western world which correlates the art, music and literature of the following periods: Greek and Roman, Middle Ages, Renaissance, Elizabethan, Neo-Classical, and Modern. Lecture 3 hours per week.

## INDUSTRIAL

**INDT 111-112 MATERIAL AND PROCESSES OF INDUSTRY I-II (3 cr.) (3 cr.)**—The materials and processes of modern industry from the drafting and design point of view. The physical properties of industrial materials such as ferrous, 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 safe-guards, fire prevention, housekeeping, occupational diseases, first aid, safety organization, protection equipment and general safety principles and promotion. Lecture 2 hours per week.

## LAW ENFORCEMENT

**LWNF 100 INTRODUCTION TO LAW ENFORCEMENT (3 cr.)**—The philosophy and history of law enforcement; overview of crime and police problems; organization and jurisdiction of local, state, and federal law enforcement agencies, survey of professional career opportunities and qualifications required. Lecture 3 hours per week.

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

**LWNF 114-115 POLICE ORGANIZATION AND ADMINISTRATION I-II (3 cr.) (3 cr.)**—Prerequisite LWNF 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.

**LWNF 117 SPECIAL ENFORCEMENT PROBLEMS (3 cr.)**—Crowd control during civil demonstrations, picketing, rioting, and other emergency situations; the police role in civil defense; police problems caused by narcotics addiction; the handling of mentally or emotionally disturbed persons. Lecture 3 hours per week.

**LWNF 126 PREVENTION AND CONTROL OF JUVENILE DELINQUENCY (3 cr.)**—Survey of youth crime, stressing the police role in community programs of prevention and control. The philosophy and functioning of the juvenile courts as related to the juvenile problems. Lecture 3 hours per week.

**LWNF 127 CRIMINAL OFFENSES (3 cr.)**—The study of particular types of crime with emphasis on the pathology of criminals. Lecture 3 hours per week.

**LWNF 128 CRIMINAL BEHAVIOR (3 cr.)**—Analysis of relationship of society socialization, and deviancy. Social responses to deviancy and criminal offenders. Lecture 3 hours per week.

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

**LWNF 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.

**LWNF 150 INTRODUCTORY POLICE PHOTOGRAPHY (2 cr.)**—Fundamental photographic skills; uses of photography in law enforcement and in courtroom presentation; practical exercises. Lecture 1 hour, Laboratory 2 hours, Total 3 hours per week.

**LWNF 166 POLICE COMMUNICATIONS AND RECORDS (3 cr.)**—Principles of organization and administration as applied to records and communications, custody, central services, and police logistics; police applications of electronic data processing and the collection of performance data. Lecture 3 hours per week.

**LWNF 176 CRIMINOLOGY (3 cr.)**—Volume and scope of crime, the background of criminal behavior in the American setting; organized crime and its affiliated problems; subjective theories and explanation of crime; the control, treatment and rehabilitation of the criminal offender. Lecture 3 hours per week.

**LWNF 187 TRAFFIC ADMINISTRATION AND CONTROL (3 cr.)**—Modern methods of traffic facilitation and control; Virginia traffic offenses, techniques of selective enforcement and of accident investigation, police responsibilities in special situations; practical exercises. Lecture 3 hours per week.

**LWNF 188 TRAFFIC ACCIDENT INVESTIGATION (3 cr.)**—Prerequisite LWNF 187 or equivalent. Conduct at the scene of a traffic accident; required tests and measurements, collection and handling of evidence, interviewing and interrogations, note-taking, case preparation and court appearances, practical exercises. Lecture 3 hours per week.

**LWNF 198, 199**—See General Usage Courses on page 154.

**LWNF 216 MUNICIPAL POLICE ADMINISTRATION (3 cr.)**—Police organization and management techniques with emphasis on the urban department; the application of sound management guidelines and techniques to police administration including the growing use of data processing. Lecture 3 hours per week.

**LWNF 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.

**LWNF 231-232-233 CRIMINAL LAW, EVIDENCE, AND PROCEDURES I-II-III (3 cr.) (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 for one year of Criminal Law. Lecture 3 hours per week.

**LWNF 236 CRIMINAL PROCEDURES (3 cr.)**—Organization and jurisdiction of Virginia law enforcement agencies; selective review of the criminal code of Virginia, with emphasis on the most frequently occurring misdemeanors not covered in "Criminal Law." Limited to students who have completed all first-year Police Science courses or who have received departmental permission. Lecture 3 hours per week.

**LWNF 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.

**LWNF 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.

**LWNF 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.

**LWNF 247 ADVANCED CRIMINAL INVESTIGATION (3 cr.)**—Prerequisite LWNF 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.

**LWNF 248 SPECIAL INVESTIGATION TECHNIQUES (3 cr.)**—The development and retention of unique information systems such as informants, surveillance, under-cover assignments, and use of electronic aids. Lecture 3 hours per week.

**LWNF 254-255 CRIMINAL INVESTIGATION TECHNIQUES I-II (4 cr.) (4 cr.)**—Crim scene searches, collection and preservation of evidence, interrogations, and interviews, obtaining statements, admissions and confessions, testifying in court. Advanced laboratory study relating to investigations, introduction and use of scientific aids and examinations, applications of investigative techniques to specific offenses. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**LWNF 266 POLICE COMMUNICATIONS SYSTEMS (2 cr.)**—Modern communications systems as they apply to daily operational requirements of a police organization. Includes basic methods and principles of communications with emphasis on procedures in an effective police communications system; practical exercises. Lecture 2 hours per week.

**LWNF 276 INDUSTRIAL AND COMMERCIAL SECURITY (3 cr.)**—Organization, methods, techniques and equipment for physical protection of industrial and commercial facilities and prevention of theft of merchandise and valuables by persons within and without those facilities. Practical exercises. Lecture 3 hours per week.

**LWNF 298, 299**—See General Usage Courses on page 154.

## MARKETING

**MKTG 100 PRINCIPLES OF MARKETING (3 cr.)**—The principles, methods, and problems involved in the distribution and marketing of goods and services. The various marketing agents: wholesaler, broker, agent, cooperative, and trade associations. Discussions of present day problems and policies connected with the distribution and sale of commodities, pricing, advertising and promotion, and buyer motivation. Lecture 3 hours per week.

**MKTG 109 PRINCIPLES OF SALESMANSHIP (3 cr.)**—The development of selling standards, methods and buying motives. The organization and training processes necessary for a well coordinated sales plan through united efforts of the sales force. The training of sales personnel for maximum efficiency in selling. Lecture 3 hours per week.

**MKTG 131-132-133 TRAFFIC AND TRANSPORTATION I-II-III (3 cr.) (3 cr.) (3 cr.)**—The requirements for traffic managers and others concerned with such fields as railroading, trucking, and air travel. The course outlines the development of transportation, transportation regulations, tariffs and rates, and the regulations and applications of traffic management. Lecture 3 hours per week.

**MKTG 134-135 ECONOMICS OF TRANSPORTATION I-II (3 cr.) (3 cr.)**—Economic analysis and understanding of transportation systems. Rail, motor, water, air and pipeline carriers are examined for importance, cost, utility and inherent and comparative advantages. The economic basis for government regulation and for transportation pricing with emphasis on competition and coordination. Transport policy as reflected in current studies and legislation. 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.

**MWTG 164 PRINCIPLES OF REAL ESTATE I (3 cr.)**—Practical applications of real estate management principles. Includes a study of contracts, deeds, mortgages, bonds, leases, search, real property leasing and appraisal. Lecture 3 hours per week.

**MKTG 165 PRINCIPLES OF REAL ESTATE II (3 cr.)**—Prerequisite MKTG 164. Continued examination of marketing fundamentals. Emphasis on the techniques required for proper selection, analysis and listing of real estate properties. How to determine needed data, how to analyze forms and records for recording and presenting data. Lecture 3 hours per week.

**MKTG 208 BANK PUBLIC RELATIONS AND MARKETING (3 cr.)**—The basis of public relations, both internal and external; the why, what, and how of public relations and marketing. An overview in terms of what everyone in banking should know about the essentials of bank public relations and marketing. Lecture 3 hours per week.

**MKTG 209 SALES MANAGEMENT (3 cr.)**—From the viewpoint of management, study of the organization and operation of the sales division within the business enterprise. Planning, organizing, and controlling the total sales effort; use of the case method of learning. Lecture 3 hours per week.

**MKTG 225 PRINCIPLES OF ADVERTISING (3 cr.)**—Study of the functions, principles, and techniques of advertising, including the role of advertising in the marketing system. Lecture 3 hours per week.

**MKTG 226 MERCHANDISE BUYING AND CONTROL (3 cr.)**—The place of buying and inventory control in the merchandising cycle; the techniques used in developing merchandise plans, model stock, unit control and inventory systems, merchandise selection policy and pricing for profits. Lecture 3 hours per week.

**MKTG 228 SALES PROMOTION AND CUSTOMER RELATIONS (3 cr.)**—The scope and total activities of a sales promotion program designed to coordinate advertising, display and publicity. Effective use of the sales forces and store policies to develop favorable customer relationships. Institutional practices which develop goodwill for the store. Lecture 3 hours per week.

**MKTG 231-232-233 INTERSTATE COMMERCE LAW I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite MKTG 133 or equivalent. A study of transportation law including the Interstate Commerce Act. First quarter devoted to constitutional issues, nature of interstate commerce, franchises, and combinations of carriers. Second quarter devoted to finance, rates, and services. Third quarter concerned with procedure, loss and damage, and related statutes. Lecture 3 hours per week.



**MKTG 236 PHYSICAL DISTRIBUTION (3 cr.)**—Business firm's functions and activities in the evaluation, purchase, and direction of transportation services provided by various transportation media; selection of transportation media, private transportation and management of equipment, order processing, supply scheduling, inventory control and customer service in developing a total system approach to marketing logistics. Lecture 3 hours per week.

**MKTG 238 TRAFFIC MANAGEMENT (3 cr.)**—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 followup relations. Lecture 3 hours per week.

**MKTG 268 PROPERTY MANAGEMENT (3 cr.)**—Prerequisite MKTG 165. The field of property management; professional aspects of real estate brokerage, properties, neighborhood analysis, tenants and qualifications, aspects of maintenance and repair. Lecture 3 hours per week.

