PORTLAND COMMUNITY COLLEGE
Portland, Oregon
GENERAL CATALOG
1964 - 1965
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SCHOOL DISTRICT NUMBER ONE  
Multnomah County, Oregon

BOARD OF DIRECTORS

R. W. deWeese, Chairman
Howard L. Cherry                Mrs. Forrest E. Rieke
Edmund A. Jordan                William W. Wyse
E. B. Burkitt

ADMINISTRATORS

Melvin W. Barnes, Superintendent of Schools
Amo DeBernardis, Assistant Superintendent
Norman K. Hamilton, Assistant Superintendent
William A. Oliver, Assistant Superintendent
Laurence E. Winter, Assistant Superintendent
L. J. Baker, Business Manager

COLLEGE STAFF

Amo De Bernardis, Administrator
Vocational-Technical Division ...... George C. Henriksen, Director
Technology Department ................ Bryce Hanning
                                  Alf Lair
Business Education Department ........ Lewis Douglas
                                  Kenneth Clark
Apprentice Department .............. Robert Zertanna
Occupational Extension Department .... Chester Pittman
Adult Family Life Department .......... Mrs. Commery Warrell
General Adult Education Department .......... Paul Kirk
                                  Raymond Shank
Practical Nursing Department .......... Miss Henrietta Doltz
College Transfer Division .......... Leonard Garmire, Director
Librarian .............................................. Roy L. Tidwell
PORTLAND COMMUNITY COLLEGE  
ACADEMIC CALENDAR 1964-65 
College Transfer and 
Technology-Business Programs

FALL TERM
Registration and Freshman Week .... Sept. 21-25
Classes Begin ................................ Sept. 28
Late Fee Begins ................................ Oct. 5
Last Day to Register ....................... Oct. 5
Last Day to Drop Courses ............... Nov. 6
Thanksgiving Vacation ................. Nov. 26-27
Final Exams ............................... Dec. 14-18
Term Ends .................................. Dec. 18

WINTER TERM
Placement Exams .......................... Dec. 29
Registration ................................. Jan. 4
Classes Begin .............................. Jan. 5
Last Day to Register, Late Fee Begins Jan. 11
Last Day to Drop Courses ............... Feb. 5
Final Exams ................................. March 15-19
Term Ends .................................. March 19

SPRING TERM
Placement Exams .......................... March 22
Registration ................................. March 29
Classes Begin .............................. March 30
Last Day to Register, Late Fee Begins April 5
Last Day to Drop Courses ............... May 7
Final Exams ................................. June 7-11
Term Ends .................................. June 11

SUMMER SESSION
(To be determined; will be announced later)

MAY

JULY

AUGUST

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S M T W T F S

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

1 2 3 4 5 6 7 8
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17 18 19 20 21 22 23 24
25 26 27 28 29 30 31

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

3
Organization

Portland Community College, unlike its sister institutions, has not had to "start from scratch". It has been a vital part of public education in School District No. 1 for nearly 75 years. Previous to its activation under state law as a community college on July 1, 1961, it was known as the adult and vocational education division of the Portland Public Schools.

As such, it developed programs as needed in the metropolitan area for all age groups beyond high school and for high school completion.

First adult evening classes were started on November 11, 1889. In 1910, an Americanization program was begun; by 1921 evening classes were conducted in nine school buildings with offerings ranging from foreign languages and business education to preparation for the trades and home economics.

By 1948-49, the number of classes had expanded to 459 and during the 1960-61 school year 738 classes were offered to 12,979 enrollees.

Programs added since 1948 include engineering technology in three areas, data processing technology, drafting, industrial electronics, supervisory development, practical nursing, business machines, and merchandising.

During 1963-64 enrollment each term was nearly 7,000 students, of whom 4,659 were enrolled in vocational-technical programs and 2,005 in adult education courses meeting at night in some 65 elementary and high schools. Many short-term courses such as insurance rating, power sewing machine operation, and waiter-waitresses training are offered to meet specific job needs of the area.

Decision to move into the college transfer field came from the Portland School Board in the fall of 1963 after encouragement from the State Department of Education and the State System of Higher Education.

Long range plans call for purchase of 100 acres on a site approximately eight miles from the city center. All divisions of the college will be located on this site. The first unit, emphasizing vocational-technical programs, should be ready for use in the fall of 1966.

The Technology Building will continue to be used as a downtown branch of the college, especially for merchandising, business, work experience, and short term courses. Evening classes will continue to be held in school buildings where enrollment warrants.
Purposes

THE PORTLAND COMMUNITY COLLEGE BELIEVES:

That all individuals in a democracy, regardless of age or level of ability, should be provided an opportunity to develop to the maximum of their potentialities and interests to the end that they and the democracy in which they live shall both prosper.

That education is a lifelong process and therefore adults should be encouraged and counseled and guided into educational programs appropriate to them.

That education should include such knowledge, skills, attitudes and understanding as are necessary to be a well-informed and active citizen in a democracy.

That a large variety of educational offerings should be provided, ranging from short-term courses to two-year curricula leading to associate degrees.

That education should be provided for both full-time and part-time students.

In keeping with the above-stated philosophy, the following educational programs are offered:

1. VOCATIONAL-TECHNICAL EDUCATION in many areas of occupational preparation designed for students with varying degrees of previous education and competencies.

2. GENERAL EDUCATION—including adult high school completion, citizenship, and such areas as contribute in developing those characteristics required of competent and successful citizens.

3. COLLEGE TRANSFER courses which will enable students, including those who enter with scholastic deficiencies, to complete the first two years of four-year college or university work.

4. GUIDANCE AND COUNSELING designed to help individuals plan an educational program tailored to their own needs, aptitudes and interests.
Organization and Facilities

LOCATION

Main offices of the Vocational-Technical Division are located at 515 N. E. 15th Ave. Technology and business portions of this division are presently quartered in the Technology Building, 049 S. W. Porter Street. The building may be reached from the east side via the Ross Island Bridge and Water Avenue; from the southwest via Barbur Blvd. to Sheridan, turn right and follow traffic pattern to Arthur and First Ave., then right three blocks to Porter; and from the northwest via First Avenue to Arthur. (See map inside cover.)

The College Transfer Division will be located in the present Shattuck School, 1914 S. W. Park Avenue, which can be reached easily from S. W. Broadway. Summer remodeling will equip classrooms, laboratories, library, etc., for post-high school studies. A gymnasium, swimming pool, and parking for 140 cars are available.

All other programs of the community college are held in 65 of the district's elementary and high schools.

LIBRARY

The present technical library at the Technology Building will be expanded each year. The library for the college transfer division at Shattuck Hall will number 3,000 to 5,000 volumes at the outset and will be expanded continually to meet the needs of students in this program. Basic reference materials, a representative selection of popular and professional periodicals, and metropolitan newspapers will be provided. Reserve shelves are set up by the librarian at the request of the instructor to facilitate student reading and research.

Regulations and Requirements

ADMISSIONS

Portland Community College accepts students in its college transfer and Technology-Business programs who hold a high school diploma. Exams will be given before registration to enable student and faculty adviser to determine a particular course to pursue. (Requirements for admission to other departments may be found in those special sections.) An official record of all high school credits and other academic work, whether the student has graduated or not, should be submitted with the formal application.

Persons 21 years of age or over who have not completed high school may enter Portland Community College upon satisfactory completion of the General Educational Development Tests. Arrangements for taking the tests may be made with student personnel services.

Exceptions to the above educational requirements will be considered on an individual basis in the Technology and Business Departments.

REGISTRATION

All students should register in person and should complete registration before the opening day of each term. Registration dates for three regular academic terms are listed in the college calendar.
New students who have met admission requirements on time, including placement tests, may expect to receive from the registrar information on registration well in advance of the registration period. Each new student is assigned a faculty adviser who assists him in planning a program. Detailed registration instructions are contained in the Schedule of Classes; students should not proceed with registration without a copy of the schedule.

Returning students are expected to pre-register in advance of the beginning of each term by consulting with their faculty adviser in course programming.

Students are completely registered and entitled to attend classes only when they have completed prescribed procedures including the payment of fees.

DEFINITIONS

The academic year of the College is divided into three terms of approximately 12 weeks each. A student may enter Portland Community College at the beginning of any term, but is advised to enter fall term when possible because of course sequence requirements. It is especially important that first-year or freshman students be present for the opening week.

A term hour represents three hours of the student's time each week for one term. This time may be assigned to work in classroom or laboratory or to outside preparation. The number of lectures, laboratory, or other periods per week for any course may be found in the course descriptions in this catalog or in the regular Schedule of Classes. The normal amount of scheduled time for a non-laboratory academic class is 50 minutes per week for each term hour of credit. For every one hour in class, at least two hours should be devoted to preparation.

A subject is a designated field of knowledge such as history, English, music, etc.

A course is a subject or an instructional subdivision of a subject offered through a single term.

A year sequence consists of three closely articulated courses in a subject extending through the three terms of the academic year.

A curriculum is an organized program of study arranged to provide definite cultural or professional preparation.

A period is a class meeting for discussion, lecture, laboratory, etc., and may be for 50 or more minutes each.

A full-time student is one registered for 15 or more term hours of college credit, or 20 actual clock hours per week in technology-business programs.

CREDIT HOUR LOAD

In order to obtain 90 term hours within the normal six terms, a full-time student should enroll for an average of 15 hours per term. Employed students should, however, be aware of the fact that 15 term hours involve about 30 clock hours of lesson preparation each week during the term. Students who must work, therefore, are advised to fit their job schedule into the term-hour equation and to plan on more than six terms to complete two years' work.
Regulations and Requirements

For example, a student who is employed 40 hours per week should enroll for not more than 10 total hours per term and take nine terms to complete two years’ work. No more than 19 hours may be taken in any one term (unless approval of the Academic Requirements Committee has been obtained).

AUDITORS

Students who do not wish college credit may register as auditors in any of the college transfer courses offered. Auditors are not required to meet any specific academic requirements, but should expect to participate fully in the activities of the class. If audit is desired, it should be so indicated at the time of registration. The registration fee is the same as for credit courses.

COURSE CHANGES — WITHDRAWALS

After registration day, any student desiring to make such course changes as credit to audit or audit to credit, or who wishes to add or drop a course must do so by means of a formal request on a form from the College Office. Approval of the class instructor and adviser must be obtained, and final decision will be made by the supervisor of student personnel services. Students should check the academic calendar for deadlines governing course changes.

A student who registers for a course is considered to be in attendance; if he discontinues without filing official withdrawal forms, he may receive a grade of F in the course.

Students who wish to withdraw completely from the college during the term should effect this through the registrar. Students are expected to process their withdrawals in person, but under exceptional circumstances may do so in writing. Proper withdrawal is reflected on the student’s transcript and protects his academic record.

COURSE NUMBERING

College transfer courses in Portland Community College are numbered in accordance with courses throughout the State System of Higher Education:

1-49 Courses which carry no credit toward a degree, or terminal courses that may not be used as transfer credits.

55-99 Courses carrying college credit in first-year foreign languages and non-credit courses such as elementary algebra and geometry, corrective English, etc.

100-110 Survey or foundation courses that satisfy group requirements

200-210 In the language and literature, science and social science groups.

111-199 Other courses offered at first-year and second-year level.

211-299 Normally 100-199 numbers are considered freshman courses and 200-299 are considered sophomore.

Course numbers in the Technology-Business departments follow a pattern established by the State Department of Education. These courses carry no automatic college transfer credit.
Regulations and Requirements

GRADING SYSTEM

Quality of student work is measured by a system of grades and by computed grade-point averages.

The grading system consists of four passing grades: A, B, C, D; failure, F; incomplete, Inc. Exceptional accomplishment is denoted by the grade of A, superior by B, average by C, inferior by D, unsatisfactory by F. When the quality of work is satisfactory, but the course has not been completed for reasons acceptable to the instructor, a record of incomplete (Inc.) is made and additional time is granted.

Grade points are computed on the basis of 4 points for each term hour of A grade, 3 for each term hour of B, 2 for C, 1 for D, and 0 for each term hour of F. The grade-point average (GPA) is the quotient of total points divided by total term hours in which grades A, B, C, D, and F are received.

SCHOLASTIC STANDING

Names of students who carry 15 term hours or more and earn a GPA of 3.50 or above without a failing grade are placed on the term honor roll, with appropriate notation made on the permanent record.

Students in the college transfer program are considered to be in good standing if they maintain an average of C (GPA of 2.00) on both term and cumulative record. When grades fall below this level, readmittance to the program is determined each term on an individual basis after consultation with faculty adviser and the Academic Requirements Committee.

In the Technical and Vocational departments, students may continue in school as long as their grades remain above failing (F). Decisions on suspension are made on an individual basis.

DEGREES — DIPLOMAS — CERTIFICATES

Certificates are given upon request to students after completion of certain adult and technical courses. If requested by the student, an additional letter is sent to the student’s employer verifying completion of training and accomplishments.

Diplomas are issued to students in the Vocational-Technical Division who have completed a curriculum of less than two years in length and in a two-year curriculum where the student has not completed all the requirements for the Associate Degree (see below). High school diplomas and elementary certificates are awarded by the General Adult Education department.

To receive an Associate Degree, a student must have attended Portland Community College for at least two terms, including the last term before the degree is awarded. The following Associate Degrees, with requirements for same, are presently conferred:

Associate in Applied Science
Vocational-Technical Division

This degree may be received by students completing 90 term hours minimum of approved course work in civil-structural engineering technology, highway engineering technology, technical drafting, data processing, electronics engineer-
Regulations and Requirements

ing technology, and supervisory development. A minimum of 18 term hours of
general education courses or approved equivalent must have been completed.
A 2.00 GPA or C average must have been maintained.

Associate in Arts (none awarded until June, 1966)
College Transfer Division

Specific requirements for this degree, in addition to the 90 hours minimum
and 2.00 grade average, include:

1. English composition, nine term hours
2. Personal Hygiene, HE 250 (unless excused)
3. Required year sequence in each of the following groups: language and
   literature, science, and social science. A second year sequence must be
   chosen in one of the three groups. Sequences must be from approved list
   of survey courses (100-110 and 200-210); at least one sequence must
   be in the 200-210 list.
4. Physical education, five term hours (unless excused)
5. At least one of the sequences in language and literature must be in
   literature. Only one sequence in a survey course will apply in fulfilling
   this group requirement.
6. The second sequence in either science or social science must be taken
   in a different department.

Associate in Science (none awarded until June, 1966)
College Transfer Division

Requirements same as for Associate in Arts with this exception:
1. A second year sequence must be chosen in science.

TUITION AND FEES

Tuition and fees are payable at the time of registration. Deferred payments
may be arranged with the registrar. The right is reserved to make changes with-
out notice in the rates quoted. However, changes made after a term begins will
not affect the fees of that current term.

Students carrying 15 term hours or more of lower division collegiate work
and students carrying 20 clock hours (actual hours spent in class or lab) or more
per week of technical and business education work are classified as full-time.
Tuition for a full-time student is $60.00 per term.

Part-time tuition in the technical-business programs will be computed on the
following formula: Clock hours per week $X$ $3.00 equals term tuition.
Example: 4 clock hours of class per week $X$ $3.00 equals $12.00.

Part-time tuition in the College Transfer Division is based on $4.00 per term
unit of theory and $6.00 per term unit of lab.

Incidental laboratory fees usually amount to $2.00 or $3.00 and are charged
to defray expenses of supplies and equipment in some of the courses. Cost of
textbooks is not included in any of the above fees.
FEE REFUNDS

Students who withdraw from Portland Community College, and who have complied with regulations governing withdrawals, are entitled to certain refunds of fees paid, depending on the time of withdrawal. Full fee less $1.00 is refunded if withdrawal is made within the first two weeks of the term; one-half fee less $1.00 if withdrawal is made during the third week; one-fourth fee less $1.00 if during fourth week. No refund will be made after the fourth week.

All claims for refund must be made in writing before the close of the term in which the claim originates. Refunds in all cases are calculated from the date of application for refund and not from the date when the student ceased attending classes, except in unusual cases where it can be shown that formal withdrawal was delayed for reasons beyond the student’s control.

Student Personnel Services

COUNSELING SERVICE

The College offers counseling and guidance services to help every student plan an academic and occupational future commensurate with his abilities and interests.

Each prospective student is required to take a placement examination consisting of a test predictive of college ability and an English examination. Engineering and physical science majors are also given a mathematics test. No one is denied admission to the college on the basis of these tests. Results are used only to suggest placement in courses.

After completing formal application for admission and taking placement examinations, each student is assigned to a faculty adviser. Although the student is ultimately responsible for his program of courses, the adviser will assist him by discussing his educational plans and helping to analyze his interests, abilities, failures, and successes.

Students who have difficulty in choosing a major and who have serious educational or personal problems are invited to seek assistance from the supervisor of student personnel services. This assistance consists of individual testing, counseling, and referral to community agencies. This office also makes available a library of occupational, educational, and vocational information as well as catalogs from many senior institutions.

EMPLOYMENT SERVICE

Job counseling, assistance with placement, and follow-up is also offered for the student whose need is immediate employment. A program of Job-Finding Techniques and Pre-Occupational Guidance is offered to assist the student.
Student Personnel Services

STUDENT ORGANIZATIONS, ACTIVITIES

Little has been done in this area so far, since Portland Community College is a non-residential institution and most of its students are holding outside jobs, attending part time. Decisions will be made by the new supervisor of student personnel services and will be announced by the College office.

It will be College policy to require clubs be open to all students with restrictions only according to academic standing or field of interest.

Intra-mural sports will be stressed rather than outside competitive athletics.
COLLEGE TRANSFER DIVISION

Newest division of Portland Community College is that of College Transfer. Courses will match those available at Oregon four-year colleges and universities and will have the approval of the State System of Higher Education. Instructors will be of the same quality as those teaching at other Oregon higher education institutions.

Present plan is to offer, beginning in September, 1964, most of the first year and some of the second year college courses. Facilities, staff, and services are being planned to accommodate 500 students.

The following courses have been approved:

Science and Mathematics

Mth 100. Intermediate Algebra. 4 hours
Mth 101. College Algebra. 4 hours
Mth 102. Trigonometry. 4 hours
Mth 200, 201, 202, 203. Calculus with Analytic Geometry. 4 hours each
GS 101, 102, 103. General Biology. 4 hours each
GS 104, 105, 106. Physical Science. 4 hours each

Social Science

Anth. 101, 102, 103. General Anthropology. 3 hours each
Hist 101, 102, 103. History of Western Civilization. 3 hours each
Hist 201, 202, 203. History of the United States. 3 hours each
Geog 105, 106, 107. Introductory Geography. 3 hours each
PS 201, 202, 203. American Governments. 3 hours each
Psy 201, 202, 203. General Psychology. 3 hours each
Ec 201, 202, 203. Principles of Economics. 3 hours each

Humanities

Wr 111, 112, 113. English Composition. 3 hours each
Eng 101, 102, 103. Survey of English Literature. 3 hours each
Eng 253, 254, 255. Survey of American Literature. 3 hours each
Sp 111, 112, 113. Fundamentals of Speech. 3 hours each

Foreign Languages

GL 50, 51, 52. First Year German
RL 50, 51, 52. First Year French
RL 60, 61, 62. First Year Spanish

Music

Mus 111, 112, 113. Music Theory I. 4 hours each
Mus 190. Applied Music. 1 hour each term
Mus. 195. Band. 1 hour each term
Mus 196. Orchestra. 1 hour each term
Mus 197. Chorus. 1 hour each term
College Transfer Division

Business Education

BA 101. Introduction to Business. 4 hours

Art

AA 195, 196, 197. Basic Design. 2 hours each term
AA 201, 202, 203. Survey of the Visual Arts. 3 hours each term.
AA 290. Painting. 1-2 hours.
AA 291. Drawing. 1-2 hours

Physical Education

PE 180. Physical Education (women), 1 hour each term, six terms
PE 190. Physical Education (men) .1 hour each term, six terms
HE 250 Personal Health. 2 hours

COURSE DESCRIPTIONS

ART

AA 195, 196, 197 DESIGN 2 hours each term
No-grade course. Studio participation exercises involving the basic
principles of design, a three-term introductory sequence.

AA 201, 202, 203 SURVEY OF THE VISUAL ARTS 3 hours each term
Cultivation of understanding and intelligent enjoyment of the visual arts
through a study of historical and contemporary works; considerations of
motives, media, and forms.

AA 290 PAINTING 1-2 hours
Instruction in the use of oil color, water color, and other media. Regis-
tration permitted any term, but it is desirable that the work be started in
the fall.

AA 291 DRAWING 1-2 hours
Training in observation and selection of significant elements. Regis-
tration permitted any term, but it is desirable that the work be started in
the fall.

BUSINESS EDUCATION

BA 101 INTRODUCTION TO BUSINESS 4 hours
Survey of business organization, operation and management intended to
orient the student in business and industry.

FOREIGN LANGUAGES

GL 50, 51, 52 FIRST-YEAR GERMAN 4 hours each
Designed to provide a thorough grammatical foundation and an elemen-
tary reading knowledge of German, as well as an understanding of the
spoken language.

RL 50, 51, 52 FIRST-YEAR FRENCH 4 hours each
An introduction to French, stressing reading and speaking. Exercises
in elementary composition and grammar.
College Transfer Division

**RL 60, 61, 62 FIRST-YEAR SPANISH**

An introduction to Spanish, stressing speaking and reading. Exercises in elementary composition.

**HUMANITIES**

**WR 111, 112, 113 ENGLISH COMPOSITION**

The fundamentals of English composition; frequent written themes. Special attention to correctness in fundamentals and to the organization of papers.

**ENG 101, 102, 103 SURVEY OF ENGLISH LITERATURE**

Study of the principal works of English literature based on reading selected to represent great writers, literary forms, and significant currents of thought. Provides both an introduction to literature and a background that will be useful in the study of other literatures and other fields of cultural history. Fall: Anglo-Saxon beginnings to the Renaissance; Winter: Milton to Wordsworth; Spring: Byron to present.

**ENG 253, 254, 255 SURVEY OF AMERICAN LITERATURE**

American literature from its beginning to the present day.

**SP 111, 112, 113 FUNDAMENTALS OF SPEECH**

Original speeches; analysis and synthesis of material, adaptation to audience, outline construction; development of confidence and release on platform; voice, enunciation, gesture, and bearing in delivery; speeches for special occasions. Must be taken in sequence.

**MUSIC**

**MUS 111, 112, 113 MUSIC THEORY I**

Theory I is a basic course and provides a thorough groundwork in the elements of music science—melodic, harmonic, and rhythmic—taught through analysis of the styles of Bach, Hayden, Mozart, Beethoven, and other eighteenth and nineteenth century composers.

**MUS 190 APPLIED MUSIC**

Freshman year. Individual instruction in organ, piano, violin, cello, harp, voice, orchestral and band instruments. Attendance at class sessions and recitals is required. Prerequisite: qualifying examination.

**MUS 195—BAND**

Six hours maximum credit.

**MUS 196 ORCHESTRA**

Six hours maximum credit.

**MUS 197 CHORUS**

Six hours maximum credit.

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College Transfer Division

Business Education

BA 101. Introduction to Business. 4 hours

Art

AA 195, 196, 197. Basic Design. 2 hours each term
AA 201, 202, 203. Survey of the Visual Arts. 3 hours each term.
AA 290. Painting. 1-2 hours.
AA 291. Drawing. 1-2 hours

Physical Education

PE 180. Physical Education (women), 1 hour each term, six terms
PE 190. Physical Education (men) .1 hour each term, six terms
HE 250 Personal Health. 2 hours

COURSE DESCRIPTIONS

ART

AA 195, 196, 197 DESIGN 2 hours each term
No-grade course. Studio participation exercises involving the basic principles of design, a three-term introductory sequence.

AA 201, 202, 203 SURVEY OF THE VISUAL ARTS 3 hours each term
Cultivation of understanding and intelligent enjoyment of the visual arts through a study of historical and contemporary works; considerations of motives, media, and forms.

AA 290 PAINTING 1-2 hours
Instruction in the use of oil color, water color, and other media. Registration permitted any term, but it is desirable that the work be started in the fall.

AA 291 DRAWING 1-2 hours
Training in observation and selection of significant elements. Registration permitted any term, but it is desirable that the work be started in the fall.

BUSINESS EDUCATION

BA 101 INTRODUCTION TO BUSINESS 4 hours
Survey of business organization, operation and management intended to orient the student in business and industry.

FOREIGN LANGUAGES

GL 50, 51, 52 FIRST-YEAR GERMAN 4 hours each
Designed to provide a thorough grammatical foundation and an elementary reading knowledge of German, as well as an understanding of the spoken language.

RL 50, 51, 52 FIRST-YEAR FRENCH 4 hours each
An introduction to French, stressing reading and speaking. Exercises in elementary composition and grammar.
College Transfer Division

**RL 60, 61, 62 FIRST-YEAR SPANISH**  
4 hours each  
An introduction to Spanish, stressing speaking and reading. Exercises in elementary composition.

**HUMANITIES**

**WR 111, 112, 113 ENGLISH COMPOSITION**  
3 hours each  
The fundamentals of English composition; frequent written themes. Special attention to correctness in fundamentals and to the organization of papers.

**ENG 101, 102, 103 SURVEY OF ENGLISH LITERATURE**  
3 hours each  
Study of the principal works of English literature based on reading selected to represent great writers, literary forms, and significant currents of thought. Provides both an introduction to literature and a background that will be useful in the study of other literatures and other fields of cultural history. Fall: Anglo-Saxon beginnings to the Renaissance; Winter: Milton to Wordsworth; Spring: Byron to present.

**ENG 253, 254, 255 SURVEY OF AMERICAN LITERATURE**  
3 hours each  
American literature from its beginning to the present day.

**SP 111, 112, 113 FUNDAMENTALS OF SPEECH**  
3 hours each  
Original speeches; analysis and synthesis of material, adaptation to audience, outline construction; development of confidence and release on platform; voice, enunciation, gesture, and bearing in delivery; speeches for special occasions. Must be taken in sequence.

**MUSIC**

**MUS 111, 112, 113 MUSIC THEORY I**  
4 hours each  
Theory I is a basic course and provides a thorough groundwork in the elements of music science—melodic, harmonic, and rhythmic—taught through analysis of the styles of Bach, Haydn, Mozart, Beethoven, and other eighteenth and nineteenth century composers.

**MUS 190 APPLIED MUSIC**  
1 hour each  
Freshman year. Individual instruction in organ, piano, violin, cello, harp, voice, orchestral and band instruments. Attendance at class sessions and recitals is required. Prerequisite: qualifying examination.

**MUS 195—BAND**  
Six hours maximum credit.

**MUS 196 ORCHESTRA**  
Six hours maximum credit.

**MUS 197 CHORUS**  
Six hours maximum credit.

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College Transfer Division

PHYSICAL EDUCATION

PE 180 PHYSICAL EDUCATION (Women) 1 hour each term, 6 terms
A variety of activities taught for physiological and recreational values. Special sections for restricted and corrective work. A total of six terms required for all lower-division women students. 3 hours a week.

PE 109 PHYSICAL EDUCATION (Men) 1 hour each term, 6 terms
A variety of activities taught for physiological and recreational values. Special sections for restricted and corrective work. A total of six terms for all lower-division men students. 3 hours a week.

HE 250 PERSONAL HEALTH 2 hours
Study of the personal health problems of men and women with emphasis on implications for family life. Mental health, communicable diseases, degenerative diseases, nutrition. Satisfies the requirement in health education for men and women.

SCIENCE AND MATHEMATICS

MTH 100 INTERMEDIATE ALGEBRA 4 hours
Functions and graphs, linear equations in two unknowns, quadratic equations, negative and fractional exponents, radicals, progressions, binomial theorem, logarithmic computation.

MTH 101 COLLEGE ALGEBRA 4 hours
Review of high school algebra emphasizing number system, logarithms, progressions, binomial series, theory of equations, determinants. Prerequisite: Mth 100 or equivalent.

MTH 102 TRIGONOMETRY 4 hours
Trigonometric functions for general angles, solution of triangles, addition formulas, trigonometric equations, graphs, complex numbers, and De Moivre's theorem. Prerequisite: Mth 101 or equivalent.

MTH 200, 201, 202, 203 CALCULUS WITH ANALYTIC GEOMETRY 4 hours each
Mth 200: Differentiation and integration: applications to rates, area, volume.
Mth 201: Applications in mechanics; plane analytic geometry, elementary transcendental functions.
Mth 202: Techniques of integration, vectors, solid analytic geometry.

GS 101, 102, 103 GENERAL BIOLOGY 4 hours each
Principles of life science, illustrated by studies of selected organisms. 3 lectures; 1 three-hour laboratory period.
GS 104, 105, 106 PHYSICAL SCIENCE 4 hours each
General introduction to the physical sciences; principles of physics and chemistry, geologic processes, and man's relation to them. Special emphasis on scientific method. 3 lectures, 1 quiz or laboratory period.

SOCIAL SCIENCE

ANTH 101, 102, 103 GENERAL ANTHROPOLOGY 3 hours each
Man as a living organism; biological evolution; nature and problems of race; the human life cycle; fossil man and prehistoric cultures; development and organization of culture; man, participant and observer of culture.

HST 101, 102, 103 HISTORY OF WESTERN CIVILIZATION 3 hours each
Origins and development of Western Civilization from ancient times to the present.

HST 201, 202, 203 HISTORY OF THE UNITED STATES 3 hours each
From colonial times to the present.

GEOG 105, 106, 107 INTRODUCTORY GEOGRAPHY 3 hours each
A general introduction to the field of geography, in sequence as follows: Geog 105, a physical geography; Geog 106, regional survey of the world; Geog 107, cultural geography.

PS 201, 202, 203 AMERICAN GOVERNMENTS 3 hours each
Fall and winter: introduction to national government and politics; spring: state and local governments.

PSY 201, 202, 203 GENERAL PSYCHOLOGY 3 hours each
Introductory study of behavior and conscious processes. Survey of experimental studies in motivation, learning, thinking, perceiving, and individual differences.

EC 201, 202, 203 PRINCIPLES OF ECONOMICS 3 hours each
Principles that underlie production, exchange, distribution, etc. Must be taken in sequence.
One of today's rapidly growing demands on education is to provide the technical and vocational training to support business and industry and their required manpower needs.

Purpose of this division is to supply these demands through one and two year post-high school programs. Occupation-centered curricula in the field of technical and vocational education are established in response to community needs made known through the use of 36 business-industrial advisory committees.

Occupational curricula now offered include: Civil and structural engineering technology, highway engineering technology, electronic engineering technology (industrial), drafting technology, and surveying technology.

This division seeks to impart the skills, abilities, understanding, attitudes, and working habits that will enable the student to assume his place in the economic life of this community, state and nation.

Individual differences are recognized and subject matter is presented in a method designed for student understanding. Guidance and counseling assist each student to make the most of his abilities.

Instructors are chosen for their occupational competency, formal educational background and interests. All meet vocational certification standards set up by the State Board of Education.

REGISTRATION

Requirements for admission, placement tests, tuition and registration procedure for technology-business programs have been outlined in introductory sections of this catalog. An additional $2.00 or $3.00 fee is charged for each lab course.

CLASSES OFFERED DAY-EVENING

Students may attend either full or part-time on either a day or an evening basis. Classes are in session from 8 a.m. to 10 p.m.

PLACEMENT

An active placement policy is maintained for the benefit of graduates of this division. Instructors in each program are in close touch with employers and job opportunities in the area.

EVALUATION

Transcripts from other post high school institutions showing subject matter completed that compares with our offerings will be accepted and credit given toward Associate degrees upon evaluation by the Committee on Academic Requirements.

Certain courses within the required curriculum may be waived upon evaluation of previous record or examinations given by the faculty committee.

Courses in this division do not carry automatic college-transfer credit.
Pre-Technical Curriculum

Courses offered in this one term program are intended to assist students in reaching the achievement level necessary to profit from instruction which is offered in the engineering technology curriculums. Refresher courses are offered in basic mathematics, science, and communication skills.

This program also is useful in helping students who have not graduated from high school prepare for the General Education Development test, successful grade on which admits them to Portland Community College.

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<th>Term Units</th>
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<td>Introduction to Physics</td>
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<td>3</td>
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<td>Communication Fundamentals</td>
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<tr>
<td>PT</td>
<td>Introduction to Engineering Technology</td>
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<td>PT</td>
<td>Blueprint Reading and Sketching</td>
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<tr>
<td>PT</td>
<td>Supervised Study (Minimum 3 Hrs. week)</td>
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Technology Building, 049 S. W. Porter

Civil and Structural Engineering Technology

This course prepares the student for entry into employment as a technician in the Civil and Structural Engineering field. The scope of the course is such that it gives education in several fields so that the graduate may have a wide choice of entry occupations.
The draftsman, contractor, foreman and artisan are a close knit team in the construction industry. The Civil and Structural Engineering technician will receive training in developing plans, estimating costs, and coordinating the trades that cooperate in the completion of a construction project.

Training includes areas of activity designed to give the student an understanding of the engineer's job and an ability to participate effectively as a technician in the Civil and Structural Engineering field.

Students may enter the course either full or part time. It is suggested that part time students check the class schedule before making a decision as to the part of the day they will attend.

Satisfactory completion of the courses required for graduation will prepare the student for employment in the Civil and Structural Engineering field. Some of the job opportunities in this field are:

- Instrument Man, Survey
- Chainman
- Job Clerk
- Engineering Aide
- Computer
- Technical Writer
- Contractor's Assistant
- Cost Estimator
- Construction Estimator
- Superintendent of Construction Inspector
- Civil Engineering Technician
- Surveyor
- Construction Foreman
- Assistant Engineer
- Senior Draftsman
- Structural Designer
Civil and Structural Engineering Technology

First Year

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Hours/Week</th>
<th>Term Units</th>
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<tbody>
<tr>
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<td>Applied Physics</td>
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<td>1.100</td>
<td>Communication Skills I</td>
<td>3</td>
<td>3</td>
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<tr>
<td>4.101</td>
<td>Drafting I</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>6.135</td>
<td>Engineering Problems</td>
<td>2</td>
<td>1</td>
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<tr>
<td>6.101</td>
<td>Plane Surveying I</td>
<td>1</td>
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<td>6.261</td>
<td>Technical Mathematics I</td>
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<th>Course Number</th>
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<th>Hours/Week</th>
<th>Term Units</th>
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<td>5.107</td>
<td>Strength of Materials Lab I</td>
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<td>5.286</td>
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<td>5.126</td>
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Second Year

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<td>4.108</td>
<td>Materials of Construction</td>
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<table>
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<th>Course Title</th>
<th>Hours/Week</th>
<th>Term Units</th>
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<td>6.133</td>
<td>Mapping and Computing II</td>
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<td>6.124</td>
<td>Soil Mechanics I</td>
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<tr>
<td>6.125</td>
<td>Timber and Steel Construction</td>
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<td>4</td>
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<tr>
<td>6.122</td>
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<th>Hours/Week</th>
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<td>Foundation of Structures</td>
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<td>6.123</td>
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<tr>
<td>6.110</td>
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21
Highway Engineering Technology

This course is designed to prepare persons for employment in technical occupations in highway departments or in firms having contracts with them and provides opportunities for those already employed in these technical occupations to obtain further training that will help them advance in their field.

Special federal funds aid in the sponsorship of this program. These special funds were appropriated to assist in the training of highly skilled technicians for occupations essential to national defense.

Students may enter the course either full or part time. It is suggested that part time students check the class schedule before making a decision as to the courses they will attend.

Satisfactory completion of the courses required for graduation will prepare the student for initial employment as a Highway Engineering Technician eventually leading to appointment to such positions as:

- Head Chainman
- Levelman
- Junior Construction Inspector
- Map Draftsman
- Computer
- Traffic Technician
- Materials Testing Technician
- Topographer
- Photogrammetric Aide

The courses offered will provide a base for further training and experience that may lead to advancement to highway engineering positions.
# Highway Engineering Technology

## First Year

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Hours/Week</th>
<th>Term Units</th>
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<tr>
<td>6.370</td>
<td>Applied Physics</td>
<td>3</td>
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<td>Drafting I</td>
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<td>6.101</td>
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<tr>
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<td>1</td>
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<td>Traffic Engineering</td>
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| Total Units   | 16                                   |

## Second Year

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<th>Term Units</th>
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<td>6.112</td>
<td>Hydraulics I</td>
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<td>3</td>
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<tr>
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<td>Strength of Materials Lab I</td>
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<td>3</td>
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<td>Mapping and Computing II</td>
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<tr>
<td>6.118</td>
<td>Contracts and Specifications</td>
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<tr>
<td>6.551</td>
<td>Asphalt Paving</td>
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<tr>
<td>6.555</td>
<td>Concrete Practice</td>
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| Total Units   | 17                                   |
## Surveying Technology (One-year Program)

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<tr>
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<tr>
<td>First Term</td>
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<tr>
<td>6.101</td>
<td>Plane Surveying</td>
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<td>6.103</td>
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<tr>
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<td>Mapping &amp; Computing I</td>
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<td>Materials of Construction</td>
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<td>4.500</td>
<td>Employer-Employee Relations</td>
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<tr>
<td>N/C</td>
<td>Supervised Study</td>
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</table>

### Electronic Engineering Technician (Day Only)

This full-time two-year curriculum is designed to prepare students for employment as engineering technicians. As such, they can expect to work with graduate engineers as members of a team in the area of electronics research and design.

Since much of this work will be of an analytical and developmental nature, mathematics and the fundamentals of advanced theory are essential parts of their technical training.

Job opportunities in this area are both numerous and attractive. Students who have an interest and ability in mathematics and electronic theory can successfully complete this program and easily find employment in the area of their greatest interest.

Upon graduation each student will be granted an Associate Degree in Applied Science by Portland Community College.

### Electronic Engineering Technician (Evening Only)

This curriculum is identical with the Electronic Engineering Technician (Day Only) in every respect except that the time is extended to meet the requirements of part-time students. The Typical Sequence of Courses indicates that a part-time student attending classes three nights per week can meet all the requirements of the Associate Degree in 12 terms.

For those students who are unable to attend classes three nights per week it simply means that their training will necessarily be extended over a longer period of time.
Electronic Engineering Technology

This course is designed to prepare persons for employment in occupations in electronic industries and allied areas. It will provide opportunities for those already employed in these occupations to obtain further training that will help them advance in their chosen field.

Special federal funds aid in the sponsorship of this program. These funds were appropriated to assist in the training of highly skilled persons for occupations essential to national defense.

This program will be offered both on a day time basis 8:00 A. M. to 3:00 P. M. and on a late afternoon and evening basis 6:00 P. M. to 10:00 P. M. Class periods will be fifty minutes each.

Enrollment will be accepted on a full time or part time basis and for individual courses. It is suggested that part time students check the class schedule before making a decision as to the part of the class day they will attend.

Satisfactory completion of the courses required for graduation will prepare the student for employment in the electronics field. Some of the job opportunities are in the following fields:

- Radio Communications (Aircraft, etc.)
- Electronics Circuit Design
- Laboratory Electronics
- Electronic Instruments
- Guided Missile (design, mfg.)
- Electronic Computers
- Microwave Systems
- Electronic Instrument Service
- Industrial Electronics
- Electronic Equipment Design
- Supervisory
## Electronic Engineering Technology

### First Year

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</table>
Electronic Technician—Industrial (Day Only)

This curriculum has been designed to prepare students for entry employment in a large number of electronic areas where circuit-tracing, trouble-shooting, and maintenance and adjustment of electronic equipment are the technician's principal activities. This might involve such jobs as the repair of electronic equipment and devices, calibration and alignment of equipment in production, maintenance and operation of radio and television transmitters and receivers, and operation of radar, loran, and other navigational equipment.

In this curriculum, the emphasis in the technical training is on the intuitive understanding of electronic circuits with a minimum reference to mathematics. Students who have a limited interest and background in mathematics or physics can expect to successfully complete this program and find numerous job opportunities available to them upon graduation.

Electronic Technician—Industrial (Evening Only)

This curriculum is identical with the Electronic Technician (Day Only) except that the time has been extended to meet the needs of part-time students.

The typical sequence of courses indicates that a part-time student attending classes three nights per week can meet all the requirements of the Associate Degree in 12 terms.

For those students unable to attend classes three nights per week, it simply means that their training will necessarily be extended over a longer period of time.

Another very important feature of this curriculum is that it can be effectively divided into four levels of training. Typical sequence of courses is available to assist evening students.
### Technology

**Electronics Technician Industrial Curriculum (Day Only)**

**Typical Sequence of Courses for Day Students**

#### First Term

<table>
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28
Drafting Technology

This is a program of either one or two years in length. The one year program is designed to prepare the student for employment in one of the areas requiring drafting skills. Employment opportunities are found in machine shops, mills, highway offices, architectural firms, contractors offices, engineering firms, and blueprint companies to name a few.

The student may elect to take either the one or the two-year program. If, after completing the first year of the drafting curriculum, the student desires to extend his knowledge and opportunities he may complete the second-year sequence of courses and qualify as a technical draftsman.

The Civil Structural Drafting and the Electronic Drafting curriculums are open to second-year majors in the Civil Structural or the Electronic Technology Curriculums who feel that they would rather specialize in the drafting area of their major curriculum.