**MKTG 269 REAL ESTATE FINANCE (3 cr.)**—Principles and practices of financing real estate sales and properties, analysis of various types of mortgage payments and contracts, financing homes and industrial properties and buildings; loan application, relations between correspondent and investor, construction loans. Lecture 3 hours per week.

**MKTG 277 LEGAL ASPECTS OF REAL ESTATE (3 cr.)**—A study of Virginia real estate law including rights incident to property ownership and management, agency contract and application to real estate transfer, conveyancing, probate proceedings, trust transactions. Lecture 3 hours per week.

**MKTG 298, 299**—See General Usage Courses on page 154.

## MATHEMATICS

**MATH 01 DEVELOPMENTAL MATHEMATICS (5 cr.)**—A developmental course which bridges the gap between a weak mathematical foundation and the knowledge necessary for the study of mathematical courses in technical and professional programs. Arithmetic, algebra, geometry and trigonometry will be covered. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Lecture 5 hours per week.

**MATH 05 BASIC ARITHMETIC (1-5 cr.)**—A developmental course in review of arithmetical principles and computations, designed to develop the mathematical proficiency necessary for selected curriculum entrance. Students may re-register for this course in subsequent quarters as necessary until the course objectives are completed. Variable hours.

**MATH 31-32-33 ALGEBRA I-II-III (5 cr.) (5 cr.) (5 cr.)**—Fundamental algebraic calculations for students who need a survey of the basic principles of algebra. Includes the essential topics of the first two years of high school algebra. Lecture 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 154.

**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 121-122-123 ENGINEERING TECHNICAL MATHEMATICS I-II-III (5 cr.) (5 cr.) (5 cr.)**—Prerequisite three units of high school mathematics other than general mathematics, and satisfactory score on appropriate mathematics proficiency examinations. Algebra, trigonometry, introduction to calculus, and some emphasis on graphical methods. The course sequence includes solutions of linear and quadratic equations, trigonometric functions, trigonometric curve sketching, logarithms, ratio, proportion and variation, vectors, complex numbers and the binomial theorem. Credit cannot be obtained for both this course and MATH 161-162-163 (College Mathematics). Lecture 5 hours per week.

**MATH 141-142-143 INTRODUCTORY MATHEMATICAL ANALYSIS I-II-III (5 cr.) (5 cr.) (5 cr.)**—Prerequisites are a satisfactory score on appropriate mathematics proficiency examination and four units of high school mathematics including two units of algebra, one of geometry, and one-half of trigonometry or equivalent. A modern unified course in analytic geometry and calculus including functions, limits, derivatives, differentials, indefinite integrals, definite integrals, and application. Lecture 5 hours per week.

**MATH 151-152-153 INTRODUCTION TO BUSINESS MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite a strong background in basic arithmetic operations. Instruction, review and drill in percentage, cash and trade discounts, markup, payroll, sales, property and other taxes, simple and compound interest, bank discounts, interest, investments and annuities. Lecture 3 hours per week.

**MATH 161-162-163 COLLEGE MATHEMATICS I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite a satisfactory score on appropriate mathematics proficiency examinations and three units of high school mathematics including two units of algebra and one unit of geometry or equivalent. 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 164-165 COLLEGE MATHEMATICS I-II (5 cr.) (4 cr.)**—Two quarter sequence covering MATH 161-162-163. Lecture 5-4 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 and a satisfactory score on appropriate mathematics proficiency examinations. 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 184-185 GENERAL COLLEGE MATHEMATICS I-II (5 cr.) (4 cr.)**—Two quarter sequence covering MATH 181-182-183. Lecture 5-4 hours per week.

**MATH 198, 199**—See General Usage Courses page 154.

**MATH 221-222 ADVANCED ENGINEERING TECHNICAL MATHEMATICS I-II (4 cr.) (4 cr.)**—Prerequisite MATH 123. Differential and integral calculus with emphasis on applied problems in the appropriate technological fields. Lecture 4 hours per week.

**MATH 241-242-243 ADVANCED MATHEMATICAL ANALYSIS I-II-III (4 cr.) (4 cr.) (4 cr.)**—(for students in Engineering and Science Curricula.) Prerequisite MATH 143. A modern course including vectors, matrices, partial differentiation, multiple integrals, infinite series, and differential equations. Lecture 4 hours per week.

**MATH 271-272-273 CALCULUS I-II-III (4 cr.) (4 cr.) (4 cr.)**—Prerequisite MATH 163 or equivalent. Topics include functions, limits, continuity, differentiation and integration of algebraic, trigonometric, and hyperbolic functions with applications, vectors in three dimensions, definite integrals, indeterminate forms, and partial differentiation. Lecture 4 hours per week.

**MATH 298, 299**—See General Usage Courses on page 154.

## MECHANICAL

**MECH 131 MACHINE LABORATORY I (2 cr.)**—Fundamental machine operations of drilling, reaming, turning between centers, chuck work, thread chasing, shaper, layout, finishing, cutting speeds, tool care, tool grinding, surface grinder, milling machine operations and tools. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

**MECH 132 MACHINE LABORATORY II (2 cr.)**—Continued study of practical and industrial applications and set up, inspection tools, gauges, tapers, gear cutting, square threads and fits. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

**MECH 156 MECHANISMS (2 cr.)**—Prerequisites PHYS 111 and MATH 121. 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 and layout method for designing cams and gear train. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

**MECH 176 INTRODUCTION TO NUMERICAL CONTROL MACHINING (3 cr.)**—Prerequisite MECH 132 or equivalent. An introduction to NC machining including dimensioning, programming, tape preparation, machine setup and machine problems. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**MECH 237-238 MACHINE DESIGN I-II (4 cr.) (4 cr.)**—Prerequisites ENGR 152 and MATH 123. The analytical design of bearings, clutches, couplings, brakes, springs, gearing systems, and power shafting. Emphasis on methods of constructing machine parts and specifications of materials and manufacturing processes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**MECH 246 METALLURGY I (4 cr.)**—Fundamentals of metallurgy, grain size, effect of alloy content, and strength testing devices. Different alloys will be tested to determine the effect of heat treatment. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**MECH 264 THERMODYNAMICS I (4 cr.)**—Prerequisite MATH 123. Characteristics of gases; applied study of gas cycles and combustion processes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**MECH 265 THERMODYNAMICS II (4 cr.)**—Prerequisite MECH 264. Advanced thermodynamics with emphasis on applications relating to internal combustion engines, steam cycles and refrigeration systems. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**MECH 267 FLUID MECHANICS (4 cr.)**—Prerequisites PHYS 111 or ENGR 151. Properties of fluids and fluid flow, Bernoulli's Theorem, measuring devices, viscosity and dimensional analysis. Emphasis on pumps, piping, and fluid motors. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**MECH 298**—See General Usage Courses on page 154.

## MENTAL HEALTH

**MENT 104 INTRODUCTION TO MENTAL HEALTH I (3 cr.)**—An examination of the concepts of mental health and mental illness. A study of the basic factors involved in any behavior and the quantitative relationship of mental health to mental illness. Laboratory includes observation in various helping agencies. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**MENT 105 INTRODUCTION TO MENTAL HEALTH II (3 cr.)**—Prerequisite MENT 104 and PSYC 130. Continuation of study of concepts of mental health and mental illness. Examination of concepts relevant to mental health and mental illness in children.

**MENT 106 INTRODUCTION TO MENTAL HEALTH III (3 cr.)**—Prerequisite MENT 105. Continuation of study of concepts of mental health and mental illness. Examination of concepts relevant to mental health and mental illness in adults.

**MENT 116 ACTIVITIES THERAPIES (3 cr.)**—Prerequisite MENT 104. 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 of 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 3 hours, Total 5 hours per week.

**MENT 166 MENTAL RETARDATION I (3 cr.)**—Characteristics of parents and families of the developmentally disabled. Problems in the home, parental reactions and responses to the diagnosis of mental retardation and cerebral palsy, the developmentally disabled and their impact on the family, needs of parents of the developmentally disabled, overprotection and rejection by parents, rivalry between the retarded and normal siblings, problems of institutionalization, and concepts of parenthood; effects on the social and psychological development and treatment of the developmentally disabled.

**MENT 167 MENTAL RETARDATION II (3 cr.)**—Current problems and directive readings of the developmentally disabled. Major problems in working with the cerebral palsied, mentally retarded and epileptic, their implications and possible alternative solutions. The legal rights of the developmentally disabled, love, dating, marriage, and birth control for the developmentally disabled, the occupational adjustment of the retardate, work and the need to belong, the normalization principal—its implications for the future, and community residences for the retarded.

**MENT 168 MENTAL RETARDATION III (3 cr.)**—Personality development of and therapeutic techniques for the mentally retarded. The dynamic structure of the personality of the retardate with emphasis on self-image, self-concept, and defense mechanisms. Alternative individual and group therapy techniques in counseling the disturbed adolescent and adult as well as a review of common social inadequacies among the mildly and moderately retarded.

**MENT 190**—Prerequisite **HLTH 104** and **MENT 104**—See General Usage Courses on page 154.

**MENT 221-222-223 MENTAL HEALTH I-II-III (3 cr.) (3 cr.) (3 cr.)**—Principles and methods of interviewing, observing, recording, summarizing, and communicating human reactions (including both verbal and non-verbal communication) and the underlying rationale for various methods. Includes a study of psychotherapy, group skills (group dynamics, role playing, leadership of group activities, other teaching skills), behavioral modification and related therapies, use of milieu, family therapies, hospital treatment, drug therapies, community resources, mental health professions, coordination of treatment program and participation in development of treatment programs. Special emphasis is placed on therapeutic use of everyday experiences in development of therapeutic relationships. Lecture 3 hours per week.

**MENT 236 PROBLEMS IN ADOLESCENCE (3 cr.)**—Prerequisite **MENT 101** or **104**, **PSYC 130**, or departmental approval. An examination of the problems associated with adolescence with an indepth look at personality, environmental, and developmental factors. Specific intervention strategies will be covered with emphasis on theory, rationale, and techniques appropriate for this age group. A review of contemporary intervention will be incorporated with a look toward the future needs of this group. Lecture 3 hours per week.

**MENT 237 PROBLEMS IN AGING (3 cr.)**—Prerequisites **MENT 101** or **104**, **BIOL 154-155**, or departmental approval. An examination of the problems associated with the aging process with an indepth look at personality changes and reaction to internal and external stress. Specific intervention strategies will be covered which attempt to rehabilitate and facilitate the adjustment of the aging client. Emphasis will be placed on rationale and technique as well as a review of psychological problems associated with such factors as organic and general physical deterioration, metabolic disturbances and social isolation. Lecture 3 hours per week.

**MENT 290, 298**—See General Usage Courses on page 154.

## MUSIC

\*Those courses marked with an asterisk may be taken as electives by students in any program that permits this; all other Music courses are for students enrolled in the Music program.

### Theory and Composition

\***MUSC 111-112-113 MUSIC THEORY I-II-III (4 cr.) (4 cr.) (4 cr.)**—Elements of musical notation. Structure of scales, intervals, triads and chords. Development of ability to sing at sight and write from dictation melodies in all keys, clefs, and meters. Beginning analysis of the Bach chorale style and construction of cadential phrases in that style. Similar experience at the keyboard. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**\*MUSC 211-212-213 ADVANCED MUSIC THEORY I-II-III (4 cr.) (4 cr.) (4 cr.)**  
—Continuation of MUSC 111-112-113. Development of facility in the analysis and usage of diatonic and chromatic harmonies. Continued study in analysis of Bach style, sight-singing, ear-training, and keyboard harmony. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

### **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 221-222-223 HISTORY OF MUSIC I-II-III (3 cr.) (3 cr.) (3 cr.)**—Primarily for music majors. A chronological study of musical styles from antiquity to the present time. Relationship of the historical development of music to parallel movements in art, drama, and literature. Development of techniques for listening analytically and critically to music. I. Music to 1600. II. 1600 to 1820. III. 1820 to present. Lecture 3 hours per week.

### **Applied Music**

Private lessons are available for either one or two hours of credit per quarter. The length of the lessons will be ½ hour for 1 hour credit and 1 hour for 2 hours credit. All courses in Applied Music may be repeated for credit for a total of 12 hours for the major and 6 hours for the minor. Laboratory 1-2 hours per week.

**MUSC 137 APPLIED MUSIC—VOICE (1-2 cr.)**—Singing, proper breath control, diction and development of tone. Standard vocal repertoire will be studied. Departmental permission required. One-two hours class voice lessons and/or one-two private lessons per week. 4-8 hours practice (laboratory) required.

**MUSC 237 ADVANCED APPLIED MUSIC—VOICE (1-2 cr.)**—A continuation of MUSC 137.

**MUSC 147 APPLIED MUSIC—KEYBOARD (1-2 cr.)**—Instruction in piano or organ. Standard repertoire will be studied. Departmental permission required. One-two hours class piano and/or one-two half-hour private lessons per week. 4-8 hours practice (laboratory) required.

**MUSC 247 ADVANCED APPLIED MUSIC—KEYBOARD (1-2 cr.)**—A continuation of MUSC 147.

**MUSC 157 APPLIED MUSIC—WOODWINDS (1-2 cr.)**—Instruction in fundamentals of the woodwind instruments for applied minors. Standard repertoire will be studied. Departmental permission required. One hour class lesson per week. 4-8 hours practice (laboratory) required.

**MUSC 257 ADVANCED APPLIED MUSIC—WOODWINDS (1-2 cr.)**—A continuation of MUSC 157.

**MUSC 167 APPLIED MUSIC—STRINGS (1-2 cr.)**—Instruction in fundamentals of the string instruments for applied minors. Standard repertoire will be studied. Departmental permission required. One hour class lesson per week. 4-8 hours practice (laboratory) required.

**MUSC 267 ADVANCED APPLIED MUSIC—STRINGS (1-2 cr.)**—A continuation of MUSC 167.

**MUSC 177 APPLIED MUSIC—BRASS (1-2 cr.)**—Instruction in fundamentals of the brass instruments for applied minors. Standard repertoire will be studied. Departmental permission required. One hour class lesson per week. 4-8 hours practice (laboratory) required.

**MUSC 277 ADVANCED APPLIED MUSIC—BRASS (1-2 cr.)**—A continuation of MUSC 177.

**MUSC 187 APPLIED MUSIC—PERCUSSION (1-2 cr.)**—Instruction in fundamentals of percussion instruments for applied minors. Standard repertoire will be studied. Departmental permission required. One hour class lesson per week. 4-8 hours practice (laboratory) required.

**MUSC 287 ADVANCED APPLIED MUSIC—PERCUSSION (1-2 cr.)**—A continuation of MUSC 187.

#### **Ensemble**

Courses in Ensemble consist of performance from the standard repertoires including study of ensemble techniques and interpretation. Departmental permission required. May be repeated for credit. Laboratory 3 hours per week.

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

**\*MUSC 238 CHORUS (1 cr.)**—A continuation of MUSC 138.

**MUSC 139 SMALL VOCAL ENSEMBLE (1 cr.)**

**MUSC 239 SMALL VOCAL ENSEMBLE (1 cr.)**—A continuation of MUSC 139.

**MUSC 148 ORCHESTRA (1 cr.)**—Students may receive credit for orchestra through participation in the Roanoke Symphony or Roanoke Youth Symphony.

**MUSC 248 ORCHESTRA (1 cr.)**—A continuation of MUSC 148.

**\*MUSC 149 BAND (1 cr.)**—The principal emphasis of the band program is in the performance of stage band literature of all styles.

**\*MUSC 249 BAND (1 cr.)**—A continuation of MUSC 149.

**MUSC 159 WOODWIND ENSEMBLE (1 cr.)**

**MUSC 259 WOODWIND ENSEMBLE (1 cr.)**—A continuation of MUSC 159.

**MUSC 169 STRING ENSEMBLE (1 cr.)**

**MUSC 269 STRING ENSEMBLE (1 cr.)**—A continuation of MUSC 169.

**MUSC 179 BRASS ENSEMBLE (1 cr.)**

**MUSC 279 BRASS ENSEMBLE (1 cr.)**—A continuation of MUSC 179.

**MUSC 189 PERCUSSION ENSEMBLE (1 cr.)**

**MUSC 289 PERCUSSION ENSEMBLE (1 cr.)**—A continuation of MUSC 189.

#### **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 125 CONSERVATION OF NATURAL RESOURCES (3 cr.)**—A course for the non-science major. The management of natural resources, balance of nature and man's importance in his environment. 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 111 FUNDAMENTALS OF NURSING I (5 cr.)**—The development of nursing skills for the physical, psychological, and social needs of patients. Selected clinical laboratory experience in cooperating health and welfare agencies. Lecture 3 hours, Laboratory 6 hours, Total 9 hours per week.

**NURS 112 FUNDAMENTALS OF NURSING II (6 cr.)**—Continuation of NURS 111. Lecture 3 hours, Laboratory 9 hours, Total 12 hours per week.

**NURS 113 FUNDAMENTALS OF NURSING III (8 cr.)**—Continuation of NURS 112. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

**NURS 199** See General Usage Courses on pages 147-148.

**NURS 221-222-223-224 NURSING IN MAJOR HEALTH PROBLEMS I-II-III-IV (8 cr.) (8 cr.) (8 cr.) (8 cr.)**—Prerequisites NURS 111-112-113, 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 United States. Lecture 4 hours, Laboratory 12 hours, Total 16 hours per week.

**NURS 298, 299**—See General Usage Courses on page 154.

## **PHILOSOPHY AND RELIGION**

**PHIL 101-102-103 INTRODUCTION TO PHILOSOPHY I-II-III (3 cr.) (3 cr.) (3 cr.)**—An introductory study of some philosophical issues concerning the perception and belief of man in society. Lecture 3 hours per week.

**PHIL 221 LITERATURE OF THE BIBLE I (3 cr.)**—A study of the literature of the Old Testament. Lecture 3 hours per week.

**PHIL 222 LITERATURE OF THE BIBLE II (3 cr.)**—A study of the literature of the New Testament. Lecture 3 hours per week.

**PHIL 226 COMPARATIVE RELIGION (3 cr.)**—A survey of the literature of comparative religions of the world. Lecture 3 hours per week.

## **PHYSICAL EDUCATION AND 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.



## PHYSICS

**PHYS 14 APPLIED PHYSICS I (2 cr.)**—The fundamentals of physics, with application. Deals with the properties of matter and mechanics. Lecture 2 hours per week.

**PHYS 16 APPLIED PHYSICS III (3 cr.)**—The fundamentals of electricity and magnetism; electrostatic sources, effects of electric current, basic direct current circuits, electromagnetism, alternating current, and generators and motors. Lecture 3 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 requirement 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 198, 199**—See General Usage Courses on page 154.

**PHYS 221-222-223 GENERAL UNIVERSITY PHYSICS I-II-III (4 cr.) (4 cr.) (4 cr.)**—Corequisite MATH 241 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 and atomic structure. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**PHYS 298, 299**—See General Usage Courses on page 154.

## 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 in 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 154.

**PSYC 201-202-203 GENERAL PSYCHOLOGY I-II-III (3 cr.) (3 cr.) (3 cr.)**—The study of human behavior relating experimental data to practical problems: the measurement of ability, sensory and perceptive processes, organic basis of behavior, heredity, maturation, learning and thinking, motivation, emotion, personality and social factors in behavior. Lecture 3 hours per week.

**PSYC 204-205 GENERAL PSYCHOLOGY I-II (5 cr.) (4 cr.)**—The principles of behavior relating experimental data to practical problems: the measurement of ability, sensory and perceptive processes, organic basis of behavior, heredity, maturation, learning and thinking, motivation, emotion, personality and social factors in behavior. Lecture 5-4 hours per week.

**PSYC 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 117 or PSYC 110 and 116. Intergroup relations and police work. Some facts about racial, religious and national differences. Prejudice, suggestion, emotion, frustration and aggression in interpersonal and intergroup situations. Types of abnormal behavior likely to be encountered in police work. Lecture 3 hours per week.

**PSYC 298, 299**—See General Usage Courses on page 154.

## **RADIOLOGY**

**RADL 100 INTRODUCTION TO RADIOLOGY AND PROTECTION (2 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. Lecture 2 hours per week.