Some job opportunities are as follows:

- Machinist Draftsman
- Structural Draftsman
- Architectural Draftsman
- Welding Draftsman
- Piping and Flow System Draftsman
- Engineering Graphics Draftsman
- Technical Illustrator
- Sheetmetal Layout Draftsman
- Electronics Draftsman
- Aeronautical Draftsman
- Topographical and Mapping Draftsman
- Statistical Draftsman
# One Year Drafting

## First Term

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## Technical Drafting (2nd Year) Option

## Fourth Term

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### Typical Sequence of Courses

#### Civil Structural Drafting (2nd Year Only)

**Fourth Term**

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**Fifth Term**

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**Sixth Term**

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### Typical Sequence of Courses

#### Electronic Drafting (Option)

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**Fifth Term**

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<td>2.104</td>
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**Sixth Term**

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<tr>
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COURSE DESCRIPTIONS

A-C FUNDAMENTALS 6.303R 3 class, 6 lab hrs/wk Term Units 5
This course is designed to prepare students with a firm foundation in A-C fundamentals. It begins with an introduction to magnetic units as these are used in practical applications of magnetic and electromagnetic circuits. Other topics covered include alternating current and voltage, inductance, inductive reactance, inductive circuits, capacitance, capacitive reactance, capacitive circuits, and alternating current circuits involving combinations of resistance, inductive and capacitive reactances.

A-C PROBLEMS 6.302R 3 class hrs/wk Term Units 3
This is the second of a series of two mathematics courses designed for the student of electronics. Mathematical principles are presented as a direct result of a need encountered in the development of the electronic theory. The major topics covered include trigonometry, vector algebra, and logarithms. Emphasis is placed on such applications as the use of the decibel in the measurement of power and voltage gain or attenuation. Methods of solving problems appearing as logarithms and exponential equations are also presented.

ADVANCED DRAFTING PROBLEMS 4.113 2 class hrs/wk Term Units 2
Survey of practical descriptive geometry. Theory of auxiliary views, true length, shape, and angles developed from point-line-plane through use of revolution. Elements of simple vector problems. Emphasis on application of principles to problems commonly encountered by draftsmen.
Prerequisite: Drafting 4.105 and Mathematics 4.204 or approval of department head.

ADVANCED DRAFTING PROBLEMS 4.115 3 class hrs/wk Term Units 3
Introduction to practical descriptive geometry used by the draftsman. Theory of auxiliary views, true length, shape, angles, and point of intersection developed from point-line-plane through the use of revolution. Introduction to graphical solution of simple vector problems.
Prerequisite: Drafting 4.105 and Mathematics 4.204.

ADVANCED ELECTRONIC CIRCUITS 6.216 2 class, 3 lab hrs/wk Term Units 3
A course designed to simulate problems in industry. Covers six electronic areas including computers, communications, industrial controls, electronics, microwaves, and radar. Class meetings involve overview of each area and study of current problems and opportunities. Lab involves construction, testing, and reporting performance of assigned circuits.
Prerequisite: Sixth term standing or approval of department head.

ADVANCED MACHINE DRAFTING 4.117 5 lab hrs/wk Term Units 2
This course extends background in the area of machine drafting. It will include technical sketching and shape description, multi-view projections, sectional views, and revolutions.
Prerequisite: Second year standing or approval of department head.
ADVANCED MACHINE DRAFTING 4.123  5 lab hrs/wk  Term Units 2
This course presents advanced studies in the major areas of machine drafting. The areas covered will include threads and fasteners, assembly drawings, pictorial drawings, and engineering graphics.
Prerequisite: Advanced Machine Drafting 4.117.

ADVANCED MACHINE DRAFTING 4.125  5 lab hrs/wk  Term Units 2
This course presents practical drafting problems requiring the application of previously learned principles of machine drafting. This will include advanced work on cams, gears, and the relationships of drafting to shop processes.
Prerequisite: Advanced Machine Drafting 4.123.

ADVANCED TRANSISTOR CIRCUITS 6.252  3 class, 2 lab hrs/wk  Term Units 4
This is an advanced course in transistor technology. It was designed for those persons who already have a moderate background in transistor theory and fundamentals as well as some experience with transistor amplifier and oscillator circuits.
Although these topics are reviewed in this course, major emphasis is placed on the development of techniques and procedures necessary to make practical use of transistors in a variety of common circuits.
Some of the principal topics covered are: parameter calculations, using characteristic curves and charts, reading transistor specifications, and transistor measurements.

AMPLIFIER CIRCUITS AND DESIGN 6.214  3 class hrs/wk  Term Units 3
A continuation of oscillator circuits and design. Analyzes the vacuum-tube amplifier into its basic and equivalent circuit, includes load-lines, distortion, and pentode and beam-power tube considerations. Analyzes transistor amplifiers in various circuit configurations and covers biasing methods. Also includes transformer analysis, transformer-coupled amplifiers, and R-C coupled amplifiers.
Prerequisites: Fifth term standing or approval of department head.

AMPLIFIER CIRCUITS AND DESIGN LAB 6.215  8 lab hrs/wk  Term Units 2
The application of theory studied in Amplifier Circuits and Design 6.214. Involves the design, construction, and testing of various types of vacuum-tube and transistor amplifiers employing direct, transformer, and R-C coupling. Class C power amplifiers are constructed and adjusted for proper operation and different types of high-frequency amplifiers are also built and tested.
Prerequisite: Fifth term standing or approval of department head.

APPLIED MECHANICS 6.109  2 class, 3 lab hrs/wk  Term Units 3
The course consists of a study of energy at rest (equilibrium). This includes resolution of forces, equilibrants of forces in one plane, simple machines, and equilibrants of nonconcurrent forces. Time is provided for demonstrations and experiments to help clarify the principles and procedures covered.
Prerequisite: Technical Mathematics 6.262 and Applied Physics 6.371 or equivalent.
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APPLIED MECHANICS 6.111 2 class, 3 lab hrs/wk  Term Units 3
A study of energy in motion. The course covers the principles of friction, centroids, inertial characteristics, motion and velocity, force and acceleration, curvilinear motion and rotation, and advanced concepts of work, power and energy. Time is provided for demonstrations and experiments to help clarify the principles and procedures covered.
Prerequisite: Applied Mechanics 6.109 or equivalent.

APPLIED PHYSICS 6.366 3 class, 2 lab hrs/wk  Term Units 4
Magnetism and electricity, including basic electric currents, sources, electromagnetism, alternating current, generators and motors. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.
Prerequisite: Technical Mathematics 1.262 or equivalent.

APPLIED PHYSICS 6.370 3 class, 2 lab hrs/wk  Term Units 4
A course in applied physics on the post high school level. Covers mechanics of measurement, structure of matter, heat energy, heat engines, sound, and light. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.
Prerequisite: Technical Mathematics 1.260 or approval of department head.

APPLIED PHYSICS 6.371 3 class, 2 lab hrs/wk  Term Units 4
Covers the principles of vectors, kinematics, work-power-energy, machines and angular vectors. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.
Prerequisite: Applied Physics 6.370 or approval of department head.

APPLIED PSYCHOLOGY 1.548 3 class hrs/wk  Term Units 3
Consideration of the following management problems: The selection, testing and training of employees; work methods, fatigue, and employee efficiency; motivation, morale, and productivity; accident prevention, factors in supervision and evaluation of employees.
Prerequisite: Psychology and Human Relations and Introduction to Business or equivalent.

ARCHITECTURAL DRAWING 4.107 4 lab hrs/wk  Term Units 2
An advanced course emphasizing architectural drawing techniques. The course will cover methods and procedures in architectural drawings, lettering, layout and design and the standard drawings (construction and display), and rendering the display drawing. Application consists of preparing sets of working drawings of residential and commercial buildings.
Prerequisite: Second year standing or approval of department head.

ASPHALT PAVING 6.551 2 class, 2 lab hrs/wk  Term Units 3
A comprehensive study of the selection of materials to meet requirements of climate and use, aggregates and their applications to paving under
varying conditions, and tests necessary to provide optimum results.
Prerequisite: Second year standing or approval of instructor.

AUTOMATION SYSTEM 6.244
3 class hrs/wk  Term Units 3
This course is devoted to the study of the techniques of automation. Introduces the basic concepts of automation and covers automatic controls, pneumatic control devices, hydraulic control devices, and electronic and electric control devices.
Prerequisite: Second year standing or approval of instructor.

BASIC ELECTRONICS I 6.305
3 class, 6 lab hrs/wk  Term Units 5
The mathematical background necessary for the satisfactory completion of this course is covered in A-C and D-C Problems.
The content of this course includes such topics as: a review of atomic structure and electron theory; analysis of vacuum tubes in terms of plate resistance, amplification factor, and transconductance; the characteristic grid-voltage plate-current curves for various tube types; D-C power supplies, limiters and clippers; basic amplifier circuits—Class A, A1, A2, B, and Class C; vacuum tubes used as oscillators—sinusoidal and nonsinusoidal; special purpose electron tubes such as cathode ray tubes, gas and vapor tubes including thyatrons and phototubes.
Supplementing the class meetings, a series of laboratory experiments have been prepared so that the student can test and apply the principles presented in theory.

BASIC ELECTRONICS II 6.037
3 class, 6 lab hrs/wk  Term Units 5
In this course the emphasis is on semi-conductors.
The major topic headings listed are: transistors, basic transistor amplifiers, transistor oscillators, special semi-conductor devices, and electronic test instruments.
A series of laboratory experiments has been designed to accompany the theory portions of this course.

BLUEPRINT READING AND SKETCHING 4.853
4 class hrs/wk
This course provides a basic understanding and ability to read and interpret blueprints, as well as the ability to make simple sketches. Accepted standards established by the "American Standards Association" are followed. The kind of practical information which is needed by the successful technician for layout, fabrication, construction, assembly, testing or designing is covered.

CODE PRACTICE I 6.338
3 class hrs/wk  Term Units 3
This course is designed for those persons interested in developing skill in sending and receiving Morse code either as a hobby or to meet F.C.C. license requirements. The pace of the course is so set that the student should have no difficulty in being able to send and receive messages in Morse Code at the rate of 9 words per minute.

CODE PRACTICES II 6.340
3 class hrs/wk  Term Units 3
This course is a continuation of Code Practice I. It is designed to de-
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velop the student's sending and receiving speed from 5 to 8 words per minute to approximately 15 words per minute.

COMMUNICATION SKILLS 1.100 3 class hrs/wk Term Units 3
This course is designed to improve the student's four basic skills—reading, speaking, writing, and listening. Problems in the field of oral communication include individual speech analysis, business and social conversations, group speaking in business and industry, informative talks, demonstrations and explanations.

COMMUNICATION SKILLS 1.102 3 class hrs/wk Term Units 3
This course presents the next steps in the process of improving the student's speaking, reading, writing, and listening skills. Practice is provided for the student in developing reports; giving talks; taking part in conferences; reading, analyzing, and discussing both general and technical periodicals; and handling representative forms of business writing.
Prerequisite: Communication Skills 1.100 or equivalent.

CONCRETE CONSTRUCTION AND DESIGN 5 class hrs/wk Term Units 4
Theory of designing; retaining walls; combined irregular and pile footings; combined direct stress and bending; short span concrete bridges; ultimate strength design; structural elements of combined steel and concrete.
Prerequisite: Applied Mechanics 6.109 and Technical Mathematics 6.266 or equivalent.

CONCRETE PRACTICE 6.555 1 class, 3 lab hrs/wk Term Units 2
A study of the producing, placing, finishing, and curing of concrete; the composition of various grades of concrete and their application to construction projects.
Prerequisite: Second year standing or approval of instructor.

CONSTRUCTION CODES 6-122 2 class hrs/wk Term Units 2
A study of the required practices as stated in local, state and federal construction codes.

CONSTRUCTION COSTS COMPUTATION 4.134 2 class hrs/wk Term Units 2
Introduction to the basic principles of estimating the amount and cost of materials required, and the attendant labor cost involved in various types of construction projects.
Prerequisite: Fifth term standing or approval of department head.

CONSTRUCTION COSTS COMPUTATION LABORATORY 4.135 5 lab hrs/wk Term Units 2
The student applies the principles of estimation to drawing assignments. Examples of local job estimates, and observation of the job site will be used to illustrate the principles whenever practicable.
Prerequisite: Fifth term standing or approval of department head.

CONSTRUCTION ESTIMATING 6.110 2 class hrs/wk Term Units 2
The student is helped to develop skills in estimating the amount and cost
of materials required, and labor cost involved in various types of construction. An opportunity is provided for the application of these skills by requiring the student to make estimates of material and labor quantities and costs for representative type of construction.

Prerequisite: Fifth term standing or permission of instructor.

CONSTRUCTION STANDARDS 4.110 2 class hrs/wk  Term Units 2

A study of the required practices covered in local, state, and federal construction standards.

Prerequisite: Fourth term standing or approval of department head.

CONTRACTS AND SPECIFICATIONS 6.118 3 class hrs/wk  Term Units 3

This is a course designed to acquaint the student with common usage and practice in the preparation of contracts and attendant specifications. Examination of existing contracts covering current jobs will be used whenever possible with practical problems designed to teach the application of theory learned.

Prerequisite: Second year standing or approval of instructor. Technical Report Writing or equivalent is recommended.

CONTROL LAYOUT SYSTEMS 4.143 1 class, 6 lab hrs/wk  Term Units 3

Introduction of time and methods study for increased production, efficiency, and safety. Methods of equipment layout and production routing, and personnel and lighting requirements will be discussed. Laboratory time will be used to apply these principles to layout drawings.

COST COMPUTATIONS 4.140 2 class hrs/wk  Term Units 2

An introduction to the principles of time and cost computations for electronic-electrical device fabrication and installation.

Prerequisite: Fifth term standing or approval of department head.

COST COMPUTATIONS LABORATORY 4.141 6 lab hrs/wk  Term Units 2

The student will apply the principles of estimating to find the cost and time allowances for simulated problems.

Prerequisite: Fifth term standing or approval of department head.

D-C FUNDAMENTALS 6.300R 3 class, 6 lab hrs/wk  Term Units 5

This is the first course in electronic fundamentals in a series of courses which are part of the electronics technician curriculum. Topics covered include Ohm's Law, series circuits, parallel circuits, series-parallel combinations, direct-current motors, conductors and insulators, resistors, batteries, and magnetism.

Supplementing the class meetings, a series of laboratory experiments has been prepared so that the student can test and apply the principles presented in theory.

D-C PROBLEMS 6.300R 3 class hrs/wk  Term Units 3

This is the first of a series of two electronics math courses designed to meet the needs of beginning electronics technician students. Although the
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prerequisites to this course specify mathematical ability of the high school level, this is not taken for granted.

Areas of study include a review of arithmetic, basic algebra, powers of ten, units and dimensions, simple equations, and the solution of problems involving Ohm's Law with regard to series, parallel, and combined resistive circuits.

DRAFTING 4.101 4 lab hrs/wk Term Units 2
This is a fundamental course in drafting designed to give the student a basic understanding of drawing techniques. Emphasis will be placed on the application of drafting instruments, standard orthographic projection, layout procedures, and ASA approved lettering techniques. Drawing techniques such as geometric construction, selection of views, sectional and auxiliary views, revolutions, threads, and standard dimensioning practices will be covered.
Prerequisite: High School Algebra or equivalent.

DRAFTING 4.105 4 lab hrs/wk Term Units 2
This is an intermediate course designed to prepare students to enter mechanical, structural, civil, and architectural drafting. It includes isometric projection, perspective drawings, descriptive geometry (development and intersections) and oblique drawings. Emphasis is placed on the concept, use, and the development of working drawing as used in industry.
Prerequisite: Drafting 4.101 or equivalent.

ELECTRICAL CIRCUITS 6.204 3 class hrs/wk Term Units 3
Prerequisite: Third term standing or approval of department head.

ELECTRICAL CIRCUITS LABORATORY 6.205 6 lab hrs/wk Term Units 2
Practical application of the theory studied in Electrical Circuits 6.204. Involves the construction and testing of passive filter networks including the constant k, the series m-derived, and the shunt m-derived types. Response of simple circuits involving diodes, resistance, inductance, and capacitance to square-wave, triangular-wave, saw-tooth-wave, and rectangular-wave pulses is analyzed. Various R-L-C combinations are designed and tested for low and high-frequency response, rise and fall times are measured, and integrator and differentiator circuits are constructed and analyzed.
Prerequisite: Third term standing or approval of department head.

ELECTRICAL DRAFTING 4.103 4 lab hrs/wk Term Units 2
This course covers the techniques required for the electrical and electronic fields. It includes charts, graphs, chassis layout, schematic and pictorial wiring diagrams, routing diagrams (power distribution, lighting, conduit and ducts, underground wiring and ducts), and location drawings. ASA and
EEIA approved symbols will be used.
Prerequisite: Drafting 4.101 or equivalent.

**ELECTRICAL MATHEMATICS 6.115**

3 class hrs/wk  Term Units 3

An applied course in mathematics for electronic engineering technicians. Includes an introduction to calculus. Covering graphical methods, differentiation, and integration with direct application to electronic and electrical circuitry.

Prerequisite: Technical Mathematics 6.266 or equivalent.

**ELECTRICAL THEORY (DC) 6.200**

3 class, 2 lab hrs/wk  Term Units 4

Presents an introduction to electronics on the basis of direct currents. Covers the principles of electron physics, unidirectional current and factors affecting its magnitude, series-circuit analysis, parallel-circuit analysis, series-parallel circuit analysis, the phenomena of magnetism and electromagnetism, inductance and its characteristics, characteristics of capacitance, and electrical measurement instruments.

Prerequisite: High school algebra or equivalent.

**ELECTRICAL THEORY (AC) 6.202**

3 class, 2 lab hrs/wk  Term Units 4

A continuation of electrical theory on the basis of alternating currents with an emphasis on contemporary techniques as a supplement to basic concepts. Covers the analysis of the sine wave, series circuits with a sine wave input, series resonance, parallel circuits with a sine wave input, parallel resonance, the non-resonant and the resonant transformer and attenuators and pads.

Prerequisites: Second term standing or approval of department head.

**ELECTRONIC DATA PROCESSING 6.240**

3 class hrs/wk  Term Units 3

An introduction to the principles of electronic digital computers. Covers the application and programming of computers in business, industrial, and scientific organizations. Reviews the decimal and binary numbering systems as they relate to computers; analyzes computer circuitry with emphasis on transistor and diode switching circuits.

Prerequisite: Fifth term standing or approval of department head.

**ELECTRONICS LABORATORY I 6.323**

4 lab hrs/wk  Term Units 2

The principal activity of this lab is the trouble-shooting alignment, and adjustment of A-M radios and transmitters, record players, and tape recorders. Begins with a review of trouble-isolation techniques such as signal-tracing methods, signal-injection methods, capacitor bridging and component substitution.

**ELECTRONICS LABORATORY II 6.325**

4 lab hrs/wk  Term Units 2

The function of this laboratory is the trouble-shooting, alignment, and adjustment of television receivers, f-m transmitters and receivers, and advanced or special communication system transmitters.

Emphasis is placed on the effective use of such test equipment as tube-checkers, capacitor analyzers, markers and sweep generators, wide-band
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oscilloscopes, r-f and demodular probes, high-voltage probes, field-strength meters, and cross-hatch and dot generators.

**ELECTRONIC STANDARD 4.114**

3 class hrs/wk  Term Units 3

A study of the industrial standards published by the ASA, AIEE, and the NEMA. Also includes a survey of typical state, federal, and military electronic-electrical practices as they affect the draftsman.

Prerequisite: Fourth term standing or approval of department head.

**EMPLOYER-EMPLOYEE RELATIONS 4.500**

2 class hrs/wk  Term Units 2

The objective of this course is to provide an understanding of the rights and responsibilities of employees. Government laws and regulations covering collective bargaining, other state and federal labor laws, and how labor disputes are negotiated are given consideration. Information on the problems faced by individuals applying for work and the individual's association with fellow workers and company representatives are covered.

**ENGINEERING PRACTICES 6.338**

3 class hrs/wk  Term Units 1

The course is intended to train the student to organize his analyses and record them in clear, concise form so that they can be easily interpreted and to develop the skill of gathering together and sorting research results and problem-solving records into logical summation.

**ENGINEERING PROBLEMS 6.135**

2 class hrs/wk  Term Units 1

This course aims to develop, through extensive applications, the ability to analyze a problem and divide into logical parts which can then be individually considered. Record keeping and efficient work methods will be stressed so that work may be verified and/or carried on further by other workers. Standards of accuracy will be considered and applied to problems.

**ENGINEERING PROBLEMS 6.136**

2 class hrs/wk  Term Units 1

This course aims to develop the skill of gathering together and sorting research results and problem solving records into logical summation. Mathematical and graphical analysis of data will be emphasized in the presentation of information in the report.

Prerequisite: Engineering Problems 6.135.

**FOUNDATIONS OF STRUCTURES 6.120**

2 class hrs/wk  Term Units 3

A study of various materials, devices, and designs used in structural foundations such as footings, cofferdams, caissons, abutments, piers, and underpinnings.

Prerequisite: Applied Mechanics 6.111 and Technical Mathematics 6.266 or equivalent.