**RADL 114 PRINCIPLES OF EXPOSURE I (4 cr.)**—The control and use of radiation to produce safe levels of radioactive energies necessary for the production of radiographs. Includes the developmental process necessary to produce artifact free radiographs. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**RADL 115 PRINCIPLES OF EXPOSURE II (4 cr.)**—Prerequisite RADL 114. The controlled use of radiation producing sources both natural and man-made. Studies in the employment of exposure relative to pediatric radiology are presented to the student. 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 136 PATIENT CARE PROCEDURES (2 cr.)**—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 2 hours per week.

**RADL 190, 199**—See General Usage Courses on page 154.

**RADL 210 PROTECTION AND PATIENT SAFETY (2 cr.)**—Prerequisite RADL 100. An advanced study in the use of protective devices to insure maximum protection for the patient and fellow employees from excessive amounts of radiation and electrical hazards. Lecture 2 hours per week.

**RADL 216 APPLIED RADIATION PHYSICS (4 cr.)**—Prerequisite RADL 114. The circuiting and electronics of x-ray machines. The structure of radioactive generators and the resultant isotopes. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.

**RADL 240 INTRODUCTION TO RADIONUCLIDES (2 cr.)**—Prerequisite RADL 100. The emphasis of this course is to introduce the student to the safe employment of radionuclides for diagnostic and therapeutic examinations. Lecture 2 hours per week.

**RADL 246 THERAPY (2 cr.)**—The use of supervoltage and other radioactive sources for the cure and palliative treatment of diseases. A survey of major diseases treated with radiation therapy will be presented in conjunction with radiation treatment plans. Lecture 2 hours per week.

**RADL 256 SPECIAL PROCEDURES (3 cr.)**—Prerequisites RADL 124 and BIOL 155. The use of special radiographic and surgical equipment employed in the more complicated investigation of internal conditions of the human body. Lecture 3 hours per week.

**RADL 276 RADIOLOGY DEPARTMENTAL ADMINISTRATION (2 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 intra departmental communications, and budgetary cost centers. Lecture 2 hours per week.

**RADL 290, 298, 299**—See General Usage Courses on page 154.

## SECRETARIAL SCIENCE

**SECR 11 TYPEWRITING I (3 cr.)**—The typewriting keyboard and skills essential to obtain employment in an office occupation. Correct typing techniques and practice in production problems such as centering, letters, manuscripts, simple tabulations, and forms. Lecture 1 hour, Laboratory 4 hours, Total 5 hours per week.

**SECR 20 BASIC STENOGRAPHIC SKILLS (3 cr.)**—Elementary skills fundamental to the effectiveness of shorthand: sensitivity to phonetic sounds; mechanics of spelling and word differentiation with emphasis on the vocabulary of business; work 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 39 RECORDKEEPING (3 cr.)**—The keeping of financial, personnel, inventory and other records in the office. Lecture 3 hours per week.

**SECR 111 TYPEWRITING I (3 cr.)**—Introduction to keyboard with emphasis on good technique and machine mastery; letter format and styles, tabulation and centering, manuscript typing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**SECR 112 TYPEWRITING II (3 cr.)**—Prerequisite SECR 111 or departmental permission. Continuation of skill building with emphasis on standards required to meet job requirements in production typing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**SECR 113 TYPEWRITING III (3 cr.)**—Prerequisite SECR 112 or departmental permission. Skill development with high standard required to meet job requirements in production typing. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**SECR 114 TYPEWRITING IV (3 cr.)**—Production typing of advanced problems involving rough drafts, tabulations, 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 101. Shorthand principles in Gregg Diamond Jubilee Series with emphasis on reading and writing skills, associated vocabulary and grammar. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**SECR 122 SHORTHAND II (4 cr.)**—Prerequisite SECR 121 or departmental permission. Reinforcement of shorthand principles, further development of general business vocabularies and English usage, general business dictation. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**SECR 123 SHORTHAND III (4 cr.)**—Prerequisite SECR 122 or departmental permission. Increased speed in general business dictation, introduction of specialized business dictation with emphasis on vocabularies. Lecture 3 hours, Laboratory 2 hours, Total 5 hours per week.

**SECR 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, recordkeeping, business mathematics, and communication classes in performing clerical activities in the office. Special emphasis is placed on development of skills in the operation of stencil and spirit duplicating machines, selection of duplication process, and a study of type styles, paper, typewriter ribbons. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SECR 157 MACHINE TRANSCRIPTION (3 cr.)**—An introduction to machine transcription incorporating good listening techniques, grammar, punctuation, and correct business English. Practice in transcribing machine dictation. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SECR 198**—See General Usage Courses on page 154.

**SECR 216 EXECUTIVE TYPEWRITING (3 cr.)**—Prerequisite SECR 113 or departmental permission. Further development of speed and accuracy on production typing with emphasis on employment standards. Instruction in use of the executive style typewriters, reports, tabulations, statistical materials and justified copy. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SECR 217 TYPEWRITING SKILL BUILDING (3 cr.)**—Prerequisite SECR 113 or departmental permission. Further development of speed and accuracy on production typing with emphasis on employment standards. Preparation for employers' secretarial placement examinations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**SECR 219 MAGNETIC TAPE SELECTRIC TYPEWRITER (3 cr.)**—Prerequisite departmental permission. Operation of automatic typewriter, procedures for recording and playing back from tapes, revision and updating of tapes, merging information from two tapes. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**SECR 221 TRANSCRIPTION I (3 cr.)**—Prerequisites SECR 113 and SECR 123 or 133. Review of principles of shorthand, development of vocabulary and phrases, speed building on general business dictation and transcription. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SECR 222 TRANSCRIPTION II (3 cr.)**—Prerequisite SECR 221 or departmental permission. Continuation of speed building with emphasis on particular areas of general business, developing special vocabularies, phrases, and shortcuts. Emphasis on spelling, grammar, and other transcription skills. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SECR 223 (GENERAL) TRANSCRIPTION (3 cr.)**—Prerequisite SECR 222 or departmental permission. Speed building in typical business dictation with speed and accuracy in transcription from shorthand notes. Preparation for employers' secretarial placement examinations. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SECR 224-225 (LEGAL) TRANSCRIPTION I-II (3 cr.) (3 cr.)**—Prerequisite SECR 221 or departmental permission. Legal secretary preparation. Skill in taking dictation and transcribing material involving legal shorthand forms and phrases. Proficiency in use of legal vocabulary, forms, and procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SECR 227 (MEDICAL) TRANSCRIPTION (3 cr.)**—Prerequisite SECR 222 or departmental permission. Medical secretary preparation. Development of skill in taking dictation and transcribing material involving medical shorthand forms and phrases. Proficiency in use of medical vocabulary forms, and procedures. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SECR 241 SECRETARIAL PROCEDURES I (3 cr.)**—Prerequisite SECR 113. Development of skills in operation of stencil and spirit duplicating machines. Preparation of copy for reproduction of offset, stencil, and spirit process. Criteria for selecting a duplicating process. Study of type styles, paper, type-writer 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 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 298, 299**—See General Usage Courses on page 154.

## SOCIAL SCIENCE

**SOSC 101-102-103 CONTEMPORARY AMERICAN CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.)**—An analysis of the factors involved in the development of the American society and American culture to develop an understanding of American history, American economics, and man's role in society. Lecture 3 hours per week.

**SOSC 121-122-123 CURRENT AMERICAN SOCIAL PROBLEMS I-II-III (3 cr.) (3 cr.) (3 cr.)**—A survey of contemporary America from the perspective of the social sciences designed to provide a basis for the forming of individual judgments of major American domestic issues. The Constitution of the United States provides a primary vehicle for exploration of problems underlying current political, economic, social and individual behavioral patterns and for discussions of relevant applications in the news of today. 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.) (4 cr.)**—The fundamental concepts and the general principles of sociology; social institutions, population study, human ecology and community study, culture, human nature and personality, social interaction and stratification, and social problems. Lecture 5-4 hours per week.

**SOCI 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 154.

**SOCI 236 MARRIAGE AND THE FAMILY (3 cr.)**—Prerequisite SOCI 101, 104, or 185. 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, 240, or 244. The application of the concept of culture to the study of contemporary societies, both primitive and modern. Such institutional areas as magic and ritual, crime, custom, law, economy, courtship, marriage and childrearing will be analyzed cross-culturally. 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 on page 154.

**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 231-232-233 SURVEY OF SPANISH LITERATURE AND CIVILIZATION I-II-III (3 cr.) (3 cr.) (3 cr.)**—Prerequisite SPAN 203 or equivalent. An introduction to Spanish life and culture and to the contributions of Spain to world civilization from medieval times to the present. Readings in the original Spanish. Spanish is used in the classroom. Lecture 3 hours per week.

**SPAN 299**—See General Usage Courses on page 154.

## **SPEECH AND DRAMA**

**SPDR 106-107 INTRODUCTION TO THE THEATRE I-II (3 cr.) (3 cr.)**—The principles of drama; the study of the development of theatre production; study of selected plays as theatrical presentations. Lecture 2 hours, Laboratory 3 hours, Total 5 hours per week.

**SPDR 111-112-113 ACTING I-II-III (3 cr.) (3 cr.) (3 cr.)**—A study of styles of acting. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SPDR 119 THEATRE WORKSHOP (1-5 cr.)**—Organization and work in the various activities of play production. Practice in set design, stage carpentry, theatre development, sound, costumes, light, stage managing, props, promotion, and stage crew. May be repeated for credit. Variable hours.

**SPDR 137 PUBLIC SPEAKING (3 cr.)**—Development of skill in speech-making. 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 156 SPEECH WORKSHOP (1-5 cr.)**—Organization and work in the various competitive speech activities; debate, oratory, extemporaneous speaking, prose, and poetry reading. May be repeated for credit. Variable hours.

**SPDR 157 DEBATE (3 cr.)**—Prerequisite either SPDR 137, or divisional permission. The presentation of oral argument and debate. Emphasis upon effectiveness in the analysis of issues, evidence, the reasoning process and skill in oral presentation. Lecture 3 hours per week.