**HYDRAULICS 6.112**

3 class hrs/wk  Term Units 3

The first course in the study of hydraulics covers the fundamental properties of fluids. The relationship of hydrostatic pressure and center of gravity and the effect of hydrostatic pressure exerted against plane surfaces will also be discussed. Time is provided for demonstrations and experiments to help
clarify the principles and procedures covered.  
Prerequisite: Applied Physics 6.371 and Technical Mathematics 6.266 or equivalent.

HYDRAULICS 6.114  
3 class hrs/week  Term Units 3

The second course in hydraulics consists of the fundamentals of fluid flow, Bernoulli's theorem, flow profiles, stream restrictions, distribution of energy in the stream, flow through pipe, vector representation, hydraulic similitude, and dimensional analysis. Time is provided for demonstration and experiments to help clarify the principles and procedures covered.  
Prerequisite: Hydraulics 6.112 or equivalent.

INDUSTRIAL CONSTRUCTION DRAFTING 4.133  
2 class, 6 lab hrs/wk  Term Units 4

Introduction to the steps of construction for commercial and industrial buildings. Discussion of modern construction techniques; materials; drawing requirements; inter-relationship of architectural, civil, mechanical, and electrical professions in industrial construction. Laboratory time is used to develop typical drawings.  
Prerequisite: Fifth term standing or approval of department head.

INDUSTRIAL ECONOMICS 1.506  
2 class hrs/wk  Term Units 2

Industrial Economics deals with the principles involved in the operation of the American economic system. Basic economic principles are applied to the relationship of employer and employee. Topics considered include historic trends, business organization, prices and competition, price levels, business cycles, taxation, labor-management relations, labor legislation, and social and private security.

INDUSTRIAL ELECTRONICS I 6.218R  
2 class, 3 lab hrs/wk  Term Units 3

An introductory class and laboratory course covering the principles and applications of electronics in industry. Includes a review of the principles of D-C motors, generators, and controls. Also covers relays and time-delay circuits; industrial photo-electric control and typical applications; electronic power control and the amplidyne; and electronic control of welding.

INDUSTRIAL ELECTRONICS II 6.246R  
3 class, 3 lab hrs/wk  Term Units 4

A continuation of industrial electronics with emphasis on A-C principles and applications in industry. Covers alternating current characteristics, generation of a-c, vector diagram analysis, and graphical representation of resistance, reactance, and impedance. Single-phase circuits are analyzed in terms of power factor and three-phase wye and delta combinations are studied.  
The theory studied in class is verified by lab experiments.

INDUSTRIAL ELECTRONICS LAB 6.247  
3 lab hrs/wk  Term Unit 1

The practical application of the theory studied in Industrial Electronics 6.246. Alternating-current theory and principles are verified by the construction and testing of circuits involving series resistance, inductance, and
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Phase-angle, reactance, and impedance are calculated and checked. All types of electrical measuring equipment are tested by application.

Prerequisite: Sixth term standing or approval of department head.

INDUSTRIAL SAFETY 4.108 3 class hrs/wk  Term Units 3
A survey of the principles of safety for industry. Includes safety codes, personnel considerations, and safety practices related to design work, materials handling, and equipment.
Prerequisite: Second year standing or approval of department head.

INDUSTRIAL TELEVISION 6.228 2 class, 3 lab hrs/wk  Term Units 3
A theory and lab course designed to cover television systems, scanning and synchronization, composite video signal, frequency-modulation, television receivers and monitors, picture tubes, power supplies, video amplification, practical design of video amplifiers, brightness-control and D-C reinsertion video detection, automatic gain-control and sync-separation, and deflection oscillator and amplifier circuits.
Prerequisite: Fifth term standing or approval of department head.

INDUSTRIAL TELEVISION II 6.235 1 class, 2 lab hrs/wk  Term Units 1
A theory and lab course serving as a continuation of Industrial Television I. Topics included are: sync separation, deflection oscillators, deflection amplifiers, transformers and yokes, picture i-f amplifiers, r-f tuners, television antennas and transmission lines, and the f-m sound signal.

INTRODUCTION TO ENGINEERING MATHEMATICS  (PT) 6 class hrs/wk
Presents a review of basic mathematics and algebra as preparation for more advanced work in technical mathematics.  (Non credit)

INTRODUCTION TO ENGINEERING PHYSICS  (PT) 3 class, 3 lab hrs/wk
Provides a basic knowledge in the physical science field and vector problem solving to prepare the students for advanced work in applied physics.  (Non credit)

INTRODUCTION TO FABRICATION PRACTICES 4.100 2 class, 6 lab hrs/wk  Term Units 4
An introductory course of observation and drafting. Students will be assigned drawing projects and will normally view the physical object of the drawing in order to develop their visualization of the subject on the drafting board. Frequent field trips will be made to observe modern methods of manufacturing, casting, forging, construction, and assembly at local industry.
Prerequisite: Drafting 4.101 which may be taken concurrently.

INTRODUCTION TO SPECIFICATIONS 4.102 3 class hrs/wk  Term Units 3
This is a course designed to acquaint the student with common usage and practice in the preparation and interpretation of specifications. Examination of existing specifications covering current subjects will be used whenever possible with practical problems to teach the application of theory learned.
Prerequisite: Second year standing or approval of department head.
LICENSE PREPARATION 6.304

This course is designed to assist those persons preparing for F.C.C. amateur and commercial licenses. The questions appearing in the Q and A book are used as topics of discussion. Persons enrolling in this course are required to have a good background in A/C and D/C Fundamentals.

LIGHT SHEET METAL DRAFTING 4.147

A study of pattern development, basic dye development techniques, and steps of fabrication for light sheet metal construction as applied to the electronic-electrical industry. Production design and layout for chassis, raceways, ducts, and metal cabinets are included.
Prerequisite: Sixth term standing or approval of department head.

MAPPING AND COMPUTING 6.131

Advanced map plotting, earthwork computation, field surveying from maps; legal description; subdivision planning and simulated problems or construction are used.
Prerequisite: Plane Surveying 6.105 and Technical Mathematics 6.266 or equivalent.

MAPPING AND COMPUTING 6.133

Advanced earthwork computation; office procedure; government surveys; surveying laws; professional practices. Simulated problems are used.
Prerequisite: Mapping and Computing 6.131 or equivalent.

MAPPING AND PLATTING 4.131

Principles of map plotting using field survey data. Office procedure: basic earthwork computation, legal description, and subdivision planning. Simulated problems are used for application of principles.
Prerequisite: Fourth term standing or approval of department head.

MATERIALS OF CONSTRUCTION 6.108

Comparisons of various materials, their source, method of manufacture, physical and chemical properties; grading under a variety of conditions; soil and terrain as encountered in construction work.

MATHEMATICS 4.200

This is a course in practical mathematics including problems composed of whole numbers, fractions, measurement, formulas, graphs, and roots.
Prerequisite: Ability to profit from instruction.

MATHEMATICS 4.202

This is a course in practical mathematics including the fundamentals of applied algebra and applied geometry, including symbols, equations, ratios and proportion, exponents, radicals, formulas, geometric lines and shapes, common geometric constructions, and introductory applied trigonometry.
Prerequisite: Mathematics 4.200 or equivalent.

MATHEMATICS 4.204

This course concentrates on problems encountered by workers in indus-
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trial occupations. It applies arithmetic, algebra, geometry, trigonometry, and their various phases to jobs encountered. Emphasis on actual problem solving aspects.
Prerequisite: Mathematics 4.202 or equivalent.

MECHANICAL DRAFTING 4.109 4 lab hrs/wk Term Units 2
An advanced course emphasizing mechanical design. It includes sketching, cam and gear layout, isometric drawings, welding drawings, tolerances and allowances, and tool jig drawings. Simplified drawing techniques will be covered and general shop procedures will be discussed. Emphasis will be placed on the industrial requirements of drawings.

METALS APPLICATION TREATMENT AND TESTING 4.106 2 class, 3 lab hrs/wk Term Units 3
A survey course in metallurgy covering the common materials of fabrication, metal code systems, characteristics, methods of refining and alloying, and methods of treating. The goal of the course is to acquaint the student with the various types and the working of metals used by industry.
Prerequisite: Second year standing or approval of department head.

MICROWAVES 6.242 2 class, 3 lab hrs/wk Term Units 3
Begins with a study of ultra-high frequencies. Covers UHF transmission lines, applications of quarter-wave lines, matching stubs, and S.W.R. measurements. TE and TM modes of propagation are studied.
Various types of microwave "plumbing" are studied, including such components as choke joints, directional couplers, flap attenuators, horns, guide partitions, and flexible waveguides.
Microwave measurements involve the use of thermocouple voltmeters, bolometers, cavity wavemeters, slotted lines, Impedance bridges, SHF signal generators, and directional couplers.

OSCILLATOR CIRCUITS AND DESIGN 6.212 2 class hrs/wk Term Units 2
A continuation of vacuum tube and transistor analysis. Involves the study of single-phase rectifier circuits and filters. Introduces the fundamental feedback equation and covers positive and negative feedback. Various types of feedback oscillators are analyzed. Covers negative-resistance oscillators, miscellaneous sine-wave oscillators, non-sinusoidal oscillators including various multivibrator circuits.
Prerequisite: Fourth term standing or approval of department head.

OSCILLATOR CIRCUITS AND DESIGN LAB 6.213 6 lab hrs/wk Term Units 2
Practical application of the theory studied in Oscillator Circuits and Design 6.212. Involves the testing of half-wave and full-wave single-phase rectifier circuits and measurement of the D.C output and ripple-voltage. Includes the construction and testing of many types of feedback and negative-resistance oscillators. The cathode-ray oscilloscope circuits are analyzed and proper techniques for use of the oscilloscope are included.
Prerequisite: Fourth term standing or approval of department head.
PHOTO INTERPRETATION AND MAPPING 4.112  
3 class, 4 lab hrs/wk  
Term Units 4

This course will introduce elements of production control and planning such as: machine routing, steps of fabrication, efficient shop layout, materials handling, storage problems, and production records.  
Prerequisite: Second year standing or approval of department head.

PHOTOGRAMMETRY 6.540  
1 class, 3 lab hrs/wk  
Term Units 2

Preparing maps and charts from aerial photographs by ground surveying and stereoscopic methods, using standard computational forms.  
Prerequisite: Plane Surveying 6.105 or equivalent.

PICTORIAL DRAFTING 4.149  
3 lab hrs/wk  
Term Units 1

A concentrated study of the development of pictorial wiring diagrams for instructional, demonstration, or sales purposes. Use of drafting templates and instrument drawings will be emphasized.  
Prerequisite: Sixth term standing or approval of department head.

PLANE SURVEYING 6.101  
1 class, 4 lab hrs/wk  
Term Units 3

A beginning course in surveying techniques designed to give the student an understanding of the fundamentals of chaining and leveling, care and adjustment of surveying instruments and office procedures. Provision is made by appropriate field work for practical application of the techniques learned.  
Prerequisite: Mathematics 4.202 or equivalent.

PLANE SURVEYING 6.103  
1 class, 4 lab hrs/wk  
Term Units 3

A continuation of Plane Surveying I designed to familiarize student completely with the engineer's transit. Uses of the transit are considered and practical problems put the theory into practice.  
Prerequisite: Technical Mathematics II and Plane Surveying I or equivalent. Technical Mathematics 6.262 may be taken concurrently.

PRACTICAL DESCRIPTIVE GEOMETRY 6.127  
4 lab hrs/wk  
Term Units 2

This course gives a brief review of advanced drafting problems and takes the student further into the field of descriptive geometric principles. In the production of detailed drawing from assembly drawing the principles of descriptive geometry are necessary to the draftsman.  
Prerequisite: Third term standing or approval of department head.

PRACTICAL HYDROLOGY 6.535  
3 class hrs/wk  
Term Units 3

A practical course of study dealing with the properties, phenomena, and distribution of water. Special emphasis is placed on underground water sources.  
Prerequisite: Hydraulics 6.112 or equivalent.

PRACTICAL PHYSICS 4.300  
3 class, 2 lab hrs/wk  
Term Units 4

This is an introductory course in practical physics covering matter, measurements, mechanics, and machines. Laboratory time is provided for
Technology

demonstrations and experiments to help clarify the principles and procedures covered in class.
Prerequisite: Mathematics 4.200 or equivalent.

PRACTICAL PHYSICS 4.302 3 class, 2 lab hrs/wk Term Units 4
This is an introductory course in practical physics covering heat, light, and sound. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.
Prerequisite: Mathematics 4.202 or equivalent.

PRACTICAL PHYSICS 4.304 3 class, 2 lab hrs/wk Term Units 4
This is an introductory course in practical physics covering magnetism and electricity. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.
Prerequisite: Mathematics 4.202 or equivalent.

PROJECT DRAFTING 4.119 1 class, 9 lab hrs/wk Term Units 4
This course emphasizes working conditions of the industrial drafting room. Students will be assigned projects that will include drawings requiring all of the skills previously acquired. Instruction will include the methods for detail layout, reading specifications, common materials of fabrication, checking and back-checking drawings, and material take-offs.
Prerequisite: Drafting 4.105 which may be taken concurrently.

PROJECT DRAFTING 4.121 8 lab hrs/wk Term Units 3
A continuation of the emphasis on industrial working conditions. Students will be assigned projects that will familiarize them with many of the specialized fields of drafting. Drafting room standards of various local industries will be discussed. Speed and accuracy will be considered of paramount importance.
Prerequisite: Project Drafting 4.119 or equivalent.

PROJECT DRAFTING 4.145 1 class, 9 lab hrs/wk Term Units 4
A project drafting course emphasizing actual working conditions and drawing requirements. Instruction will include speed dimensioning (co-ordinate dimensioning) use of drawing index, drafting room administration, coordination of specification and design, and different methods of representing circuits and circuit components.
Prerequisite: Sixth term standing or approval of department head.

PROPERTY SURVEYING 6.511 1 class, 3 lab hrs/wk Term Units 2
Surveying techniques applied to real property. The finding of monuments, looking up deeds and survey records, reading of descriptions, writing of descriptions, and the correct methods of conducting surveys under varying conditions will be studied.
Prerequisite: Plane Surveying 6.105 or equivalent.

PSYCHOLOGY AND HUMAN RELATIONS 1.546 3 class hrs/wk Term Units 3
Psychological principles and fundamentals of individual behavior involved in understanding the relationship of the individual and his reactions to the social framework with emphasis to business situations.

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Technology

ROAD AND HIGHWAY DRAFTING 4.129 1 class, 6 lab hrs/wk  Term Units 2
Advanced course in drafting including profiles, grades, beds, routes, cross-sections, and details of bridge constructions, and hard and dirt-surfaced roads. Emphasis is placed on drafting requirements for roads built by government agencies and private companies.
Prerequisite: Fourth term standing or approval of department head.

ROUTE SURVEYING 6.507 1 class, 4 lab hrs/wk  Term Units 3
Road layout problems, various construction problems, and the determination of proper methods of drainage, calculation of cuts and fills, and the best construction techniques to be employed under specific circumstances will be covered.

ROUTE SURVEYING 6.509 2 class, 5 lab hrs/wk  Term Units 4
A continuation of Route Surveying I on an advanced basis, requiring the application of knowledge to the solution of more complex problems.

SCALES AND GRAPHS 4.139 6 lab hrs/wk  Term Units 2
An advanced course covering the techniques of design and layout of meter scales and graphs. Instruction includes methods of calculating the layouts for square root, logarithmic, semi-logarithmic, meter scales, etc. Layout and drawing techniques for co-ordinate, logarithmic, and polar graphs are also covered. Skills in inking procedures, use of the French curves and adjustable splines will be developed.
Prerequisite: Fourth term standing or approval of department head.

SERVO SYSTEM 6.236 1 class, 3 lab hrs/wk  Term Units 2
Presents the principles of servo and data transmission system with emphasis on fundamentals. Covers elementary forms of control systems, servo systems, synchros, servo elements, electronic and magnetic amplifiers, direct current servomotors, performance improvers, methods and measurement.
Prerequisite: Fourth term standing or approval of department head.

SLIDE RULE OPERATION 6.337 3 lab hrs/wk  Term Units 1
This is an intensive course on the operation and use of the slide rule. It includes a review of the advantages and importance of the slide rule to the electronics technician.

SOIL MECHANICS 6.124 2 class, 3 lab hrs/wk  Term Units 3
Physical and mechanical properties of soil: specific gravity, grain size, distribution, plasticity, shrinkage, permeability, compressibility, consolidation, and shear characteristics. Analysis with respect to stability of slopes, earth pressures, stress distribution, and settlement carrying capacity.
Prerequisite: Second year standing or approval of instructor.

SOIL MECHANICS 6.526 3 class hrs/wk  Term Units 3
A continuation of Soil Mechanics I using basic materials of the first course in practical applications to advanced design.
Prerequisite: Soil Mechanics 6.124 or equivalent.
Technology

STRENGTH OF MATERIALS 6.107T  2 class hrs/wk  Term Units 2

A study of the stresses and strains that occur in bodies when subjected to tensile, compressive and shearing forces, including the common theory of beams. The distribution and magnitude of stresses are examined in welded and riveted joints, thin wall cylinders, torsional members and beams. Practice problems emphasize the materials studied.
Prerequisite: Applied Mechanics 6.111 and Technical Mathematics 6.266 or equivalent.

STRENGTH OF MATERIALS LABORATORY 6.107  3 lab hrs/wk  Term Unit 1

Principles of materials testing and loads measurement. Experiments include application of testing equipment to structural materials and calibration of testing equipment.
Prerequisite: To be taken concurrently with Strength of Materials 6.107T.

STRENGTH OF MATERIALS 6.128  2 class, 3 lab hrs/wk  Term Units 3

This is a continuation of Strength of Materials I. In addition to advanced theory in the area of materials characteristics, field trips will be taken to enable the student to observe use of different materials in actual installations.
Prerequisite: Strength of Materials 6.107 or equivalent.

STRUCTURAL ANALYSIS AND DESIGN 6.130  1 class, 3 lab hrs/wk  Term Unit 2

The course deals with the determination of stresses induced by loads on structures of wood, steel, concrete, selections of appropriate structural members and suitable connections; loading conditions causing compression, tension, shear, torsion, and bending; practical design procedures, relating to various structural members, beams, girders, columns and footings.
Prerequisite: Applied Mechanics 6.111 and Technical Mathematics 6.266 or equivalent.

STRUCTURAL DRAFTING 4.111  4 lab hrs/wk  Term Units 2

An advanced course emphasizing civil and structural drafting procedures. It includes the function and design of: the general plan, stress diagrams, shop drawings, foundation or masonry plans, erection diagrams, falsework plans, and sheet metal layout. Bills of materials, rivet lists, drawing indexes, design considerations, and strength of joints will be covered.
Prerequisite: Sixth term standing or approval of department head.

SURVEYING COMPUTATIONS 6.500  1 class, 4 lab hrs/wk  Term Units 3

Application of trigonometry, logarithms, tables, and calculating machines to calculations relating to areas, subdivision, plotting surveys, and stadia surveying.
Prerequisite: Third term standing in Technical Mathematics and Surveying.

TECHNICAL ILLUSTRATION 4.127  4 lab hrs/wk  Term Units 2

This course will introduce the techniques required for modern technical illustrations and drawings such as those found in catalogs, published presentation or exploded drawings. Both freehand drawing and template drawing
will be covered. Balance, surface rendering, kinds of drawing implements, pencils, brush and technique of light and shadow will be discussed.

Prerequisite: Second year standing or approval of department head.

TECHNICAL MATHEMATICS 6.261 3 class hrs/wk Term Units 3

This is an applied course in mathematics on the technician level covering the slide rule, tables and interpolation, additional applications in geometry, review of algebraic operations, systems of linear equations, functions and graphs, advanced applications of exponents and radicals, quadratic equations in one unknown, and introductory trigonometry.

Prerequisite: High school algebra or equivalent.

TECHNICAL MATHEMATICS 6.262 3 class hrs/wk Term Units 3

This is an applied course in mathematics on the technician level including logarithms, right and oblique triangle problem solving, trigonometric applications, vectors, trigonometric formulas, identities and equations, and graphs of trigonometric functions.

Prerequisite: Technical Mathematics 6.261 or equivalent.

TECHNICAL MATHEMATICS 6.266 3 class hrs/wk Term Units 3

This is an applied course in mathematics on the technician level covering simultaneous quadratic equations, ratio and proportion, binomial theorem, arithmetic and geometric progressions, exponential functions, complex notation, and vector algebra.

Prerequisite: Technical Mathematics 6.262 or equivalent.

TECHNICAL MATHEMATICS 6.270 3 class hrs/wk Term Units 3

An introduction to differential and integral calculus. An applied course covering graphical methods, differentiation, and integration.

Prerequisite: Technical Mathematics 6.266 or equivalent.