**SPDR 198** See General Usage Courses on page 154.

**SPDR 218 DIRECTING (3 cr.)**—Fundamentals of stage direction. Lecture 3 hours per week.

**SPDR 230 ADVANCED PUBLIC SPEAKING (5 cr.)**—Prerequisite either SPDR 137, or divisional permission. Preparation and delivery of the various advanced forms and methods of public address. Lecture 5 hours per week.  
**SPDR 248 PERSUASION (3 cr.)**—Prerequisite either SPDR 137 or divisional permission. Principles and practices of persuasion with emphasis on practical application. Lecture 3 hours per week.



**SPDR 266 THE ART OF THE FILM (3 cr.)**—An introduction to the art of the film, viewing, discussion and analysis of selected films; introduction to the film techniques of composition, shot sequence, lighting, visual symbolism, sound effects, and editing. Lecture 2 hours, Laboratory 2 hours, Total 4 hours per week.

**SPDR 276 ORAL INTERPRETATION (3 cr.)**—Prerequisite divisional permission or speech communication course. Introduction to the study of techniques and styles of oral reading. Lecture 3 hours per week.

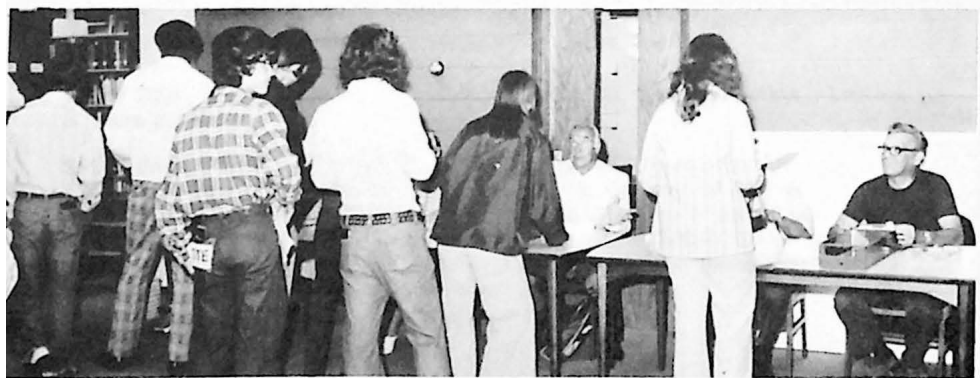
**SPDR 298, 299**—See General Usage Courses on page 154.

## WELDING

**WELD 100 FUNDAMENTALS OF WELDING (2 cr.)**—An introduction to electric and gas welding and cutting. The fundamental principles of joining ferrous and non-ferrous metals, welding and cutting processes, equipment operation, and safety procedures with emphasis upon welding and cutting procedures and practice in the automotive area. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

**WELD 101 WELDING I (OXACETYLENE) (2 cr.)**—Oxygen/acetylene welding and cutting including safety of equipment; welding, brazing, and soldering procedures and cutting procedures. Lecture 1 hour, Laboratory 3 hours, Total 4 hours per week.

**WELD 115 ARC AND GAS WELDING (4 cr.)**—Arc and gas welding practices. Safety, general welding practices, and effects of welding on metal. Lecture 3 hours, Laboratory 3 hours, Total 6 hours per week.



## PART VI

# STATE AND LOCAL ORGANIZATION

## STATE BOARD FOR COMMUNITY COLLEGES

Dr. Daniel C. Lewis, Chairman

Mr. Gordon C. Willis, Vice-Chairman

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Mr. Carl E. Bain

Mrs. Helmi E. Carr

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Mr. Richard S. Reynolds, Jr.

Mr. William J. Vaughan

Mr. Y. B. Williams, Jr.

Mr. Gordon C. Willis

## VIRGINIA COMMUNITY COLLEGE SYSTEM

Dr. Dana B. Hamel, Chancellor

## VIRGINIA WESTERN COMMUNITY COLLEGE BOARD

Mr. W. Darnall Vinyard, Chairman, City of Vinton

Mrs. Hunter M. Painter, Vice-Chairman, City of Fincastle

Dr. Harold H. Hopper, Executive Secretary

Mrs. John M. Chaney, City of Roanoke

Mr. Warner N. Dalhouse, City of Roanoke

Mr. C. L. Jennings, County of Roanoke

Mrs. Hunter M. Painter, County of Botetourt

Mr. William S. Russell, County of Roanoke

Mr. Henry E. Thomas, City of Roanoke

Mr. W. Darnall Vinyard, County of Roanoke

Mr. Richard M. Watson, County of Craig

Mr. C. E. Webber, City of Salem

Dr. Frank B. Wolfe, County of Franklin

## PRESIDENT

Dr. Harold H. Hopper

**ADMINISTRATION**

- HOPPER, HAROLD H.** President of the College  
B.S.—Washington University, 1951  
M.S.—Washington University, 1954  
Ed.D.—University of Florida, 1965
- MCCABE, JAMES N.** Administrative Assistant to the President  
A.B.—West Virginia University, 1940
- COOPER, JOHN J.** Dean of Instruction  
B.M.E.—University of Kansas, 1957  
M.M.E.—University of Kansas, 1958  
Ed.D.—University of Colorado, 1965
- CUMMINS, DANIEL G.** Dean of Financial and Administrative Services  
B.S.—University of Maryland, 1957  
M.B.A.—George Washington U., 1960
- RACE, HARRY C.** Dean of Student Services  
B.S.E.E.—Northeastern University, 1942  
M.S.—Radford College, 1965  
Ed.D.—Virginia Polytechnic Institute & State University, 1974
- GENTRY, CARROLL L.** Chairman, Division of Business Science  
B.S.—East Tennessee State University, 1965  
M.B.A.—East Tennessee State University, 1967
- HILL, JAMES P., JR.** Chairman, Division of Science and Mathematics  
B.S.—Roanoke College, 1957  
M.Ed.—University of Va., 1963  
Ed.D.—Virginia Polytechnic Institute & State University, 1974
- PHELPS, HUGH B.** Chairman, Division of Engineering/Industrial & Health Technologies  
B.M.E.—Clarkson College of Technology, 1950  
M.M.E.—Clarkson College of Technology, 1956
- PULLEN, PAUL T.** Chairman, Division of Humanities  
A.B.—Asbury College, 1949  
M.Th.—Pittsburgh Theological Sem., 1957  
Ph.D.—University of Pittsburgh, 1961
- SHIRLEY, WILLIAM T.** Chairman, Division of Social Science & Public Service Technology  
B.A.—Furman University, 1948  
M.A.—University of North Carolina, 1950
- STRAUSBAUGH, MAURICE** Director, Continuing Education  
B.A.—Juniata College, 1950  
M.D.—Bethany Theological Seminary, 1953  
M.Ed.—Johns Hopkins University, 1966
- SYKES, CYRIL H.** Director, Learning Resources  
B.A.—Norwich University, 1947  
M.S.—Syracuse University, 1950
- BOWLING, HERBERT E.** Coordinator of Cooperative Education  
B.S.—Virginia Polytechnic Institute & State University, 1962  
M.S.—Virginia Polytechnic Institute & State University, 1973
- HILLMAN, DAVID L.** Coordinator of Library Services  
B.A.—College of William & Mary, 1969  
M.L.S.—University of Maryland, 1972

- HOUSTON, CHARLES A. **Coordinator of Institutional Research**  
 B.S.—University of Tennessee, 1964  
 M.M.—University of Tennessee, 1969
- KAZANJIAN, GARY **Coordinator, Audio-Visual Media**  
 B.A.—University of Iowa, 1970  
 M.S.—Brooklyn College, 1972
- KNISELY, ELLEN F. **Coordinator of Learning Laboratory**  
 B.S.—California (Pa.) State College, 1966  
 M.A.—West Virginia University, 1967
- NICKENS, HARRY C. **Coordinator of Counseling**  
 B.S.—Tennessee Tech. University, 1966  
 M.A.—Tennessee Tech. University, 1968  
 Ed.D.—University of Tennessee, 1972
- BLALOCK, DWIGHT E. **Administrative Data Processing Manager**  
 B.S.—University of Alabama, 1966  
 M.S.—Virginia Commonwealth University, 1970
- RYG, CHRIS J. **Radio Station Manager**  
 B.A.—University of Iowa, 1970
- ANDERSON, DONALD **Grants Officer**  
 B.S.—Louisiana State University, 1970  
 M.S.—V.P.I. & S.U., 1973

## FACULTY

- ANDERSON, DONALD **Instructor**  
**Grants Officer**  
 B.S.—Louisiana State University, 1970  
 M.S.—V.P.I. & S.U., 1973
- ARCHER, J. ANDREW **Professor**  
**Mathematics**  
 A.A.—Reinhardt Junior College, 1959  
 A.B.—Mercer University, 1961  
 M.A.—George Peabody College, 1965  
 Ph.D.—George Peabody College, 1972
- ARMINIO, ROBERT L. **Assistant Professor**  
**Architecture**  
 B. Arch.—University of Virginia, 1968
- BAKER, JAMES W., JR. **Assistant Professor**  
**Electrical/Electronics Engr.**  
 A.A.S.—Roanoke Technical Institute, 1965  
 B.S.—V.P.I. & S.U., 1971
- BANKS, HELEN K. **Instructor**  
**Developmental English**  
 B.A.—Grove City College, 1947
- BANKS, ROBERT G. **Associate Professor**  
**Music**  
 B.S.—Indiana (Pa.) State University, 1948  
 M.Ed.—Pennsylvania State University, 1952
- BASS, J. LOUIS **Assistant Professor**  
**Biology**  
 B.S.—University of Tennessee, 1960  
 M.A.—Vanderbilt University, 1971