TECHNICAL REPORT WRITING 6.126 3 class hrs/wk Term Units 3

This is a course which supplies knowledge of the principles of composition and basic forms of writing reports. The subjects covered are: why reports are written, types of reports, make-up of reports, effectiveness of writing styles, gathering of facts for a report, planning a report, method of writing a report, layout and typing of a report, and visual aids in a report.

Prerequisite: Communication Skills I or equivalent.

TIMBER AND STEEL CONSTRUCTION 6.125 3 class, 3 lab hrs/wk Term Units 4

A course consisting of practical design procedure of various types of structures and their details.

TOPOGRAPHICAL SURVEYING 6.515 1 class, 6 lab hrs/wk Term Units 3

The techniques of surveying are employed in the production of topographical maps. The course includes field work so the student may gather notes from which to work. Maps will be prepared using these notes and additional sets supplied by the instructor.

Prerequisite: Plane Surveying 6.105 or equivalent.
Technology

TOPOGRAPHICAL SURVEYING 6.517 1 class, 6 lab hrs/wk Term Units 3
A continuation of Topographical Surveying I on an advanced basis.
Prerequisite: Topographical Surveying 6.515.

TRAFFIC ENGINEERING 6.553 3 class hrs/wk Term Units 3
A study of traffic engineering and controls. Such subject matter as signals, illumination, traffic organization, surveys, route analysis, etc., are covered.
Prerequisite: Fifth term standing.

TRANSMITTERS & RECEIVERS I 6.311 3 class, 4 lab hrs/wk Term Units 4
The two major topics of this course are High-frequency Receivers and High-frequency Transmitters. This is essentially an introductory course to the principles and practices of amplitude modulation and detection.
Transmitters are first presented in block diagram form and then the individual circuits are analyzed. Design considerations of exciters, r.f. power amplifiers, coupling systems, and power supplies are covered. Proper adjustment and operation of transmitters is stressed and practiced in the laboratory portion of this course.

TRANSMITTERS & RECEIVERS II 6.313 3 class, 4 lab hrs/wk Term Units 4
This course covers transmission lines, antennas, wave propagation, and specialized communication systems.
A study is made of f-m and phase modulation system of communication. Included is a survey of radioteletype techniques and single side band theory, circuits, and practical equipment.
The laboratory portion of this course involves the proper adjustment of f-m and single side band transmitters and receivers.

VACUUM TUBE AND TRANSISTOR ANALYSIS 6.210
3 class hrs/wk Term Units 3
An introductory course in the analysis of the electrical characteristics of vacuum tubes and transistors. Includes a review of electron physics with emphasis on electron emission and fundamental transistor theory. Includes a review of auxiliary electronic components and elementary filter design, harmonic analysis, network theorems, and four-terminal networks.
Prerequisite: Third term standing or approval of department head.

VACUUM TUBE AND TRANSISTOR ANALYSIS LAB 6.211
3 lab hrs/wk Term Unit 1
Practical application of the theory studied in Vacuum Tube and Transistor Analysis 6.210R. Involves the disassembling of tubes and transistors to observe their construction. Also includes the plotting of the electrical characteristic curves of vacuum tubes and transistors to determine the transconductance, the amplification factor, and the plate-resistance of vacuum tubes and the current-gain of junction transistors in various circuit configurations.
Prerequisite: Third term standing or approval of department head.
WAVE GENERATION AND SHAPING 6.234  2 class, 3 hrs/wk  Term Units 3

A class and laboratory course designed as an introduction to pulse techniques. Includes the theory and operation of limiter and clipper circuits, differentiating and integrating circuits, and D-C restoration. Various multivibrator circuits, synchronization circuits, and blocking oscillators are covered.

Prerequisite: Fourth term standing or approval of department head.

FACULTY

ALVER, VALENTIN—Physics
B.S. Portland State College;
Instructor: Portland State College

BAKKE, JERRY D.—Mathematics
B.S. University of Oregon

BARRETT, EUGENE F.—English
A.B. University of Portland

BERNERT, RAY J.—Mathematics
B.S. Portland State College;
Group Manager, Tektronix

BRIGHAM, JAMES L.—Electronics
B.S. Colorado State University;
Distribution Engineer, Pacific Power and Light

BROWNING, HOWARD W.—Metallurgical Engineering
A.A. Clark College;
Test Engineer, Tektronix
Instructor: Oregon State University

BERN, HENRY L.—Civil-Structural
B.S., M.E., Oregon State University; Consulting Engineer;

BERGLE, J. WAYNE—Drafting
B.S., I.A. and C.E., Montana State College;
Engineer, Stevens and Thompson

FOLTZ, LEO C.—English
B.A., M.A., Gonzaga University;
Instructor: Benson Polytechnic

GROSSENBACHER, ARMEN C.—Electronics
B.S. Portland State College;
Engineer: Electro-Scientific Industries

HENRY, HARLAN G.—Mathematics
B.S. University of Oregon;
Instructor: Benson Polytechnic School

HERMAN, NORMAN P.—Electronics
Chief Engineer, Radio Station KEX

JORG, ROBERT W.—Civil-Structural
B.S., Portland State College;
Instructor: Clark College

LANEY, DAVID H.—Drafting
B.S. University of Washington;
Instructor: Benson Polytechnic School

LEACH, JOHN M.—Mathematics
Huron College;
Commander and Communications
Electronics Office, U.S.A.F.

MARTINSON, FRED W.—Mathematics
B.S. Iowa State University;
Estimating Engineer, Pacific Power and Light

MONTAG, GEORGE D.—Physics
B.A. Stanford University;
Graduate work at Uni. of Chicago;
Manufacturers' Representative, Heating and Air Conditioning Products
Multnomah College

OLSON RONALD A.—Electronics
B.A. Reed College;
Graduate work, Oregon State Uni. Electronic Design Engineer, Tektronix, Inc;

POLLER, HAROLD F.—Electronics
Chief Engineer, Radio Station KBPS; Engineer KGW

PUCILOSKI, FRANK L. Electronics
Department Head
B.S. Oregon State University;
Instructional Materials Writer, State Division of Vocational Education

REIERSON, LAWRENCE E.—Electronics
Portland State College;
Instructor: Tektronix, Inc.

ROEDGER, KENNETH A.—Electronics
B.S. University of Washington;
Communication Engineer, Pacific Power and Light

ROECKER, ROBERT A.—Electronics
Portland Electronics College;
Calibration Technician, Tektronix

SAMS, ERING E.—Industrial Television
Pacific University, Clark Junior College, U.S.A.F. schools;
Calibration Engineer, Tektronix, Inc.
Technology

SANDSTROM, CUTHBERT F.—Drafting
B.S. Bradley University

SAYER, JAMES A.—Mathematics
B.S., M.A., University of Minnesota;
Test and Calibration Engineer, Tektronix, Inc.

SESSIONS, KEITH W.—Electronics
Oregon State College, Georgia Tech;
U.S.A.F. Cadet School;
Engineering Assistant, Tektronix, Inc.

SJOBERG, MARTIN O.—Drafting
South Dakota State School of Mines;
Senior Engineering Draftsman, Stevens and Thompson, Inc.

SLAVSKY, CLIFFORD D.—Counseling
Med., University of Washington;
Instructor, Washington High School;

WEBER, JOSEPH F.—Electronics
Lowry A.F.B. Technical School;
Calibration Engineer, Tektronix

WU, STEVE W. H.—Structural
B.S. Canton University;
Design Engineer, Cascade Manufacturing Co.

ZIEGLER, RAY A.—Counseling, Psychology, Economics
B.S. Lewis and Clark College;
Ed.M. Oregon State University;
LL.B Blackstone School of Law;
Director, Oregon State Senior Worker Division, Bureau of Labor
Business Education Department

This department offers post high school programs in data processing, office and clerical, merchandising, real estate, and small business management. Purpose of this type of education is to fit the individual for useful employment. Course content and methods of instruction are developed with a "family of occupations" in mind rather than a single occupational area.

Instructors are chosen for their occupational competency, formal educational background, and interests. All instructors meet certification standards established by the State Board of Education.

Contact with occupational areas for which training is given is maintained by working closely with advisory committees for the fields of training offered. These contacts also enable the department to facilitate placement of its students.

Classes are held from 8 a.m. to 10 p.m. Thus a student may attend either full time or part time on either a day or an evening basis. Students may register for individual courses, and they will find additional evening courses listed under the General Education division in this catalog.

Certificates are given on successful completion of one-year sequence of courses in the respective subject areas. An Associate in Applied Science degree will be issued upon satisfactory completion of the two-year sequence in data processing.

Data Processing Technology

The courses in this curriculum are designed to meet the needs of persons preparing for employment in the data processing field and to provide opportunities for those already engaged in technical occupations in this field to obtain further training or retraining that will help them advance in their employment.

This program may be of either one or two years in length.

Instructors will generally be select supervisors or technical personnel normally employed in business and retained on a part-time basis.

For the most part classes will be held during the evening. Day classes will also be held providing there is a sufficient demand. A person attending classes on a full-time basis may expect to complete the full two-year curriculum in two school years of three terms each.

This program gives a broad theoretical and practical training for tabulator and calculator work, and for planning, programming, and analysis of data processing problems. Technically trained persons will find many opportunities for employment in the field of data processing.

The one-year sequence of courses will give a person a basic background for entry into the electronic data processing field as a unit record equipment operator. The two-year sequence is designed to prepare the individual for employment of greater responsibility such as a flow chartor, computer operator, or programmer trainee.

KEY PUNCH OPERATION

Plans are under way for the introduction of short, intensive training programs in Key Punch Operation, beginning the fall of 1964. Those interested should call the college for registration information.
## Data Processing Technology

### First Term

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<td>*Computer Programming II</td>
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<tr>
<td>2.140</td>
<td>Electronics for Data Processing</td>
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<td>2.105</td>
<td>Unit Record Equipment Applications</td>
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<td>2.133</td>
<td>Computer Applications</td>
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### Sixth Term

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<th>Credits</th>
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<tbody>
<tr>
<td>2.128</td>
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<tr>
<td>2.132</td>
<td>Computer Operations</td>
<td></td>
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<td>2.400</td>
<td>Business Management</td>
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</tr>
<tr>
<td>2.150</td>
<td>Data Processing Management</td>
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<td>3</td>
</tr>
<tr>
<td>2.404</td>
<td>Business Statistics</td>
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</tr>
</tbody>
</table>

* The starred courses are recommended for those wishing only the essentials of machine operation and programming.

### Electives

<table>
<thead>
<tr>
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<th>Course Name</th>
<th>Credits</th>
<th>Hours</th>
</tr>
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<tr>
<td>2.503</td>
<td>Typing II</td>
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<td>2.505</td>
<td>Typing III</td>
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<td>2</td>
</tr>
<tr>
<td>2.512</td>
<td>Office Procedures I</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2.514</td>
<td>Office Procedures II</td>
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<tr>
<td>2.516</td>
<td>Office Procedures III</td>
<td></td>
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</tr>
</tbody>
</table>
Business Education

General Clerical

This sequence of courses is geared toward preparing the student for employment of a general nature in typical office activities wherein a broad, general knowledge and skill are required. This sequence may also serve to prepare the individual to pass the examinations for civil service ratings in various clerical categories.

It is recommended that students begin their study at the start of a term; however, students will be placed on a waiting list for some of the classes and may enter at any time that an opening occurs.

STENOGRAPHIC OPTION

For those interested in preparing for a stenographic pursuit, it is recommended that Shorthand I 2.541 and Shorthand II 2.253 be taken in lieu of Accounting I and II.

MEDICAL AND LEGAL SECRETARIAL

Specialized training will be offered this fall in both medical and legal secretarial work. To qualify for this training, the student should possess above average ability in typing and shorthand. Those interested should contact the college for further details.

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>First Term</th>
</tr>
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<tbody>
<tr>
<td>2.301</td>
<td>Business English I</td>
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<tr>
<td>4.200</td>
<td>Business Mathematics I</td>
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<td>2.501</td>
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<td>2.512</td>
<td>Office Procedures I</td>
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<tr>
<td>1.546</td>
<td>Psychology and Human Relations</td>
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<td>2.521</td>
<td>Office Machines I</td>
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<td>2.523</td>
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<tr>
<td>2.516</td>
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<td>2.525</td>
<td>Office Machines III</td>
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<tr>
<td>2.112</td>
<td>Accounting II</td>
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<td></td>
<td></td>
<td>Class  Lab</td>
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<table>
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<th>Term</th>
<th>Units</th>
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</table>

Retail Business (Merchandising)

This curriculum is designed to equip the individual with the fundamental knowledge and techniques pertaining to retail merchandising. This knowledge and skill may be applied to a number of merchandising pursuits in retail, service and specialty selling.

56
## Business Education

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Hours/Week</th>
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<tbody>
<tr>
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<td><strong>First Term</strong></td>
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<tr>
<td>2.301</td>
<td>Business English I</td>
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<tr>
<td>2.308</td>
<td>Business Mathematics I</td>
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<tr>
<td>2.311</td>
<td>Fashion Fundamentals</td>
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<tr>
<td>2.307</td>
<td>Retail Selling</td>
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<td>Introduction to Business</td>
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<td>Business English II</td>
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<td>2.310</td>
<td>Business Mathematics II</td>
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<tr>
<td>2.305</td>
<td>Principles of Retailing</td>
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<td>2.303</td>
<td>Fundamentals of Advertising</td>
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<tr>
<td><strong>Third Term</strong></td>
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<tr>
<td>2.304</td>
<td>Fundamentals of Marketing</td>
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<tr>
<td>2.315</td>
<td>Advertising Layout and Copywriting</td>
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<td>2.322</td>
<td>Color, Line and Design</td>
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<tr>
<td><strong>Electives</strong></td>
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<td>Typing I</td>
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<tr>
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<td>Typing II</td>
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<td>2.130</td>
<td>Introduction to Business Systems</td>
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<td>2.402</td>
<td>Business Law</td>
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<td>Business Statistics</td>
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The following advanced courses may be offered initially on an evening basis.

<table>
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<tr>
<th>Course Code</th>
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<th>Class Hours/Week</th>
<th>Lab Hours/Week</th>
<th>Term Units</th>
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<tr>
<td>2.110</td>
<td>Accounting I</td>
<td>2</td>
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<td>2.215</td>
<td>Buying</td>
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<td>2.205</td>
<td>Consumer Economics</td>
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<td>2.203</td>
<td>Credit Procedures</td>
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<td>3</td>
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<td>2.306</td>
<td>Forms and Fixtures</td>
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<td>4</td>
<td>3</td>
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<tr>
<td>2.309</td>
<td>Problems in Retailing</td>
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<td>3</td>
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<tr>
<td>2.312</td>
<td>Show Card Lettering</td>
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<tr>
<td>2.314</td>
<td>Small Business Operation</td>
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<tr>
<td>2.319</td>
<td>Textiles</td>
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<tr>
<td>2.317</td>
<td>Visual Merchandising</td>
<td>1</td>
<td>4</td>
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**HOME FURNISHINGS MERCHANDISING OPTION**

It is recommended that those interested in Home Furnishings Merchandising take the following courses as electives. They will be offered upon indication of sufficient demand.

<table>
<thead>
<tr>
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<th>Class Hours/Week</th>
<th>Lab Hours/Week</th>
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<tr>
<td>9.230</td>
<td>Fundamentals of Interior Decoration</td>
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<td>2</td>
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<tr>
<td>9.231</td>
<td>Techniques of Selling Home Furnishings</td>
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<td>2</td>
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<tr>
<td>9.232</td>
<td>Designs for Sitting</td>
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<td>2</td>
<td>3</td>
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<tr>
<td>9.233</td>
<td>Floor Coverings</td>
<td>2</td>
<td>2</td>
<td>3</td>
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<tr>
<td>9.234</td>
<td>Case Goods: Tables and Storage Units</td>
<td>2</td>
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<td>3</td>
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<tr>
<td>9.235</td>
<td>Sleep Equipment</td>
<td>2</td>
<td>2</td>
<td>3</td>
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</table>

**COURSE DESCRIPTIONS**

**ACCOUNTING I 2.110**

An introduction to the basic procedures of accounting and the preparation of financial statements. The methods of recording business transactions, the books commonly used, and the techniques of closing the books periodically.

**ACCOUNTING II 2.112**

Accounting problems arising in different types of business, such as the corporation, partnerships, and individual proprietorship, together with their financing. Introduction to analysis and interpretation of financial statements.

**ACCOUNTING III 2.114**

Methods of accounting for the corporate organization including capital stock, earnings, bonds, and intangibles. An introduction to accounting for manufacturing operations.

**ACCOUNTING, COST 2.116**

Introduction to the analysis and control of material, labor, and overhead costs in manufacturing, with emphasis on process and job-order costs systems.

**ADVERTISING, FUNDAMENTALS OF 2.303**

An introduction to advertising and its relationship to business. Emphasis is placed on planning an advertising program, advertising budgets, merchandising with advertising, local media, and types of retail advertising.
ADVERTISING LAYOUT AND COPYWRITING 2.315
2 class, 2 lab hrs/wk Term Units 3
A basic course in layout and copywriting as applied to the newspaper and direct mail media. Emphasis is placed on the elements of design, the tools and methods used, practical work layouts, and practice in writing copy.

BUSINESS ENGLISH I 2.301
3 class hrs/wk Term Units 3
Business English I is aimed at building the student's vocabulary, spelling ability, usage of words, and provides a thorough review of the principles of grammar while applying them in sentences. Written and oral communications as required in business situations are emphasized.

BUSINESS ENGLISH II 2.302
3 class hrs/wk Term Units 3
Business English II, this course is intended to follow Business English I and will include continuation of the review of grammar, study of vocabulary building, spelling, punctuation, and penmanship. Writing of business letters will be introduced. Speech and the informal personal communications studied. Practical application in the writing of business letters will be stressed.

BUSINESS, INTRODUCTION TO 2.502
3 class hrs/wk Term Units 3
A basic background course in the general fields of business aimed at developing an awareness of the nature of business in the capitalistic system, including problems of ownership, organization, personnel, finance, marketing, and managerial and governmental control.

BUSINESS LAW 2.402
3 class hrs/wk Term Units 3
Fundamentals of business law including contracts, agency, partnerships, corporations, bankruptcy, sales, and negotiable instruments.

BUSINESS MANAGEMENT 2.400
3 class, 2 lab hrs/wk Term Units 4
The overall picture of how business is organized and how it functions, including the history of American business, organization of business enterprise, risk and forecasting, financing the enterprise, building the internal organization, developing the product, constructing the physical facilities, principles of business relations, and managing the office.

BUSINESS MATHEMATICS I 2.308
3 class hrs/wk Term Units 3
This course provides for a general review of mathematics and proceeds with a coverage of the fundamental principles involved in interest computation, buying and selling, and payroll operations. Considerable time is spent in an application of the principles of interest and percent.

BUSINESS MATHEMATICS II 2.310
3 class hrs/wk Term Units 3
This is an advanced course providing a complete coverage of financial business operations, computing ownership interests, long-term borrowing, insurance and graphs.

BUSINESS RELATIONS 2.519
3 class hrs/wk Term Units 3
This course is designed to provide the student with a practical application of business etiquette for new employees, good public relations, employe-
Business Education

employer relation, business customs, the social side of business, the importance of personality, relationships with others, self appraisal, and self improvement. An emphasis is placed on the psychological principles involved in understanding the relationship of the individual to the social framework.

BUSINESS STATISTICS 2.404
3 class, 2 lab hrs/wk Term Units 4
A practical course in the use and interpretation of statistics.
Prerequisite: Introduction to Business 2.502, Mathematics 4.204, Accounting I 2.110 or equivalent.

BUSINESS SYSTEMS, INTRODUCTION TO 2.130
1 class, 3 lab hrs/wk Term Units 2
This is a specialized treatment of records and reports and has as its purpose developing the student's ability to prepare the many kinds of management data needed to guide a business operation other than the financial data furnished by the bookkeeping system. Reports, legal records, insurance records, personnel records, equipment records, sales and production records, visual reports, and assembly of data receive emphasis.

BUYING 2.316
3 class hrs/wk Term Units 3
The course covers steps in buying, beginning with analysis of store policies and determination of customer wants. A survey is made of available sources of supply, selecting criteria and aids, and methods of drawing up sound buying plans. Also treated here are stock and inventory considerations, buying negotiations, merchandise budgeting and sound merchandising management.

COLOR, LINE AND DESIGN 2.322
2 class, 4 lab hrs/wk Term Units 3
An introductory study of the factors involved in color, line, and design. Special attention is given to the psychological basis of color, color theory, texture, harmony, shades and tints; the basic concepts of static and dynamic design, proportion, balance, unity, and symmetry.

COMMUNICATION SKILLS I 1.100
3 class hrs/wk Term Units 3
This course is designed to improve the student's four basic skills—reading, speaking, writing, and listening. Emphasis is placed upon oral communications including individual speech analysis, business and social conversations, group speaking in business and industry, informative talks, demonstrations, and explanations.