- BENSON, G. DON** **Professor**  
 B.S.—Texas Western College, 1964  
 Ph.D.—Vanderbilt University, 1971  
Physics
- BIRMINGHAM, MICHAEL G.** **Assistant Professor**  
 B.A.—St. Bonaventure University, 1967  
 M.P.A.—University of Missouri, 1969  
Business Management
- BLALOCK, DWIGHT E.** **Associate Professor**  
Administrative Data Processing Manager  
 B.S.—University of Alabama, 1966  
 M.S.—Virginia Commonwealth, 1970
- BLEASE, ALFRED D.** **Associate Professor**  
 B.S.—Brown University, 1961  
 M.S.—University of Maine, 1965  
Physics
- BLOMBERG, ALBERT A.** **Associate Professor**  
 A.S.—Boston University, 1960  
 B.S.—Northeastern University, 1968  
 M.S.—V.P.I. & S.U., 1974  
Automotive Technology
- BONDS, ETHEL** **Instructor**  
 B.A.—Bennett College, 1971  
 M.A.—V.P.I. & S.U., 1973  
English
- BOWLING, HERBERT E.** **Associate Professor**  
 B.S.—V.P.I. & S.U., 1962  
 M.S.—V.P.I. & S.U., 1973  
Coordinator of Cooperative Education
- BOWMAN, BETTY R.** **Associate Professor**  
 B.S.—Madison College, 1960  
 M.Ed.—Virginia Polytechnic Institute, 1969  
Accounting
- BRANSCOM, SALLIE D.** **Assistant Professor**  
 B.S.—Radford College, 1957  
 M.Ed.—University of Virginia, 1962  
Accounting
- BRODY, MYRON R.** **Assistant Professor**  
 B.F.A.—Philadelphia College of Art, 1965  
 M.F.A.—University of Pennsylvania, 1968  
Art
- BROKER, THOMAS O.** **Associate Professor**  
 B.A.—Wesleyan University, 1936  
 J.D.—Cornell Law School, 1939  
 M.A.—Tufts University, 1969  
Law and Government
- BROWN, MARTHA L.** **Associate Professor**  
 B.S.S.A.—University of North Carolina, 1957  
 M.A.—East Carolina University, 1961  
Secretarial Science
- BRUSATI, JOHN F.** **Associate Professor**  
 B.A.—Southwestern College, 1962  
 M.Div.—Duke University, 1965  
 M.S.—Radford, 1970  
 M.A.—University of Virginia, 1971  
Sociology
- CALLIS, TRACY G.** **Assistant Professor**  
 B.S.—V.P.I. & S.U., 1963  
 M.A.—V.P.I. & S.U., 1975  
Data Processing
- CARR, GUY R.** **Assistant Professor**  
 B.S.—Virginia Polytechnic Institute, 1942  
 M.S.—V.P.I. & S.U., 1973  
Counseling

- CARTER, DOUGLAS**  
B.A.—University of Arizona, 1966  
M.A.—University of Arizona, 1968  
**Assistant Professor**  
Speech
- CHENG, FA-HWA**  
B.S.—National Taiwan University, 1961  
M.S.—V.P.I. & S.U., 1966  
Ph.D.—V.P.I. & S.U., 1970  
**Associate Professor**  
Civil Engr. Technology
- CHRISTIANSEN, PAUL A.**  
B.A.—Brown University, 1967  
M.S.—Brooklyn College, 1972  
**Instructor**  
Radio & Television  
Production Technology
- CLOWSER, MARGARET P.**  
B.A.—V.P.I. & S.U., 1970  
M.A.—V.P.I. & S.U., 1971  
**Instructor**  
English
- COHRON, JOSEPH W.**  
B.A.—College of William and Mary, 1933  
M.A.—Ohio University, 1941  
**Associate Professor**  
Speech and Drama
- COLEMAN, RONALD L.**  
B.S.—Virginia Commonwealth University, 1965  
M.Ed.—University of Virginia, 1969  
**Assistant Professor**  
Assistant Director of  
Continuing Education
- COLLIER, JANE GRAY**  
B.A.—Carson-Newman College, 1971  
M.S.—University of Tennessee, 1973  
**Instructor**  
Counseling
- COLLINSWORTH, ROGER ALLEN**  
B.S.—University of Dayton, 1972  
M.S.—Eastern Kentucky University, 1974  
**Assistant Professor, Program Head,**  
Police Science
- COOPER, JOHN J.**  
B.M.E.—University of Kansas, 1957  
M.M.E.—University of Kansas, 1958  
Ed.D.—University of Colorado, 1965  
**Professor**  
Dean of Instructor
- COUNCILL, GEORGE D.**  
B.S.—Lebanon Valley College, 1954  
M.A.—Scarritt College, 1959  
M.S.M.—Southern Methodist University, 1964  
**Instructor**  
Music
- CRAIG, BETTY C.**  
B.A.—Hollins College, 1946  
M.A.L.S.—Hollins College, 1971  
**Assistant Professor**  
English
- CRAWFORD, PATRICIA M.**  
B.A.—University of Oregon, 1930  
M.A.—State University of Washington, 1933  
**Assistant Professor**  
English
- CRITES, RICHARD W.**  
B.S.—Eastern Illinois University, 1967  
M.S.—Eastern Illinois University, 1968  
**Associate Professor**  
Biology
- CROCKETT, S. R., JR.**  
B.A.—University of Virginia, 1958  
M.S.—Radford College, 1967  
**Assistant Professor**  
English
- CROTTY, A. EUGENE**  
B.S.—University of Virginia, 1955  
M.B.A.—University of Virginia, 1957  
C.P.A.—Virginia, 1959  
**Professor**  
Business Administration

- CUMMINS, DANIEL G.** **Professor**  
 B.S.—University of Maryland, 1957 Dean of Financial and  
 M.B.A.—George Washington U., 1960 Administrative Services
- DAVID, RITA H.** **Assistant Instructor**  
**Radiologic Technology**  
 Certificate in Radiologic Technology, Stevens Clinic Hospital, 1950
- DEARBORN, CHARLES E., JR.** **Assistant Professor**  
 B.S.—Boston University, 1965 **Automotive Technology**  
 Certificate—Wentworth Institute, 1958
- DEVINS, GEORGE V.** **Assistant Professor**  
 B.A.—San Jose State College, 1939 **Health/Physical Education**  
 M.S.—Radford College, 1970  
 Certified—Medical Rehabilitation Coordinator, 1956
- DICKERSON, VERA M.** **Assistant Professor**  
 B.A.—Radford College, 1968 **Art**  
 M.F.A.—American University, 1970
- DURHAM, LINDA E.** **Instructor**  
 B.A.—Elon College, 1968 **Music**  
 M.M.—Univ. of North Carolina, 1971
- DURLING, MARJORIE S.** **Assistant Professor**  
 B.S.—West Virginia University, 1946 **Reading**  
 M.A.—West Virginia University, 1950
- EADS, SALLY A.** **Assistant Professor**  
 B.A.—Agnes Scott College, 1965 **History**  
 M.A.—University of Virginia, 1967
- EDELMAN, GEOFFREY M.** **Instructor**  
 B.S.—V.P.I. & S.U., 1970 **Marketing/Management**  
 M.S.—V.P.I. & S.U., 1974
- FIGHTMASTER, JAMES W.** **Instructor**  
 B.S.—Georgetown College, 1957 **Mathematics**  
 M.Ed.—University of Virginia, 1965
- FURBISH, DALE** **Instructor**  
 B.S.—University of Pittsburgh, 1972 **Counseling**  
 M.Ed.—Temple University, 1974
- GALE, HUGH M.** **Instructor**  
 B.A.—University of North Carolina, 1953 **Art**  
 B.P.A.—Art Center College of Design, 1959
- GENTRY, CARROLL L.** **Professor**  
 B.S.—East Tennessee State University, 1965 **Chairman, Division of**  
 M.B.A.—East Tennessee State University, 1967 **Business Science**
- GILL, DAWN M.** **Assistant Professor**  
 B.S.—Mary Washington College, 1949 **Biology**  
 M.S.—Radford College, 1969  
 Registered Physical Therapist—Walter Reed Hospital, 1950
- GLANVILLE, JAMES O.** **Professor**  
 A.R.C.S.—The Royal College of Science, London, 1962 **Chemistry**  
 B.S.—University of London, 1962  
 Ph.D.—University of Maryland, 1967



- GRAYBEAL, JUNE A.** Instructor  
B.A.—Emory & Henry College, 1973 Librarian  
M.L.S.—George Peabody College, 1974
- HAMLAR, CONSTANCE J.** Associate Professor  
A.B.—Virginia State College, 1942 English  
M.A.—Northwestern University, 1945
- HAMPTON, NORMAN A.** Assistant Professor  
B.A.—W. Va. University, 1952 Data Processing
- HEADLAND, CHARLES J.** Associate Professor  
B.S.—State Teachers College, Slippery Rock, Pa., 1941 Physics  
M.Ed.—University of Pittsburgh, 1951
- HILL, JAMES P., JR.** Professor  
B.S.—Roanoke College, 1957 Chairman, Division of Science  
M.Ed.—University of Virginia, 1963 and Mathematics  
Ed.D.—V.P.I. & S.U., 1974
- HILLMAN, DAVID L.** Instructor  
B.A.—College of William & Mary, 1969 Coordinator of Library Services  
M.L.S.—University of Maryland, 1972
- HINCHCLIFFE, ALICE B.** Associate Professor  
R.D.H.—Eastman School of Dental Hygiene, 1939 Program Head,  
A.B.—Syracuse University, 1962 Dental Hygiene  
M.Ed.—University of Virginia, 1970
- HOFFMAN, WILLIAM E., JR.** Instructor  
A.A.S.—Roanoke Technical Institute, 1964 Electrical Engineering  
B.S.—Roanoke College, 1971 Technology
- HOOVEN, JAMES A.** Associate Professor  
B.A.—New Mexico Highlands University, 1965 History and Government  
M.A.—New Mexico Highlands University, 1967
- HOOVEN, JUDITH L.** Instructor  
B.A.—New Mexico Highlands University, 1963 English  
M.A.—New Mexico Highlands University, 1966
- HOPPER, HAROLD H.** President of the College  
B.S.—Washington University, 1951  
M.S.—Washington University, 1954  
Ed.D.—University of Florida, 1965
- HOCHINS, WILLIAM A.** Assistant Professor  
B.S.—Concord College, 1949 Health and Physical Education  
M.P.H.—University of North Carolina, 1961
- HOUSTON, CHARLES A.** Associate Professor  
B.S.—University of Tennessee, 1964 Coordinator, Institutional Research  
M.M.—University of Tennessee, 1969
- JAMES, DAVID P., JR.** Assistant Professor  
B.S.—Virginia Polytechnic Institute, 1960 Financial Aid Officer  
M.S.—Radford College, 1969
- JOHNS, DOLORES Y.** Assistant Professor  
B.S.—Virginia State, 1955 Counseling  
M.S.—Virginia Commonwealth, 1969
- JOHNSON, SHIELDS** Instructor  
A.B.—Roanoke College, 1931 English (Journalism)