COMMUNICATION SKILLS II 1.102
3 class hrs/wk Term Units 3
This course covers the next steps in the process of improving the student's communicative skills. Practice is provided in developing reports; taking part in conferences; reading, analyzing, and discussing both general and technical periodicals; and handling representative forms of business writing.

COMPUTER APPLICATIONS 2.133
3 class, 2 lab hrs/wk Term Units 4
The applications of electronic computers to the solution of data processing
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Units</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Business Education</td>
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</tbody>
</table>

Problems in such areas as inventory control, sales analysis and payroll. Prerequisite: Computer Operations 2.132.

**COMPUTER OPERATIONS 2.132** 2 class, 2 lab hrs/wk Term Units 3
- Study and practice in computer center operations including console operating, job setup, tape changing, and operating peripheral equipment such as card readers, punches, and high speed printers.
- Prerequisite: Computer Programming I 2.122 or equivalent.

**COMPUTER PROGRAMMING I 2.122** 3 class, 2 lab hrs/wk Term Units 4
- Prerequisite: Introduction to Electronic Data Processing 2.100 or equivalent.

**COMPUTER PROGRAMMING II 2.124** 3 class, 2 lab hrs/wk Term Units 4
- Practice in programming with emphasis on methods of generalized programs: sorting, report generating, table look-up, and program testing.
- Prerequisite: Computer Programming I 2.122 or equivalent.

**COMPUTER PROGRAMMING III 2.126** 3 class, 2 lab hrs/wk Term Units 4
- A continuation of programming study with emphasis on automatic programming systems such as COBOL, algebraic compilers, floating point arithmetic, introduction of scientific programming.
- Prerequisite: Computer Programming II 2.123 or equivalent.

**CONSUMER ECONOMICS 2.313** 3 class hrs/wk Term Units 3
- The study of consumer activity in the market; buying behavior and ability to judge values; consumer problems in choice-making; together with a survey of agencies and techniques available to aid and protect the consumer.

**CONTROL PANEL WIRING 2.104** 2 class, 4 lab hrs/wk Term Units 4
- Intensive study and practice on punch card equipment studied in Introduction to Unit Record Equipment. Functional wiring principles of basic punch card data processing machines.
- Prerequisite: Introduction to Unit Record Equipment 2.102.

**CREDIT PROCEDURES 2.318** 3 class hrs/wk Term Units 3
- A study of the principles and methods of credit administration in the mercantile and retail field, including sources of information, credit control, legal remedies, and collection techniques.

**DATA PROCESSING MANAGEMENT 2.150** 3 class, 2 lab hrs/wk Term Units 4
- Advanced study of machine accounting techniques, card design, procedure development, work loads, scheduling process control, evaluation and improvement and supervision of the Tabulating Department.

**DATA PROCESSING MATHEMATICS 2.128** 5 class hrs/wk Term Units 5
- Basic logic, numbering systems, algebra with emphasis on problem solving, computation with logarithms and numbers in bases other than ten, and Boolean algebra.
Business Education

ECONOMICS, APPLIED 1.506  
2 class hrs/wk  
Term Units 2  
The underlying principles by which business and industry are influenced.  
Production, income, management, prices, values, markets, money, wastes,  
interest, and profits are examples of subjects studied, with illustrations of  
how they affect current business situations.

ELECTRONICS FOR DATA PROCESSING 2.140  
3 class, 2 lab hrs/wk  
Term Units 4  
A basic course in the applications of the principles of electronics to  
the field of data processing.

ELECTRONIC DATA PROCESSING, INTRODUCTION TO 2.100  
3 class, 2 lab hrs/wk  
Term Units 4  
A basic orientation to the field of Electronic Data Processing. Emphasis  
on the growing technology in the field of processing business data and how  
this growth in business, industry, and government has necessitated the  
automation of business routines.

FASHION FUNDAMENTALS 2.311  
2 class, 2 lab hrs/wk  
Term Units 3  
This course covers the origin and history of fashion, the laws and  
principles of fashion, fashion cycles and forecasting, fashion coordination,  
and fashion illustrating. The student is introduced to the fundamentals of  
apparel copywriting. A study is made of color, line, and design as they  
relate to the selection of appropriate merchandise.

FORMS AND FIXTURES 2.306  
2 class, 3 lab hrs/wk  
Term Units 3  
A course in display specifically designed to familiarize students with  
types and styles of props and fixtures currently in use in retail stores. This  
covers store layout, merchandise arrangement, flow of store traffic, use of  
mannequins and care and maintenance of display forms and props.

MARKETING, FUNDAMENTALS OF 2.304  
3 class hrs/wk  
Term Units 3  
A general survey of the nature, significance, and scope of marketing.  
Emphasis is placed upon the channels of distribution; the marketing of con-  
sumer, shopping, specialty and other goods; service marketing; middlemen,  
wholesaling, shipping, and warehousing; standardization, grading, and pric-  
ing; government regulations of competition.

MATHEMATICS 4.204  
6 class hrs/wk  
Term Units 6  
This is a course in practical mathematics including a review of arithmetic  
and an introduction to the fundamentals of applied algebra, geometry and  
trigonometry, including symbols, equations, ratio and proportion, exponents,  
radicals, formulas, and actual problem solving aspects.

OFFICE MACHINES 1 2.521  
2 class, 2 lab hrs/wk  
Term Units 3  
This course combines basic mathematics with instruction in the appli-  
cation of office machines to bookkeeping and other office problems. The  
general functions of office machines and understanding their application in  
business and the acquiring of reasonable skills in their use is a major goal.
OFFICE MACHINES II 2.523  2 class, 2 lab hrs/wk  Term Units 3
Particular attention is given to stenographic dictating and transcribing machines. Practice in planning layouts and cutting stencils and masters for use in duplicating copy and the use of photographic and electronic reproducing devices is covered.

OFFICE MACHINES III 2.525  2 class, 2 lab hrs/wk ....... Term Units 3
Emphasis on mathematical machines found in larger offices such as the full-key board adding-listing machine and the key-driven calculator. Throughout the three terms students will have received training on ten-key adding machines, rotary calculators, and billing and posting machines.

OFFICE PROCEDURES I 2.512  2 class, 2 lab hrs/wk  Term Units 3
Designed to introduce the student to general office duties and the simple tools he will use in an office. Detailed instruction in filing is given.

OFFICE PROCEDURES II 2.514  2 class, 2 lab hrs/wk  Term Units 3
A continuation of Office Procedures I and prepares the student to handle office mail, telephone and telegraph communications, sources of information, and prepare office records and reports, including graphic presentations of business trends. Records and reports are emphasized.

OFFICE PROCEDURES III 2.516  2 class, 2 lab hrs/wk  Term Units 3
A continuation of Office Procedures II with emphasis on the office duties that require meeting the public as receptionist, cashiering, preparing credit instruments, and sales office operations. A brief introduction to economic factors that affect business public relations and personality receive emphasis.

PSYCHOLOGY AND HUMAN RELATIONS 1.546  3 class hrs/wk  Term Units 3
Psychological principles and fundamentals of individual behavior involved in understanding the relationship of the individual and his reactions to the social framework with emphasis on business situations.

PUBLIC SPEAKING 1.610  1 class, 2 lab hrs/wk  Term Units 2
A course designed to provide a thorough study of oral communication principles and a development of their application through regular speech assignments related to the student's interests and experiences.

RETAILING, PRINCIPLES OF 2.305  3 class hrs/wk  Term Units 3
A general survey of the principles of efficient store organization and management. Topics include location and layout, types of store organization, personnel management, operating activities, financial and budgetary control, coordinating policies, and store protection.

RETAILING, PROBLEMS IN 2.309  2 class, 2 lab hrs/wk  Term Units 3
A study of problems commonly encountered in retail store operation, using the case history approach. Treatment of retail management functions to provide basis for intelligent solution to administrative problems.

RETAIL SELLING 2.307  2 class, 2 lab hrs/wk  Term Units 3
A survey of the many aspects of retail selling, including characteristics
Business Education

of the customer, buying motives, the approach, the presentation, demonstrating the merchandise, handling objections, closing the sale, and suggestion selling. Sales demonstrations given in class are evaluated by students and the instructor.

SHORTHAND I 2.541 2 class, 2 lab hrs/wk Term Units 3
A beginning course in Gregg Shorthand, to enable the student to take simple dictation and transcribe it in the early part of the course. While rhythm and good penmanship in forming shorthand characters are stressed more than speed, the student should progress to a speed of about 40 wpm in the first term.

SHORTHAND II 2.543 2 class, 2 lab hrs/wk Term Units 3
A continuation of Shorthand I. It deals principally with special and abbreviated forms, punctuation, and compound words, in conjunction with writing and transcribing exercises, to build the student’s speed to 60 wpm writing and 20 wpm typing.

SHORTHAND III 2.545 2 class, 2 lab hrs/wk Term Units 3
This course is for the student who has learned the principles of shorthand covered in Shorthand I and II. It includes vocabulary, phrase building, and word building principles. Practice included should develop the student’s speed to 100 wpm from unfamiliar dictation and 30 wpm transcription.

SHOW CARD LETTERING 2.312 4 lab hrs/wk Term Units 2
In this course, students receive instruction in basic lettering system, supplementary forms of lettering, the use of templates for show card design, inks and tempera colors, and the use of show card designs.

SMALL BUSINESS OPERATION 2.314 3 class hrs/wk Term Units 3
This is an educational program offered in cooperation with the Small Business Administration, whose purpose is to assist owners and managers of small business in strengthening their positions as administrators of their businesses. It is designed for owners and managers, rather than employees, and is concerned with administrative management.

SYSTEMS AND PROCEDURES I 2.106 3 class hrs/wk Term Units 3
Procedures as a basic administrative technique. The principles of organizing, planning, and administering a procedures program and techniques of systems and procedures analysis.

SYSTEMS AND PROCEDURES II 2.108 3 class hrs/wk Term Units 3
Fundamentals of automated data systems and procedures. Techniques and principles of systems analysis, forms design and control, systems economics feasibility studies and the installation of electronic processing systems. Prerequisite: Introduction to Electronic Data Processing 2.100 and Systems and Procedures I 2.106 or equivalent.

TEXTILES 2.319 1 class, 4 lab hrs/wk Term Units 3
A comparative analysis of natural and man-made fibers, including cur-
rent blends. Identification of fabrics through a study of the various fibers, weaves, dyeing, and embossing processes. Some emphasis is given to fashion trends and techniques of accessorizing. Throughout the course, emphasis is placed on the consumer advantages and selling features of each fabric and weave.

**Typing I 2.501**  
2 class, 2 lab hrs/wk  
**Term Units 3**

A beginning course in typing for those with no previous typing instruction. It covers the parts and construction of the more common makes of typewriters, learning of the keyboard, and the basic techniques of the touch system. The student should develop rhythm in his movements and attain a typing speed of approximately 25 wpm.

**Typing II 2.503**  
2 class, 2 lab hrs/wk  
**Term Units 3**

A continuation of Typing I with emphasis on increasing the typing speed to 40 wpm while mastering the various forms of business communications.

**Typing III 2.505**  
2 class, 2 lab hrs/wk  
**Term Units 3**

A continuation of Typing II including corrective and acceleration drills to develop a minimum typing speed of 50 wpm. The student receives instruction in cutting stencils and masters for various duplicating processes and additional training in the various business papers encountered in a general office is given.

**Unit Record Equipment Applications 2.105**  
3 class, 2 lab hrs/wk  
**Term Units 4**

Theory and practice in the application of electric accounting machines to the solution of business problems.  
Prerequisite: Control Panel Wiring 2.104.

**Unit Record Equipment, Introduction to 2.102**  
3 class, 2 lab hrs/wk  
**Term Units 4**

The nature and purpose of electro-mechanical machine operation. Principles of punch card operations including key punches, interpreters, verifiers, sorters, collators, reproducers, accounting machines, and calculating punches.  
Prerequisite: Accounting 2.100 or equivalent.

**Visual Merchandising 2.317**  
1 class, 4 lab hrs/wk  
**Term Units 3**

The application of principles of line and design to interior and window display. Treatment of problems in space utilization, improvisation, seasonal display, lighting arrangements and organization of display departments. Provides practice in creating displays.
Business Education

Additional Courses Under Home Furnishings Option

FUNDAMENTALS OF INTERIOR DECORATION (DECOR) 9.230

2 class, 2 lab hrs/wk  Term Units 3

A study of the principles of color, line and design as they apply to home furnishings. Emphasis is placed upon the elements of decor, traditional and recent furniture styling, and room planning.

TECHNIQUES OF SELLING HOME FURNISHINGS 9.231

2 class, 2 lab hrs/wk  Term Units 3

A survey of modern practices in furniture and home furnishings salesmanship, including the study of consumer attitudes and buying habits, market research, installment buying, servicing accounts, prospecting for sales, assisting customers with their home planning, and a complete review of the selling process. Particular emphasis is placed upon the personal and professional qualifications necessary for the successful home furnishings salesman.

DESIGNS FOR SITTING 9.232

2 class, 2 lab hrs/wk  Term Units 3

A merchandise information course involving the study of chair design, molded plastic frames, springs, cushions, tubular steel, foam rubber, fillings, fabrics, weaves and designs.

FLOOR COVERINGS 9.233

2 class, 2 lab hrs/wk  Term Units 3

A merchandise information course involving the study of rugs and carpets, padding, linoleum, asphalt tile, cork, and other materials used as floor covering. Emphasis is placed on comparative values, selling features, proper care of different coverings, color, design and construction.

CASE GOODS: TABLES AND STORAGE UNITS 9.234

2 class, 2 lab hrs/wk  Term Units 3

A merchandise information course involving the study of types of woods and their characteristics, identification of different materials, various types of construction, furniture finishes, proper care of case goods, packing and shipping, metal units.

SLEEP EQUIPMENT 9.235

2 class, 2 lab hrs/wk  Term Units 3

A merchandise information course involving the study of box springs, mattresses, foam rubber, flat and coil springs, padding, filling and ventilating, frames and headboards, bed design, bed spreads, pricing and comparative values, sleep equipment for children, and the care and maintenance of sleep equipment.
FACULTY

BACKSTROM, ROBERT—Business
B.S. Lewis and Clark;
Holdner, Butcher, Goebell, King CPA

BACKSTROM, VERLA—Business
B.S. Northern State Teachers College

BUENGER, JAMES—English
B.A. Buena Vista College

CAREY, EUGENE—Data Processing
Los Angeles City College, UCLA;
California Division of Highways;
International Business Machines,
Data Processing Systems Engineer

CLARK, FLORENCE
B.A. Kansas Wesleyan University

CLARK, KENNETH—Business
B.A. State College of Washington;
M.A. University of Minnesota;
Pacific University, Asst. Prof.

CULVER, JAMES—Data Processing
LaSalle Extension; Accounting Machines Systems, Office Manager,
Pauli Packing Co.; National Cash Register; National Computer Center

ENQUIST, MERRILLY ANN—Business
B.S. Oregon State University

GATRELL, JAMES—Data Processing
B.A, Duke University;
Tennessee Eastman Corporation, Systems Analyst; International Business Machines, Associate

GEORGE, ALMA—Business
B.S. Lewis and Clark

HADDUCK, CHARLES—Data Processing
Western Business University;
School District No. 1 Multnomah County, Assistant Head IBM Dept.

HAND, HAROLD—Real Estate
B.S. University of Oregon;
Department of Veterans’ Affairs, Mortgage Loan Officer;
Oregon Mutual Savings Bank, Appraiser

HANDEL, KENNETH—Real Estate
B.S. Lewis and Clark,
M.B.A. University of Portland;
Dean Vincent, Inc., Mortgage Banker;
Willamette Savings and Loan Association

JUDY, CLAYTON—Advertising
B.A. Pacific University;
Adolph L. Bloch Advertising, Account Executive; Northwest Advertising Inc.,
Copy Chief; Pacific National Advertising Agency, Creative Director

LOPRINZI, PHILIP—Business
B.A. Stanford University

MATHEWS, RICHARD—Data Processing
Oregon State University;
New York University, Portland State College; Sawyer’s Inc., Production and Inventory Manager

MERRILL, JOSIAH—Business
B.C.S. Multnomah College, Instructor and Head of Accounting Department

MURPHY, FRANCIS J.—Mathematics
B.A. University of Portland
Niedermeyer-Martin Company

RINTOUL, ROBERT—Data Processing
B.S. Oregon State University;
Shell Oil Co., Portland Public Schools Head, IBM

SILLS, JACK—Business
B.S. University of Oregon
Sills Truck Service
Vice President and General Manager

TOOKE, GOLDA—Business
Behnke-Walker Business College;
Portland Christian High School, Teacher; Pacific Business College, Teacher

WHITEHEAD, DONALD—Data Processing
B.B.D. Lewis and Clark;
IBM Training School

WRIGHT, WILLIAM—Business
B.B.A. University of Oregon;
Western Kraft, Salesman;
Goodell and Wright, Associate

ZIMPLEMAN, JOAN—Business
B.S. Oregon State University;
Oregon Laundry Cleaners, Office Clerk
General Adult Education Department

This department is concerned with the common knowledge, skills, and attitudes needed by each individual for effective living as a person, a citizen, and a worker.

Areas embraced include: adult high school, continuation high school, Americanization, elementary completion, business education, and enrichment.

ADULT HIGH SCHOOL

Persons seeking a secondary diploma should contact the General Adult Education department office and plan a program leading to graduation. They must have graduated from the 8th grade.

Thirty-eight semester credits (1 credit per course each semester) are required for high school graduation. These must include 4 years of English, 1 year each of science, mathematics, U. S. history, and American Problems.

Diplomas are granted annually upon completion of requirements and maintenance of a satisfactory grade level. Grades A, B, C, and D indicate satisfactory achievement; F—unsatisfactory.

All high school courses are open to adults (over 18 years of age) on a non-credit enrichment basis.

High school credit courses include: algebra, arithmetic review, art, biology, chemistry, drawing and painting, economics, English composition, English 5-6 and 7-8, mechanical drawing, psychology 1 and 2, physical science, sociology, Spanish 1 through 3, speech 1 and 2.

Non-credit enrichment courses include: bridge-hand, calligraphy, drawing and painting, elementary completion, English for new Americans, fly tying, French, high school equivalency, income tax, Italian, photography I through color, progressive typing, rapid reading, and remedial reading and spelling.

CONTINUATION SCHOOL

Youths 16 and 17 years of age who have dropped from high school to accept employment are required by Oregon law to attend school until they are 18 years of age or graduate from high school; hence, this department which permits them to attend school at night. One or two years are usually required for graduation. They enroll in the adult high school classes, with separate sections being maintained for them when enrollment warrants.

ELEMENTARY EDUCATION

Since some persons have not completed their elementary schooling, a study program provides basic learning and skills leading to an elementary certificate. Also available are remedial refresher classes such as: developmental reading, mechanics of English, and remedial mathematics to enable students to make satisfactory adjustment to the high school program.

Americanization (for foreign born)

An extensive program for new and future citizens is provided including tools of communication, and training in the attitudes and concepts fundamental to American democracy.
BUSINESS EDUCATION

Commercial subjects such as bookkeeping, shorthand, typing, office practice, business law, and business English and mathematics may be taken in evening classes by persons seeking high school credit or a one-year diploma. High school graduates should enroll in the Business Education department of the Vocational-Technical Division. Course descriptions may be found in that section. High school certificates are held by those teaching the evening classes, while instructors in the Vocational-Technical Division are selected for their occupational competency as well as educational background.

The following curriculum is suggested for students enrolling in commercial courses of this department:

Basic Clerical

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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</thead>
<tbody>
<tr>
<td>BE 161 Shorthand I</td>
<td>BE 157 Shorthand II</td>
</tr>
<tr>
<td>BE 159 Typing I</td>
<td>BE 160 Typing II</td>
</tr>
<tr>
<td>BE 165 Business English and Math I</td>
<td>BE 186 Business English and Math II</td>
</tr>
<tr>
<td>BE 150 Bookkeeping I</td>
<td>BE 151 Bookkeeping II</td>
</tr>
</tbody>
</table>

Further vocational competency may be obtained by enrolling in third and fourth semesters of bookkeeping, typing and shorthand, office practice, and business law.

REGISTRATION INFORMATION

The General Adult Education department operates on a two-semester basis. Classes are held from 7 to 9:30 p.m. once a week for one semester. The main center is at Washington High School, 531 S. E. 14th Avenue. Other classes are listed on the schedule. Tuition is $11.00 per course per semester.

Counselors are available at each registration for help in individual planning. They also are available during school hours for vocational consultation.