- JONES, CLYDE** Associate Professor  
 B.A.—Furman University, 1956 English  
 M.A.—George Peabody College for Teachers, 1957
- \*KABLER, PAUL D.** Instructor  
 Diploma—Danville Technical Institute, 1960 Air Conditioning & Refrigeration
- KAZANJIAN, GARY M.** Assistant Professor  
 B.A.—University of Iowa, 1970 Coordinator, Audio-Visual Media  
 M.S.—Brooklyn College, 1972
- KILLIAN, JOHN M.** Associate Professor  
 B.S.—Louisiana State University in New Orleans, 1965 Biology  
 Ph.D.—Louisiana State University, 1971
- KNISELY, ELLEN F.** Associate Professor  
 B.S.—California (Pa.) State College, 1966 Coordinator of  
 M.A.—West Virginia University, 1967 Learning Laboratory
- KRASNOW, RITA** Assistant Professor  
 B.A.—Old Dominion University, 1969 Sociology  
 M.A.—University of Virginia, 1971
- KUNZE, DONALD C.** Associate Professor  
 B.S.—Baldwin Wallace College, 1945 Biology  
 M.A.—Kent State University, 1952
- KUNZE, EDNA K.** Associate Professor  
 A.B.—Rutgers University, 1962 Biology  
 M.S.—University of Rhode Island, 1968
- LAMANCA, JOHN** Instructor  
 Certificate in Radiologic Technology Program Head,  
 Roanoke Memorial Hospitals, 1962 Radiologic Technology
- LANDIS, LINDA D.** Instructor  
 B.S.N.—University of Virginia, 1959 Nursing
- LEVINE, MARTIN** Professor  
 B.E.E.—College of the City of New York, 1949 Electrical Engineering  
 M.Litt.—University of Pittsburgh, 1956 Technology  
 M.Ed.—University of Pittsburgh, 1960  
 Ph.D.—University of Michigan, 1969
- LOWDON, JO ANN M.** Assistant Professor  
 B.A.—Bridgewater College, 1951 Program Head,  
 M.A.L.S.—Hollins College, 1972 A.D. Nursing Program
- MACDONALD, ROBERTA C.** Professor  
 B.A.—Regis College, 1935 Secretarial Science  
 M.C.S.—Boston University, 1941  
 Ed.D.—University of Florida, 1966
- \*\*MAGGARD, ROBERT E.** Assistant Professor  
 B.A.—University of Kentucky, 1958 Health/Physical Education  
 M.A.—Eastern Kentucky University, 1971  
 Ed. Specialist—Eastern Kentucky University, 1972

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\* Part time.

\*\* Educational Leave.

- MAGRUDER, EDWARD G.** Associate Professor  
 B.S.—Roanoke College, 1951 Business Management  
 Diploma—Commercial Banking—Rutgers University and  
 Stonier Graduate School of Banking, 1960  
 M.S.—Radford College, 1970
- MAYS, CLARENCE C., JR.** Professor  
 B.S.—University of Virginia, 1961 Spanish  
 M.Ed.—University of Virginia, 1965  
 Ed.D.—University of Va., 1973
- MCCABE, JAMES N.** Associate Professor  
 A.B.—West Virginia University, 1940 Administrative Assistant  
 to the President
- MC FARLAND, ROSALIND L.** Instructor  
 B.A.—Radcliffe College, 1939 Mathematics
- MICHIE, WAYNE R.** Instructor  
 A.A.S.—Roanoke Technical Institute, 1964 Asst. Div. Chmn.  
 B.S.—Roanoke College, 1969 Engr. Tech., FM Station Engineer
- MILES, ROY G.** Associate Professor  
 B.S.—Missouri School of Mines, 1951 Geology  
 M.S.—Northwestern University, 1957
- MITCHELL, FRANCES T.** Associate Professor  
 B.S.—Radford College, 1942 Secretarial Science  
 M.S.—Radford College, 1968
- MOORE, DOLORES K.** Instructor  
 Diploma—Lehrerinnen Seminar, 1945 German  
 Interpreter's Diploma—Rackow Schule, 1947
- MOORE, BETTY L.** Professor  
 A.B.—Kansas State Teachers College, 1943 English  
 B.S.—Kansas State Teachers College, 1943  
 M.A.—Columbia University, 1949  
 Ph.D.—Columbia University, 1972
- MURPHY, MARCIA M.** Instructor  
 B.A.—Baldwin-Wallace College, 1970 Learning Laboratory
- MUSGROVE, CHARLES P.** Associate Professor  
 B.S.—East Tennessee State University, 1967 Mathematics  
 M.S.—Virginia Polytechnic Institute, 1969
- MUSIC, JOYCE N.** Instructor  
 B.S.—Radford College, 1971 Secretarial Science  
 M.S.—V.P.I. & S.U., 1972
- MUSIC, WILLIAM O., JR.** Assistant Professor  
 B.S.—Lynchburg College, 1963 Health/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 Technology  
 M.S.—Appalachian State University, 1966
- NICKENS, HARRY C.** Associate Professor  
 B.S.—Tennessee Tech. University, 1966 Coordinator of Counseling  
 M.A.—Tennessee Tech. University, 1968  
 Ed.D.—University of Tennessee, 1972

- NICKERSON, GWENDOLYN, J.**  
 B.S.—Roanoke College, 1951  
 M.Ed.—University of Virginia, 1965  
 Associate Professor  
 Chemistry
- NININGER, EDWARD C.**  
 B.A.—Richmond College, 1931  
 M.A.—Richmond College, 1932  
 Associate Professor  
 History
- OWEN, SUSAN R.**  
 B.S.N.—University of Virginia, 1970  
 Instructor  
 Nursing
- OWEN, WILLIAM C.**  
 B.A.—University of Virginia, 1966  
 M.Ed.—University of Virginia, 1970  
 Ed.D.—University of Virginia, 1974  
 Assistant Professor  
 Psychology
- PACK, JOEL C.**  
 B.A.—Roanoke College, 1963  
 M.A.—Wayne State University, 1967  
 Assistant Professor  
 Mathematics
- PAPADATAS, GEORGE**  
 B.A.—University of Athens, Greece, 1969  
 M.S.—University of Utah, 1971  
 M.A.—V.P.I. & S.U., 1973  
 Assistant Professor  
 Economics
- PAYNE, CHRISTINE K.**  
 B.S.—Winston-Salem State University, 1946  
 M.Ed.—Pennsylvania State Univ., 1956  
 Assistant Professor  
 Reading
- PAYNE, ELIZABETH W.**  
 B.S.—University of North Carolina, 1950  
 M.Ed.—University of North Carolina, 1969  
 Associate Professor  
 Secretarial Science
- PERDUE, RICHARD V.**  
 B.S.—Bluefield State College, 1971  
 M.S.—Radford College, 1973  
 Instructor  
 Veteran's Counseling
- PHELPS, EMMA SUE**  
 B.A.—Concord State Teachers College, 1939  
 M.A.—State University of Iowa, 1946  
 Assistant Professor  
 Speech and Drama
- PHELPS, HUGH B.**  
 B.M.E.—Clarkson College of Technology, 1950  
 M.M.E.—Clarkson College of Technology, 1956  
 Professor  
 Chairman, Division of  
 Engineering/Industrial &  
 Health Technologies
- PHIPPS, JAMES THOMAS**  
 A.A.—Kellogg Community College, 1972  
 B.S.—Eastern Kentucky University, 1974  
 Instructor  
 Police Science
- PICARELLA, ROBERT G.**  
 B.A.—Concord College, 1970  
 M.S.—Radford College, 1972  
 Instructor  
 Mental Health Technology  
 Asst. Div. Chmn., Health Tech.
- PLACE, ADRIENNE P.**  
 B.A.—The College of William & Mary, 1951  
 Ms.Ed.—Madison College, 1970  
 Assistant Professor  
 Program Head,  
 Child Care

- POOLE, MEREDITH J. **Instructor**  
English  
B.A.—Oberlin College, 1968  
M.A.—University of Virginia, 1971
- POWELL, IRIS C. **Assistant Professor**  
Nursing  
B.S.N.—University of Virginia, 1959  
M.S.—Radford College, 1971
- PULLEN, PAUL T. **Professor**  
A.B.—Asbury College, 1949 Chairman, Division of Humanities  
M.Th.—Pittsburgh Theological Seminary, 1957  
Ph.D.—University of Pittsburgh, 1961
- RACE, HARRY C. **Professor**  
Dean of Student Services  
B.S.E.E.—Northeastern University, 1942  
M.S.—Radford College, 1965  
Ed.D.—V.P.I. & S.U., 1974
- RAKES, JEFFERY L. **Assistant Instructor**  
Radiologic Technology  
Certificate in Radiologic Technology  
Roanoke Memorial Hospital, 1969
- RYG, CHRIS J. **Instructor**  
Radio Station Manager  
B.A.—University of Iowa, 1970
- SALMON, JANE A. **Assistant Professor**  
A.D. Nursing Program  
B.S.N.—Duke University, 1957
- SAUNDERS, JEAN M. **Assistant Professor**  
Business Management  
B.S.—Radford College, 1954  
M.Ed.—Virginia Polytechnic Institute, 1967
- SCHULTZ, L. DAVID **Assistant Professor**  
Mathematics  
B.A.—University of California, Santa Barbara, 1967  
M.A.—University of Arizona, 1969
- SELANDER, EDWIN V. **Assistant Professor**  
Mathematics  
B.S.—Virginia Polytechnic Institute, 1955  
M.S.—Virginia Polytechnic Institute, 1967
- SELANDER, MARY V. **Instructor**  
Mathematics  
B.S.—Virginia Polytechnic Institute, 1955  
M.A.—Pennsylvania State University, 1959
- SHEPARD, DAVID E. **Assistant Professor**  
Business Management  
B.S.—Virginia Commonwealth U., 1958  
M.B.A.—University of Virginia, 1962
- SHEPPARD, VERNON M., JR. **Associate Professor**  
Economics  
B.S.—Virginia Polytechnic Institute, 1954  
M.S.—Virginia Polytechnic Institute, 1960
- SHIRLEY, WILLIAM T. **Associate Professor**  
B.A.—Furman University, 1948 Chairman, Division of Social Science  
M.A.—University of North Carolina, 1950 & Public Service Technology
- SINGER, MADELYN H. **Associate Professor**  
Mathematics  
A.B.—Brooklyn College, 1942  
M.A.—Columbia University, 1946

- SMITH, HUGH P.**  
 B.A.—University of California, 1948  
 M.A.—University of California, 1950  
 Ph.D.—University of Utah, 1969  
 Associate Professor  
 Geology and Geography
- SMITH, MILTON S.**  
 B.A.—Wesleyan University, 1933  
 M.A.—Harvard University, 1934  
 Ph.D.—Fordham University, 1955  
 Professor  
 English
- SOWER, RONALD D.**  
 B.A.—Emory & Henry College, 1969  
 M.A.—Radford College, 1972  
 Assistant Professor  
 Biology
- STARNES, JOHN N.**  
 B.S.—East Tennessee State University, 1960  
 M.S.—East Tennessee State University, 1968  
 Assistant Professor  
 Mathematics
- STATON, RUTH J.**  
 B.A.—College of William and Mary, 1934  
 M.Ed.—University of Virginia, 1954  
 M.A.—University of Michigan, 1968  
 Associate Professor  
 English
- STEWART, ALBERT W.**  
 B.S.E.E.—Virginia Polytechnic Institute, 1957  
 Assistant Professor  
 Electrical Engineering  
 Technology
- STRAUSBAUGH, MAURICE**  
 B.A.—Juniata College, 1950  
 M.D.—Bethany Theological Seminary, 1953  
 M.Ed.—Johns Hopkins University, 1966  
 Associate Professor  
 Director of Continuing Education
- SYKES, CYRIL H.**  
 B.A.—Norwich University, 1947  
 M.S.—Syracuse University, 1950  
 Associate Professor  
 Director, Learning Resources
- TATE, CAROL S.**  
 B.S.—Radford College, 1969  
 M.S.—Radford College, 1973  
 Instructor  
 Counseling
- THOMSON, PAUL R.**  
 B.S.—Syracuse University, 1939  
 Instructor  
 Assistant Coordinator—  
 Cooperative Education
- TRAHIN, LAVERNE L.**  
 B.A.—Radford College, 1960  
 M.S.—Radford College, 1965  
 Assistant Professor  
 Psychology
- TRAYNOR, MARGARET H.**  
 B.S.Ed.—Longwood College, 1933  
 M.Ed.—University of Virginia, 1968  
 Instructor  
 Learning Laboratory
- 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
- TURNER, SHIRLEY D.**  
 Certificate in Radiologic Technology  
 Lewis-Gale Hospital, 1968  
 Assistant Instructor  
 Radiologic Technology

- VAN LIERE, RUTH B.**  
 B.A.—Roanoke College, 1967  
 M.S.—Radford College, 1968  
**Instructor**  
**Psychology**
- VAUGHT, MARTHA LOU**  
 B.S.N.—University of Virginia, 1973  
**Instructor**  
**AD Nursing Program**
- WASHBURN, WILLIAM B.**  
 B.A.—Lynchburg College, 1953  
 M.B.A.—University of New Haven, 1971  
**Assistant Professor**  
**Business Management**
- WEBB, JANICE E.**  
 B.S.N.—University of Virginia, 1972  
**Assistant Professor**  
**A.D. Nursing Program**
- WEINMAN, DANIEL J.**  
 B.S.—Loyola University, 1967  
 M.A.—Northern Illinois University, 1969  
**Assistant Professor**  
**Government**
- WEIS, MARCIA K.**  
 B.A.—Oakland University, 1963  
 M.A.—Wayne State University, 1967  
 Ph.D.—Michigan State University, 1973  
**Assistant Professor**  
**French**
- WELCH, JOHN D.**  
 B.A.—St. Vincent College, 1964  
 M.L.S.—University of Pittsburgh, 1972  
**Assistant Professor**  
**Circulation/Periodical Librarian**
- WHITE, ROY R.**  
 B.S.—Florida Southern College, 1954  
 M.A.—University of Florida, 1957  
 Ph.D.—University of Florida, 1960  
**Professor**  
**History**
- WILSON, JAMES H.**  
 A.A.S.—Roanoke Technical Institute, 1965  
 B.S.—V.P.I. & S.U., 1971  
 M.S.—V.P.I. & S.U., 1973  
**Assistant Professor**  
**Mechanical Engineering**  
**Technology**
- WIMMER, WOODROW M.**  
 B.S.—University of Virginia, 1970  
 C.P.A.—Virginia, 1972  
**Instructor**  
**Accounting**
- WOOD, CONNIE M.**  
 B.A.—Mary Baldwin College, 1964  
 M.Ed.—University of Virginia, 1972  
**Instructor**  
**Mental Health Technology**
- WU, FRANK**  
 B.S.—Rocky Mount College, 1958  
 M.A.—Montclair State College, 1965  
**Assistant Professor**  
**Counseling**
- ZIRKLE, BENJAMIN F., III**  
 B.S.—Roanoke College, 1965  
 M.S.—Florida State University, 1968  
**Assistant Professor**  
**Mathematics**

## STAFF PERSONNEL

ADAMS, WILLIE I.	Personnel Supervisor
ANDERSON, GARY	Radio Production Manager
ARRINGTON, MARVIN L.	Police Chief
BARNES, CATHY L.	Instructional Aide, Biology
BLEVINS, LINDA Y.	Sec., Learning Lab and Audio-Visual Dept.
BRANDSTETTER, DOROTHY I.	Procurement Clerk
BRATTON, MARION B.	Bookstore Manager
BROOKS, THOMAS R., JR.	Campus Policeman
COMER, BERNITA	Radio Traffic Director
CORRELL, ALICE L.	Secretary to Data Processing Manager
CRAWFORD, ROBERT J.	Instructional Assistant, Electrical Engineering
CROMER, BENJAMIN D.	Radio Station Operator
DE FELICE, VIRGINIA B.	Secretary to the Chairman, Engineering/ Industrial & Health Technologies Division
EQUI, JEAN D.	Supervisor of Duplicating Dept.
FERRON, EDWARD G.	Night PBX Operator
GARST, DORIS D.	Secretary to the Dean of Instruction and Administrative Assistant
GAULDIN, JUDITH S.	Computer Operator, Data Processing
GAULDIN, CLAUDE S.	Campus Policeman
GAUT, BESS S.	Clerk Typist, Veterans Affairs
GRAY, MARIE L.	Clerk-Steno, Admissions Office
GREAVES, LINDA F.	Periodicals, Library Assistant
GREGORY, JANE F.	Circulation Librarian
GRIMM, JOAN C.	Financial Aid, Secretary to Counseling Coordinator
HIGGINBOTHAM, DORIS P.	Sec. to the Chairman, Science & Math Div.
HOLLAND, SANDRA	Cataloging Clerk, Library
HOUSEMAN, W. ROBERT	Instructional Assistant, Automotive Technology
HUFFMAN, J. FRANK	Instructional Aide Acct./Secr. Science
HURD, BARBARA E.	Faculty Secretary
JAMES, MARGARET C.	Secretary to Building & Grounds Supervisor
JANNEY, BETTY	Secretary, Continuing Education
KELLEY, BETTY E.	Secretary to the Chairman, Humanities Division
LAYMAN, CATHY S.	Illustrator, Audio-Visual
LYON, WARD B.	Audio-Visual Technician
MARTIN, ANN T.	Secretary to Director of Learning Resources
MAUK, JOHN W.	Campus Policeman
MEADOR, FRANCES M.	Bookstore Assistant
MOCK, DOROTHY C.	Secretary to Director, Continuing Education
MORRIS, JUANITA C.	Secretary, Allied Health Programs



MUNDY, MARION D.	Secretary to Dean of Student Services
MUSSELMAN, RHONDA T.	Illustrator, Audio-Visual
MUSSER, PATRICIA R.	Secretary, Allied Health Programs
NEAL, BETTIE T.	Transcript & Government Clerk—Admissions Office
NEWELL, CHARLES P., JR.	Accountant Local Funds
PETERS, BARBARA A.	Key Punch Operator, Data Processing
PETERS, ROSE M.	Secretary to Coordinator of Institutional Research
POFF, WANDA E.	Accountant State Funds
PREVO, PATRICIA L.	Instructional Aide, Chemistry
PRILLAMAN, KATHERINE W.	Cashier, Business Office
PURDY, CYNTHIA H.	Secretary, Cooperative Education
RAMEY, MONA J.	Manager, Mailroom and Supply
REED, PATRICIA T.	Requisition Control
ROSS, MARY LEE	Secretary, Special Services
ROWLETT, JUNE V.	Bookkeeper, Business Office
ROUTT, PAUL L., JR.	Campus Policeman
SAYLES, ARLETHA M.	Secretary, Counseling Services
SHUMAKER, DREWRY P.	Sec. to the Chairman, Division Social Science & Public Service Technology
SOWER, SANDY B.	Secretary to Director, Admissions
STRONG, ALICE	Coordinator of Program for Senior Citizens
SUTHERLAND, ELIZABETH Y.	Programmer, Data Processing
TURNER, BETTY S.	PBX Operator—Receptionist
VIA, JOYCE A.	Confidential Secretary to the President
WHEELER, WILLIAM H.	Laboratory Mechanical Technician
WILLIAMS, SHIRLEY R.	Secretary, Dental Technology
WILLS, BRENDA S.	Sec. to the Chairman, Business Science Division
WILLS, GEORGE A.	Campus Policeman
WITT, BILLY L.	Campus Policeman
WOOD, IRENE S.	Faculty Secretary
WOOD, JOYCELYN J.	Clerk-Typist, Admissions Office
YOUNG, JOHN R.	Buildings & Grounds Supervisor

# NOTES

# 1975

## JULY

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
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## AUGUST

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## SEPTEMBER

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## OCTOBER

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## NOVEMBER

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## DECEMBER

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# 1976

## JANUARY

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## FEBRUARY

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## MARCH

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## APRIL

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## MAY

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## JUNE

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## JULY

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## AUGUST

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## SEPTEMBER

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## OCTOBER

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## NOVEMBER

S	M	T	W	T	F	S
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## DECEMBER

S	M	T	W	T	F	S
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