Students may register in person or by mail in September and January during the week preceding start of classes. The schedule of classes, including course numbers, instructors, meeting place, etc., will be mailed on telephone request (234-9621). Checks or money orders should be made payable to School District No. 1 and returned to Portland Community College, 515 N. E. 15th Ave., specifying class wanted, day the class meets, and where.
<table>
<thead>
<tr>
<th>Name</th>
<th>Degree/Field</th>
<th>Institution(s)</th>
</tr>
</thead>
</table>
| ANDERSON, DONALD V. | Americanization | B.A. Eastern Washington College of Education  
|            |        | M.A. Oregon College of Education |
| BARRETT, EUGENE | English | B.A. University of Portland |
| BENTALL, GRACE | Americanization | A.B. Western State Teachers College,  
|            |        | Kalamazoo, Mich.  
|            |        | M.A. University of Michigan  
|            |        | D.Ed. University of Oregon |
| BERKHAM, NATHAN | Social Studies | B.A. Reed College  
|            |        | M.A. University of Oregon |
| BLIXT, PAUL | Photography | Adult Education Certificate  
|            |        | Professional Photographer |
| BREWER, ROSS KELVIN | Social Studies | B.S. Brigham Young University |
| CLARKSON, EVILO | Business Education | B.A. Oregon State University |
| CLAWSON, ORVAL | Social Studies | B.A. Reed College  
|            |        | M.Ed. University of Oregon |
| CROOK, GARY S. | Mathematics | B.S. Portland State College |
| DELURY, JAMES | Business Education | B.S. University of Oregon  
|            |        | M.R.E. Western Baptist Theological Seminary |
|            |        | M.Ed. University of Oregon |
| DRAKE, ELMER S. | Sociology | B.S. Lewis and Clark |
| ENQUIST, MERRILY A. | Business Education | B.S. Oregon State University |
| ERLANDSON, GILBERT | Social Studies | B.S. Oregon State University  
|            |        | M.S. University of Oregon |
| FISKUM, DUANE | Math. | B.A. Concordia College  
|            |        | M.Ed. University of Oregon |
| FOLTZ, CHARLES LEO | English-Math. | B.A. Gonzaga University, Spokane Wash. |
| FRANGIPANI, FRANK R. | Spanish | B.A. University of Portland  
|            |        | M.Ed. University of Portland |
| GEORGE, ALMA | Business Education | B.S. Lewis and Clark |
| GROSS, RICHARD M. | English | B.A. University of Portland  
|            |        | M.A. University of Portland |
| GUFFY, WILLIAM P. | Geography | B.S. Lewis and Clark |
| HAMILTON, OPAL | Speech | B.A. Oregon State University  
|            |        | M.S. University of Oregon |
| HANSEN, PAUL C. | Mathematics | B.A. Reed College  
|            |        | M.A.T. Reed College |
| HEINE, HENRY N. | Art | B.S. University of Oregon  
|            |        | M.Ed. University of Oregon |
| HELD, CHESTER | Dancing | B.S. University of Wisconsin  
|            |        | M.S. University of Wisconsin |
| HILDRETH, RICHARD | English | B.A. University of Oregon  
|            |        | M.Ed. Lewis and Clark |
| HODGES, RALPH | Rapid Reading | B.S. Eastern Montana College of Ed.  
|            |        | M.A. Eastern Montana College of Ed. |
| HODSON, RUTH | Business Education | B.A. George Fox  
|            |        | M.Ed. Oregon State University |
| HOEPPNER, ROBERT L. | Business Ed. | B.S. University of Oregon  
|            |        | M.S. University of Oregon |
| HOLLAND, MARGARET C. | German | B.A. University of Oregon  
|            |        | M.Ed. University of Oregon |
| HUGHITT, ROBERT A. | Art | B.S. Portland State College  
|            |        | M.S. University of Oregon |
| JARRETT, BEN RICHARD | Social Studies | B.A. Central Washington College of Education |
| JUBB, KATHERINE J. | Business Ed. | B.A. University of Washington |
| KEARNS, DONALD R. | Psychology | B.A. Lewis & Clark  
|            |        | M.Ed. University of Oregon |
| KILLORIN, PAUL J. | English | B.A. University of Portland  
|            |        | M.Ed. University of Portland |
Kohns, Gwen—Americanization
B.A. University of Oregon
M.Ed. University of Oregon

Lee, Nancy—Social Studies
B.S. Oregon State University

LoPrinz, Philip G.—Business Ed.
A.B. University of Portland
M.A. University of Portland

McCarr, Myron D.—Americanization
B.S. Oregon State University
M.Ed. University of Oregon

McElroy, Arthur—Rem. Reading and Spelling
B.E. & B.S. Washington State Univ.
M.Ed. Univ. of Oregon

McGinnis, Hugh—Business Education
B.A. University of Portland
M.Ed. University of Portland

McQuain, Clemmie—High School Equivalency
A.B. West Virginia University
A.M. University of Portland

McMenemey, Richard A.—Rapid Reading
A.B. Whitman College
A.M. Whitman College

Maloney, Joseph C.—English
A.B. University of Portland

Mendenhall, Spencer K.—Business Ed.
B.S. Brigham Young University
M.S. Brigham Young University

Moffatt, Leonard—Dancing
Adult Education Certificate
Dance Instructor

Neher, Daryl L.—Mathematics
B.S. Portland State College

Palmer, Robert—English
B.A. Lewis and Clark
M.Ed. University of Oregon

Porter, David—Science
B.S. University of Portland
M.Ed. Oregon State University

B.S. Univ. of Nebraska
M.A. Colorado State College

Richter, Carlton—Business Education
B.S. Oregon State University
M.Ed. Oregon State University

Running, Helen—Homemaking
B.S. Oregon State University

Ryder, John—Art
B.S. University of Southern California
M.Ed. University of Oregon

Sanderson, Wilma—Business Education
B.S. University of Oregon
M.Ed. Oregon State University

Seeley, Edwin—Spanish
B.A. Brigham Young University
M.S. Utah State University

Sells, Gale B.—Dancing
Adult Education Certificate
Dance Instructor

B.S. University of Oregon
M.A. University of Oregon

Sonnen, Richard—Americanization
B.A. Oregon College of Education

Stanton, Stanley—English
B.S. Oregon College of Education
M.S. Oregon College of Education

Tarr, Franklin—Business Ed.
B.S. Portland State College

Thomas, William—English
B.S. Central Missouri Teachers College
M.A. University of Missouri

Thurston, Ronald L.—Business Ed.
A.B. Colorado State
A.M. Colorado State

Todd, Françoise—French
B.E. France

Tontz, Charles E.—Business Ed.
B.S. University of Portland
M.Ed. University of Oregon

Turville, Dolores—Business Education
B.S. Oregon State University
M.Ed. Oregon State University

Uppendahl, Donald—Americanization
B.A. University of Colorado
M.A. Reed College

Van Osten, Louise—Fly Tying
Adult Education Certificate
Sporting Goods Specialist

Vestal, Gaylor S.—Americanization
B.S. Southern Oregon College
M.Ed. University of Oregon

Walters, Chris F.—Business Ed.
B.A. Concordia, Moorhead, Minn.

Wright, Jack H.—Business Education
B.S. University of Oregon

General Adult Education
Adult Family Life Department

Calendar
Fall Term—September 28, 1964
Winter Term—January 4, 1965
Spring Term—March 29, 1965

General Information and Objectives

The family is the center of our democratic society and improvement of family life is the goal of the Adult Family Life Department. Because of the rapid changes taking place in our times, class offerings and course content are continually changing to meet present needs.

Specific objectives include:
1. To improve woman’s role as a homemaker through greater knowledge and skill in use of newer methods and techniques in the various areas of homemaking.
2. To provide training in occupational fields related to Home Economics.
3. To provide counsel, guidance and leadership for parent-discussion groups interested in child growth and development and family life.
4. To provide training in group leadership for local leaders of such parent groups.

Entrance Requirements

Classes are open to all adults. At the present time, only non-credit classes are offered. However, one and two-year post-high school curricula in general Home Economics for preparation for family life and some specific vocational training courses in the field of Home Economics may be offered with credit in the near future. Interested persons should call or write to determine the current status of these courses.

Adult Family Life classes are held in both high schools and elementary schools. Those in the high schools are scheduled on the basis of previous demand. The P.T.A. Homemaking Chairman or Parent Education (Study Group) Chairmen of the elementary schools assist the department by requesting and promoting the classes in their districts. Those interested in getting classes started in their district should contact the P.T.A. chairman of their local school. A minimum enrollment of 12 is required.

Registration Procedure

Pre-registration for classes is handled through the Adult Family Life office. Maximum enrollments differ with the needs of the various classes. Disappointment may be avoided through early registration.

The program of classes consists of three separate terms each year, starting in September, January and March. Anyone desiring a schedule of classes should request one by calling the office prior to the start of each term.

Certificates are issued at the end of each course to signify completion. No refunds are given after the second session of a class. There is a $1.00 charge for processing refunds.
PARENT EDUCATION

Counseling Service

Available to P.T.A. leaders for assistance in the areas of program planning and development and leadership problems; film previews. Thursday afternoon of each week and at other times upon request at the Community College, 515 N. E. 15th Avenue.

Discussion Leaders

Leaders for parent groups may be obtained by calling the parent education coordinator. Fees for such assistance are $4.00 for one session or $10.00 for a series of three sessions.

COURSE DESCRIPTIONS

FL 50 LIVELY LEADERSHIP:

A course of three weekly lessons in fundamentals of group development, organizing and planning meetings and discussion groups, program planning and program presentation. Offered fall and spring. Fee $1.00.

FL 51 ADVANCED LEADERSHIP:

A course of ten weekly lessons of two hours each, including further training and experience in group leadership, with emphasis on discussion topics related to child growth and development and parent-child relations. Offered October, January and April. Fee $4.00. Prerequisite: Lively Leadership.

FL 52 LEADERSHIP SEMINAR:

An extension of Advanced Leadership for those interested in further experience in group development and leadership. Fee $4.00.

FL 60—ORGANIZATION LEADERSHIP (Parliamentary Procedure):

A course in the fundamental rules of Parliamentary Law and Procedure based on Roberts' Rules of Order Revised, to be used when presiding at meetings or as a participating member of an organization. This course includes such instruction as form and nature of constitution and by-laws, meeting procedures, writing minutes, kinds of motions, how to preside, and actual practice in these processes.

Completion of this 20-hour course entitles the individual to apply for membership in the National Association of Parliamentarians or the American Institute of Parliamentarians. Fee $4.00.

FL 75 TALKING IT OVER:

A relationship course for parents and their seventh and/or eighth grade students to promote understanding and improve communications between adolescents and their parents. Available upon request of the elementary P.T.A. A five session discussion series meeting weekly 7:15 p.m. Fee $4.00 per family.
HOMEMAKING

COURSE DESCRIPTIONS

CL 1 CLOTHING SELECTION:
Study of creative wardrobe building with emphasis on color, line, design and figure type; and the practical application to each individual. 3 hours, 10 sessions—$6.00.

CL 10 BEGINNING SEWING:
A variety of attractive and useful articles and simple garments are constructed to develop skill and confidence in the use of the sewing machine, selection and handling of cotton fabrics, and use of a pattern. 3 hours, 10 sessions—$6.00.

CL 15 BASIC DRESSMAKING:
Through the construction of an apron, blouse, skirt and simple dress, all using cotton fabrics, fundamental construction techniques are taught including preparation of fabric, simple alterations, zipper application, finishing techniques. Beginning Sewing is recommended as a prerequisite for those with little or no knowledge of sewing. 3 hours, 10 sessions—$6.00.

CL 20 ADVANCED DRESSMAKING:
This course is designed to give the home-sewer self-confidence in proceeding independently and achieving the professional look through the construction of two or three garments incorporating more advanced dressmaking techniques such as pattern alterations, interfacing, underlinings, matching plaids, bound buttonholes, gussets. Prerequisite: Basic Dressmaking. 3 hours, 10 sessions—$6.00.

CL 23 MAKING YOUR BASIC PATTERN:
To eliminate the problem of fitting one’s self and time consuming garment alterations, this course includes the construction of a basic pattern, altered to meet the individual’s fitting needs. Prerequisite: Basic Dressmaking. 3 hours, 10 sessions—$6.00.

CL 25 GENERAL SEWING:
Construction of a wide variety of garments for the individual or family members is possible in this course planned to help give the the student confidence in applying various dressmaking techniques. 3 hours, 10 sessions—$6.00.

CL 27 FITTING:
Fitting problems of different figure types are analyzed, with each individual making a basic pattern to be used in checking and altering commercial patterns. 3 hours, 10 sessions—$6.00.

CL 28 PATTERN DRAFTING:
Instruction in how to adapt an individual’s sloper to different designs by changing basic construction lines and drafting various types of collars, sleeves, etc. Prerequisites: Fitting or consent of instructor. 3 hours, 10 sessions—$6.00.
CL 30  BASIC TAILORING:
The fundamentals of tailoring techniques, handling and pressing of wool, are incorporated in the making of a simple lined coat or suit. Prerequisite: Advanced Dressmaking or equivalent. 3 hours, 10 sessions—$6.00.

CL 35  ADVANCED TAILORING:
Increased skill in tailoring with advanced techniques in handling wool fabrics, design detail, custom finishes. Prerequisite: Basic Tailoring or equivalent. 3 hours, 10 sessions—$6.00.

CL 38  TAILORING MEN’S SPORT COATS:
Advanced tailoring techniques involved in making men’s and boy’s coats. Knowledge of basic tailoring methods recommended. 3 hours, 10 sessions—$6.00.

CL 40  MAKING SHIRTS AND SLACKS:
Instruction in making men’s sport shirts and construction of slacks, capri pants, shorts and shirts for women and children. Prerequisite: Basic Dressmaking or equivalent. 3 hours, $10 sessions—$6.00.

CL 45  REMODELING AND RESTYLING GARMENTS:
Salvaging the good fabric from out-dated or ill-fitting garments through analysis of restyling possibilities and use of remodeling techniques. 3 hours, 10 sessions—$6.00.

CL 46  CHILDREN’S CLOTHING:
Construction techniques pertinent to sewing for children, including self-help details, growth features, suitable fabrics and styles, closures, trimmings. Knowledge of Basic Dressmaking techniques necessary. 3 hours, 10 sessions—$6.00.

F 31  MODERN MEALS:
Planned especially for the girl about to be married, this course includes planning and preparing attractive and nutritious meals that fit a budget; planning low-calorie meals, selecting and purchasing foods; simple entertaining menus and ideas. 3 hours, 10 sessions, $6.00 (plus lab fee).

F 61  CAKE DECORATING:
Basic skills are taught in decorating cakes for all occasions and seasons. A hobby class for both men and women. 3 hours, 10 sessions—$6.00 (plus lab fee).

HM 72  NEW IDEAS IN HOME MANAGEMENT:
Management for effective family living with emphasis on time planning, simplification of home care, getting the most from money spent, evaluating household equipment and home laundry. 2 hours, 8 sessions—$3.20.
Adult Family Life

HM 75  HOUSEHOLD REPAIRS FOR THE HOMEMAKER:

A course on common household repairs such as care and sharpening of tools, replacing faucet washers, refinishing woods and metals and the repairing of electric cords and plugs. 3 hours, 8 sessions—$4.80.

HM 82  INTERIOR DECORATION:

Study of the use of color and line as they pertain to interior design; treatment of windows, walls and floors; selection and arrangement of furnishings. 3 hours, 10 sessions—$6.00.

HM 96  UPHOLSTERY:

A course designed for men or women who wish to recondition chairs for their homes. Not a trade preparatory course. Due to limitations of space, chairs only—no davenports.

COMMERCIAL HOME ECONOMICS

COURSE DESCRIPTIONS

HE 10  NURSING AIDE TRAINING:

For Nursing Aides now employed in nursing homes, this course provides instruction and practice in the fundamental techniques and procedures involved in nursing home care. A 36-hour course meeting one night a week for 12 weeks.—$7.20.

HE 30 (3.990)  POWER SEWING:

Classes run continuously in training for employment in the garment industry. The minimum course, to develop skill in operation of the power machine, consists of 60 hours of instruction, but additional time may be needed to develop the necessary speed. An advanced course of 30 hours is available for those wanting skills in more difficult construction techniques. 30 hours—$7.50.

CIVIL DEFENSE

COURSE DESCRIPTIONS

CD 1  PERSONAL AND FAMILY SURVIVAL:

This twelve-hour course is offered without charge to any group or organization upon request. Usually consisting of four, three-hour sessions, classes are conducted in the public schools during day or evening hours. The course is designed to give adult citizens a basic understanding of civil defense, the effect of nuclear weapons, and the action they must take to fulfill their individual, family and community responsibilities for defense.
FACULTY

ADAMS, MRS PATRICIA L.—Clothing Construction  
B.S. Whitworth College

ALEXANDER, MRS. ANITA—Clothing Construction  
B.S. Washington State College

ALEXANDER, MRS. VERA E.—Clothing Construction  
B.S. Oregon State University

ANDERSON, MRS. PAULINE—Clothing Construction  
Business and Trade Experience

BEEMAN, MRS RUBY W.—Cake Decorating  
Experience in Cake Decorating Trade;

BROWNING, MRS. MARJORIE E.—Clothing Construction  
B. S. Oregon State University

BRECKON, MRS. LILLIAN C.—Coordinator, Parent Education  
Manitou Jr. College & Normal School;

BURNS, MR. ROBERT C.—Civil Defense State Civil Defense Consultant

CARRIERE, MRS. BEATRICE—Clothing Construction  
B.A. Marylhurst College

CASSINELLI, MRS. DOROTHY M.—Clothing Construction  
B.S. Oregon State University

COUCHE, MRS. ELIZABETH—Clothing Construction  
B.S. Oregon State University

DANNER, MRS. MARGARET—Nursing Aide Training  
R.N. St. John’s Hospital School of Nursing  
Nursing Home Supervisor

DE LONG, MRS. MILDRED S.—Parent Education  
B.S. Brigham Young University

FOSTER, MRS. ANNE G.—Clothing Construction  
B.S. Oregon State University

FREELAND, MRS. MAXINE—Clothing Construction  
B.S. Oregon State University

GODARD, MRS. JEAN—Clothing Construction  
B.S. Oregon State University

HOUSTON, MRS. FRANCES—Interior Decoration  
Rudolph Shaeffer School of Color and Design; Member A.I.D.

KOCH, MRS. ESTHER B.—Clothing Construction  
B.S. Teachers College, Columbia Univ.

LAHTI, MRS. JANET—Home Management  
B.S. Oregon State University

LAUGHLIN, MRS. MILDRED R.—Clothing Construction  
B.S. Oregon State University

LONG, MRS. HELEN L.—Clothing Construction  
B.S. Oregon State University

LUCAS, MRS. ELINOR F.—Cake Decorating  
Experience in Cake Decorating Trade

MANFULL, MRS. DOROTHY E.—Clothing Construction  
B.S. Oregon State University

McGILL, MRS. PHYLLIS J.—Clothing Construction  
B.S. Oregon State University

McKEAN, MRS. DORIS S.—Clothing Construction  
B.A. Oregon State University  
4H Extension Work

MUNHALL, WALTER F., JR.—Household Repairs for the Homemaker  
B.S. State Teacher’s College, Calif.  
M.A. Colorado State College  
Teacher of Industrial Arts

NASH, MRS. ELIZABETH—Clothing Construction  
Vienna School of Clothing Construction and Pattern Drafting, Art School.

NELSON, MR. THOMAS W.—Upholstery  
B.A. Stout Institute, M.S. Colorado State College  
Teacher of Industrial Arts

PARROTT, MRS. HELEN—Clothing Construction  
B.A. Linfield College

PHILLIPS, MRS. CATHERINE—Power Sewing Training  
Supervisor, Garment Industry
Adult Family Life

ROHMAN, MRS. MARIE—Clothing Construction
Custom Sewing, Tailoring and Alterations Experience

ROLLINS, MRS. ALICE—Parent Education
Nursery School Experience

SAIGET, MRS. BERTHA—Clothing Construction
B.S. Oregon State University

SMELSER, MRS. GRACE—Clothing Construction
B.S. Iowa State College

STRAND, MRS. DOROTHY E.—Cake Decorating; Teaching experience

STREET, MRS. HELEN W.—Clothing Construction
B.S. Kansas State College, M.HE. Oregon State University

SWIFT, MRS. CORINNE J.—Clothing Construction
B.S. University of Washington

TICE, MRS. ELISABETH—Parent Education
B.A. and M.A. University of B.C.

VICKERS, MRS. MARION—Clothing Construction
B.S., M.S. Oregon State University
Former Assistant State Supervisor Home Economics

WENDLAND, MRS. FRED A.—Clothing Construction
Custom Dressmaking Experience
Apprenticeship Department

Related instruction classes for apprentices are offered in accordance with Oregon’s Law and Plan of Apprenticeship. These classes offer instruction in the related technical areas of the trade and are intended to complement the skills taught on the job with the end result being the training of competent journeymen.

Enrollment in related instruction classes is limited to individuals who are registered with the Oregon State Apprenticeship Council as apprentices.

To become a registered apprentice and be eligible to attend related instruction classes it is necessary that:

1. The person be employed as a learner in one of the apprenticeable trades.
2. The employer meets the requirements of an apprentice training agency in accordance with the Oregon Law and Plan of Apprenticeship.
3. The Local Trade Apprenticeship Committee approves the application for an apprenticeship.

Apprentices may register at the office of the Apprentice department, 515 N. E. 15th Avenue, after they have been approved for apprenticeship training by the proper Trade Apprenticeship Committee.

Typical apprenticeable trades for which related instruction is given:

- Automotive
- Bricklayers
- Bridge and Structural Iron
- Carpenters
- Cement Masons
- Dry Wall Tapers
- Glaziers
- Industrial Maintenance
- Boilermakers
- Inside Electricians
- Lathers
- Line Construction
- Linoleum and Carpet Laying
- Machinists
- Millmen and Cabinet Making
- Molders and Coremakers
- Operating Engineers
- Optical Technicians
- Outside Electricians
- Painting and Decorating
- Plastering
- Plumbing
- Roofing
- Sheet Metal
- Steamfitting
- Union Pacific Railroad
- Carmen
- Machinists
### Apprenticeship

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<tr>
<th>Name</th>
<th>Trade and Education</th>
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<td>ALLDREDGE, LLOYD P.</td>
<td>Meterman; Journeyman Electrical Worker; Relay Meter Tester</td>
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<tr>
<td>ALTENHOFEN, RICHARD</td>
<td>Sheetmetal Journeyman; Foreman</td>
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<tr>
<td>BACKENSTOS, JAMES S.</td>
<td>Inside Electric Journeyman Inside Electrician; City Electrical Inspector</td>
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<tr>
<td>BEGAN, ERNEST</td>
<td>Sheetmetal Journeyman</td>
</tr>
<tr>
<td>BERGMAN, LLOYD</td>
<td>Painting and Decorating Journeyman Painter</td>
</tr>
<tr>
<td>BORHO, ARNOLD</td>
<td>Dry Wall Tapers Journeyman Dry Wall Taper</td>
</tr>
<tr>
<td>BRITT, IRA E.</td>
<td>Carpentry Journeyman</td>
</tr>
<tr>
<td>BRUMELS, LLOYD</td>
<td>Machinists Journeyman Machinist</td>
</tr>
<tr>
<td>BYRD, WAYLAND</td>
<td>Radio &amp; TV Repair Journeyman Radio &amp; TV Serviceman</td>
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<tr>
<td>CARLSON, HARRY L.</td>
<td>Carpentry Journeyman</td>
</tr>
<tr>
<td>CONNELL, REID S.</td>
<td>Inside Electric Journeyman Inside Electrician; City Electrical Inspector; Oregon Institute of Technology; Oregon State University</td>
</tr>
<tr>
<td>COUSINS, RICHARD</td>
<td>Machinists Journeyman Machinist</td>
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<tr>
<td>EBEL, ALEX</td>
<td>Inside Electric Journeyman Inside Electrician; Journeyman Carpenter</td>
</tr>
<tr>
<td>ESCH, LEONARD</td>
<td>Sheetmetal Journeyman Sheetmetal Worker</td>
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<tr>
<td>ELMER, JACK</td>
<td>Bakers Dunwoody Institute; Journeyman Baker</td>
</tr>
<tr>
<td>FRANK, STANLEY</td>
<td>Carmen Journeyman Railroad Carman; I.C.S.</td>
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<tr>
<td>FRITSCH, ROBERT W.</td>
<td>Brick Masonry Architect; AIA</td>
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<tr>
<td>GAVIN, HERBERT A.</td>
<td>Sheet Metal Journeyman Sheetmetal Worker</td>
</tr>
<tr>
<td>GENDE, DAVID P.</td>
<td>Inside Electric Journeyman Inside Electrician; City Electrical Inspector</td>
</tr>
<tr>
<td>GIBBS, CHESTER</td>
<td>Plumbing Journeyman Plumber; Washburn College; Multnomah College</td>
</tr>
<tr>
<td>GRIFFITH, CHARLES</td>
<td>Glazing Journeyman Glazer</td>
</tr>
<tr>
<td>GRIFFITH, NORMAN L.</td>
<td>Sheetmetal Journeyman Sheetmetal Worker; Multnomah College</td>
</tr>
<tr>
<td>HAMMER, LEROY</td>
<td>Plumbing Journeyman Plumber</td>
</tr>
<tr>
<td>HANSEN, ALFRED</td>
<td>Plastering Journeyman Plasterer</td>
</tr>
<tr>
<td>HEMEL, STANLEY</td>
<td>Carpentry Journeyman</td>
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<tr>
<td>HORD, RAYMOND</td>
<td>Brick Masonry Journeyman Brick Mason</td>
</tr>
<tr>
<td>HUBBARD, HOWARD C.</td>
<td>Millwork and Cabinetmaking Journeyman Cabinetmaker; B.A. Oregon State University; M.Ed. Oregon State University</td>
</tr>
<tr>
<td>KAEPPLINGER, THEODORE A.</td>
<td>Steamfitting Journeyman Steamfitter</td>
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<tr>
<td>LASALLE, WILBUR H.</td>
<td>Structural Iron Work Structural Steel Fabrication Estimator</td>
</tr>
<tr>
<td>MATHIS, JACK J.</td>
<td>Lathing Journeyman Lather; I.C.S.</td>
</tr>
<tr>
<td>MAY, HAROLD</td>
<td>Linoleum and Carpet Laying Journeyman Linoleum and Carpet Layer; Foreman</td>
</tr>
<tr>
<td>MCCOY, JAMES</td>
<td>Welding Journeyman Structural Iron Worker; Certified Welder; City Building Inspector</td>
</tr>
<tr>
<td>McDERMAID, ANDREW</td>
<td>Painting and Decorating Journeyman Painter</td>
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MELVIN, STUART—Inside Electric
Journeyman Inside Electrician; City
Electrical Inspector;
Oregon Institute of Technology;
University of Oregon Extension Divi-
sion

MERCK, JESSE J.—Roofers
Journeyman Roofer

NEUHARTH, CHESTER D.—Carpentry
Oregon Polytechnic Institute
Journeyman Carpenter

NIEMI, WILLILAM J.—Plumbing
Journeyman Plumber

OLIVER, WILLARD—Machinist
Journeyman Railroad Machinist;
Lead Man

PATTERSON, PAUL—Sign Painting
Journeyman Sign and Pictorial Artist

PRICE, CAREY J.—Operating Engineers
Journeyman Operating Engineer

ROBSON, ROBERT M.—Carpentry
Journeyman Carpenter;
Lead Man;
University of Oregon

SCHRANTZ, JOHN—Boilermaker
Journeyman Boilermaker

SCOTT, VIRGIL—Inside Electric Eval-
uator
B.S. Oregon State University

SHEA, JACK A.—Plumbing.
Journeyman Plumber; Supervisor

SIMS, HARRY D.—Lineman
Journeyman Lineman; Line Foreman;
Diploma, Oregon College of
Education

SMITH, EMMETT J.—Sheetmetal
Journeyman Sheetmetal Worker

SUMMERS, HARVEY—Molding and
Coremaking
Journeyman Molder and Coremaker;
Diploma, Oregon College of
Journeyman Sheetmetal Worker
Education;
B.S. Oregon State University;
M.Ed. University of Oregon

TUERCK, JOHN—Motor Winders &
Industrial Maintenance Electricians;
Journeyman Motor Repairman

WOLD, EMMET S.—Cement Masons
Journeyman Cement Mason

Yeamans, John M.—Carpet Layers
Journeyman Carpet Layer

UGAR, JOHN—Welding
Journeyman Sheetmetal Worker;
Certified Welder

WARDLEY, FRANK A.—Welding
Journeyman Steamfitter

WILLIAMS, RICHARD N.—Plumbing
Journeyman Plumber
Occupational Extension Department

SUPERVISORY DEVELOPMENT

This program is designed to provide the student with an understanding of the supervisor's job together with some of the skills and knowledges needed by today's supervisors in business and industry.

Intended to help the new supervisor, the experienced supervisor who feels he needs a refresher in the techniques of supervision, and those with assurances of soon being placed in a supervisory position.

The curriculum includes 30 term units in Supervision, 27 term units of general electives, 18 term units of general education and 15 term units of occupational courses. Classes in Supervision are taught by working supervisors in evening classes only, with classes starting at 7 p.m.

Students register by securing an enrollment form from the office which, when returned with the tuition of $12.00 per course, completes the registration.

Candidates for the degree program must be high school graduates or its equivalent as shown by a G.E.D. test.

The division reserves the right to make deviations in course requirements for individual students dependent on their education and experience.

CERTIFICATE IN SUPERVISION

Required courses (12 term units)
Principles of Supervision........3 units
Basic Psychology.................. 3 units
Oral or Written Communications...............3 units
Employee Training...............3 units

Elective courses (6 term units)
1 course from list A
1 course from list A or B

CERTIFICATE IN ADVANCED SUPERVISORY DEVELOPMENT

Required courses (30 term units)
Principles of Supervision........3 units
Basic Psychology.................. 3 units
Communications, Oral.............3 units
Communications, Written.........3 units
Training Employees...............3 units
Human Relations...................3 units
Labor-Management Relations.....3 units
Occupational Courses..............9 units

Elective courses (15 term units)
1 course from list A, 3 units and 4 courses from list A or B, or 12 credits for supervisory experience or a combination of credits for supervisory experience and courses totaling 12 term units.

ASSOCIATE DEGREE PROGRAM

Required courses (45 term units)
Principles of Supervision........3 units
Basic Psychology.................. 3 units
Communications, Oral.............3 units
Communications, Written.........3 units
Training Employees...............3 units
Human Relations...................3 units
Labor-Management Relations.....3 units
Industrial Economics..............3 units
Methods Improvement..............3 units
Cost Control.......................3 units
Occupational Courses..............15 units

Elective courses (45 term units)
General Education courses (18 term units) from list B.
General electives (27 term units) from list A or B. Credit for supervisory experience can be submitted for up to 24 units of general electives.
List A (Supervisory Development)

Communications, Oral
Communications, Written
Human Relations
Management Controls
Labor-Management Relations
Supervisory Responsibility for Management of Personnel
Methods Improvement
Technical Report Writing
Organization and Management
Industrial Economics
Cost Control
Job Analysis for Wage Adm.
Safety Training
Reading Improvement

List B (General Education)

Industrial Psychology
Survey of Humanities
American Institutions
History of Western Civilization
History of the United States
Sociology
Economics
Humanities
Communications, Oral
Communications, Written
Technical Report Writing
Reading Improvement

NOTE: Most courses offered on a post-high school level in the area of general education can be included on this list.

Occupational Courses

Post-high school courses selected on the basis of need from such areas as applied math, applied science, drafting and technical skills and information. The Degree program will include at least one sequence of three courses in a specific field.

COURSE DESCRIPTIONS

PRINCIPLES OF SUPERVISION

A course covering in general terms the total responsibilities of a supervisor in industry, such as organization, duties and responsibilities, human relations, grievances, training, rating, promotion, quality-quantity control, management-employee relations, etc.

COMMUNICATIONS FOR SUPERVISORS, Oral

How we communicate. Effective speaking and listening. Kinds of supervisory communications. Saying what we mean, which covers oral versus written communications. Understanding what is communicated as related to intent and effect. Conference leading and practice for supervisors.

HOW TO INSTRUCT SUCCESSFULLY


BASIC PSYCHOLOGY FOR SUPERVISORS

Course to assist the supervisor in understanding the people with whom he works, with emphasis on the psychological aspects, perceptions, learning processes, emotions, attitudes and personalities, etc.

HUMAN RELATIONS (Developing Supervisory Leadership)

To show the practical application of basic psychology in building better employer-employee relationships by studying Human Relations techniques.

Prerequisite: Basic Psychology for Supervisors
Supervisory Development

LEADERSHIP SEMINAR (Advanced Human Relations)

Case study approach in applying Human Relations principles and techniques to job situations.

Prerequisite: Human Relations

METHODS IMPROVEMENT FOR SUPERVISORS

The supervisor's responsibility for job methods improvement. The basic principles of work simplification. Administration and the problems involved. Motion study fundamentals for supervisors. Time study techniques.

COMMUNICATIONS FOR SUPERVISORS, Written

Review of writing mechanics covering grammar, punctuation, sentence structure, and paragraph structure. Business letter-writing involving the principles, planning and dictating of letters.

LABOR-MANAGEMENT RELATIONS

The history and development of the Labor Movement. Development of the National Labor Relations Act, the Wagner Act, the Taft-Hartley Act. The supervisor's responsibility for good labor relations. The union contract and grievance procedure.

PERSONNEL MANAGEMENT FOR SUPERVISORS *

Personnel techniques for which the supervisor is, partially responsible and for which he should have some training in carrying out his responsibility. Selection, placement, testing, orientation, training, counseling, merit rating, promotion, transfer, and training for responsibility.

*It is recommended that the first course be Principles of Supervision.

TECHNICAL REPORT WRITING

Report writing covering the necessity, planning, and writing of reports. Memorandum and bulletin writing with emphasis on format, content, structure, tone, and style. Manual writing covering format, content, and structure.

ORGANIZATION AND MANAGEMENT

To assist the Supervisor in developing and using the basic management functions of Planning, Organizing, Directing and Controlling. Essentially a study of authority and responsibility relationships and how, through effective organizational planning and directing an enterprise can more effectively achieve its goal.

Prerequisite: Principles of Supervision

MANAGEMENT CONTROLS AND THE SUPERVISOR

Basic principles of controls. Delegation of responsibility through the use of controls. The purpose and objectives of controls, manufacturing costs, quality control, quantity control, production control, control over materials, control over personnel, organization, etc.
Supervisory Development

INDUSTRIAL ECONOMICS

Significant economic facts. Development of a critical attitude toward industrial economics. Institutions and practices that determine our social environment. Management-supervisory, employee relationships to economics and local industry.

COST CONTROL FOR SUPERVISORS

How costs are determined in industry. Cost control and its function. The supervisor's responsibility for costs. Factors in Cost Control: cost, materials, waste, salvage, quality control, control of time.

JOB ANALYSIS FOR WAGE ADMINISTRATION


SAFETY TRAINING AND FIRE PREVENTION


READING IMPROVEMENT FOR SUPERVISORS

General approach to better reading through the proper use of text material, reading films, tachistoscopes, and practice. Benefits of better reading, primary considerations in reading, evaluating and analyzing what is read, vocabulary improvement, advanced reading tips.

TECHNICAL TRAINING FOR SUPERVISORS In Related Fields

Will be offered if there is sufficient demand.

Special courses in Electronics, Metallurgy, Blueprint Reading, Shop Mathematics, Inspection, Production Control, etc.

FACULTY

BOICE, ELBERT E.—Supervisory Training
College Extension, I.C.S.; Training Director, Jantzen, Inc.

BRUNING, ROBERT F.—Supervisory Training
B.S. Oregon State University; B.A. University of Portland; 10-year Engineer and Supervisor Crown-Zellerbach Corporation.

CHURCH, DON—Supervisory Training
Eastern Oregon College; Supervisor Oregon Liquor Control Commission

FARNSWORTH, SAMUEL H.—Supervisory Training
B.S. Northwestern University; Supervisor American Pipe and Construction Co.
JOURNEYMAN TRAINING

These programs are designed to meet the needs of industry for training journeymen in new skills as a result of changes in techniques and materials and to meet the needs of journeymen for refresher training.

Classes are open only to journeymen who are employed in the trade or occupation or who are in a trade where the skill to be learned is a part of his trade.

Registration may be through an employee or employer group. Where welding training is wanted registrations are accepted at the Apprentice Division office.

A typical class in this area meets one night a week for 12 weeks. Subjects include such courses as gas, arc, and inert gas welding; blueprint reading; new processes in printing; electrical code, industrial electronics, math refresher, advanced shop training, refrigeration. Of these welding and electrical code are offered each term, and registrations are accepted at any time during the school year.

FACULTY

BEALE, JACK R.—Welding
Journeymen Steamfitter;
Certified Welder

BEVINGTON, JACK R.—Industrial Electronics
Journeymen Inside Electrician

BYRNE, VINCENT T.—New Process Printing
Journeymen Printer

CLARK, ROSS—New Process Printing
Journeymen Printer

ELWOOD, JACK—Outside Electrical
B.S. EE, Oregon State University;
Control Application Engineer

FORS, GLENN—Blueprint Reading
St. Olaf College;
Dunwoody Institute;
Journeymen Carpenter;
City Building Inspector

MURPHY, DANIEL J. C.—Supervisory Training
Oklahoma A and M and Oregon State University;
Wire Chief, West Coast Telephone

REGAN, WALLACE E.—Supervisory Training
B.A. San Jose State College;
Supervisor, Owens-Illinois Glass Co.

SEIFORTH, JACK B.—Supervisory Training
Texas A and M;
Mogensen Work Simplification Conference;
Work Simplification Coordinator;
ESCO Corporation;

HENDRYX, GERALD L., JR.—Supervisory Training
B.A. Washington State University;
Supervisor, Accountant

HUMPHREY, KENNETH A.—Supervisory Training
College Extension;
Superintendent of Training, Post Office

JOHNSON, DALE V.—Supervisory Training
B.A. Linfield College;
Supervisor Northwest Natural Gas Company.

JOHNSON, HAROLD F.—Supervisory Training
B.S. University of Minnesota,
M.A. Columbia University;
Assistant Personnel Officer, Veterans Administration

KEARCHER, KENNETH P.—Supervisory Training
College Extension;
Plant Superintendent Fibreboard Paper Products Co.

McCANNA, FRANK—Supervisory Training
B.S. University of Portland;
Assistant Personnel Manager,
Iron Fireman Manufacturing Co.
JOHNSON, DONALD—Chefs Training
Commercial Foods, Clark College;
Hotel and Restaurant Management,
Cornell University

JOYAUx, HENRI—Industrial Electronics
Electrical Engineer

LA FORGE, ROBERT—Steamfitting
Journeyman Steamfitter

MILLER, PAUL—Inside Electric Code
Journeyman Inside Electrician
City Electrical Inspector

McMAHON, ROBERT—New Process
Printing
Journeyman Printer

MOON, EARNEST—Welding
Journeyman Automotive Mechanic
Certified Welder; Foreman

NICHOLS, WILLIAM W.—Airframe and
Powerplant Mechanics
Licensed A&P Mechanic

QUILICI, GINO—New Process Printing
Journeyman Printer

UGAR, JOHN—Welding
Journeyman Sheetmetal Worker;
Certified Welder
Practical Nursing Department

HISTORY. The Portland School of Practical Nursing was started by the Adult and Vocational Education department of the Portland Public Schools at the request of the Oregon Nurses Association and various hospitals in Portland. It was felt that there was a tremendous need for well trained practical nurses in the hospitals and nursing homes. With the approval of the Oregon State Board of Nursing, the first class of 19 students began its training January 10, 1949.

The first two classes were only nine months long. This was the minimum time as set by the Oregon Law for the licensing of practical nurses. The State Board of Nursing recommended the increase of the training period to 12 months with the third class which started training September, 1950.

OBJECTIVES. To prepare suitable applicants to give nursing care to patients under the direction and supervision of a registered professional nurse or a licensed physician; and to prepare qualified applicants for licensure as practical nurses.

At the completion of the course, a diploma will be awarded, and the privilege of wearing the school cap and pin will be granted.

PROGRAMS. There are Day and Evening programs for students preparing for licensure. There is also an extension program for Licensed Practical Nurses.

REQUIREMENTS FOR ENTRANCE.

1. The applicant must be 18 years old by completion of the course.

2. The applicant must be a high school graduate or have passed the General Education Development Test.

3. The applicant must have a personal interview and take an ability test.

4. Satisfactory references.

5. Satisfactory physical examination including chest x-ray, and laboratory tests.

COUNSELING SERVICE. Personal interviews are held with each applicant to explain the program and to assist with plans and arrangements. Graduates of the course are eligible to take the National League for Nursing Licensing examination. Those who pass this examination become licensed practical nurses for the state of Oregon and may be eligible for licensing in other states.

Registration interviews are held twice each week and applications are put into whichever class the applicant desires. New classes are started every four months for the Day Program and once each year for the Evening Program.
TUITION. (1) $15.00 per month for the Day Program. (2) $34.80 payable in four equal installments for the pre-clinical portion of the Evening Program. Balance is due and payable at the rate of $15.00 per month.

STIPEND. Affiliated hospitals pay an hourly stipend for all of the time that the student spends in hospital practice—a total of about $800.00.

CURRICULUM.
In the Classroom (during the total program):

I. Personal and Vocational Relationships including Orientation, Introduction to Relationships in Nursing, Community Health Agencies, Professional Responsibilities (78 hrs.)

II. Normal Health, Growth and Development including Anatomy and Physiology, Maternal and Child Health, Basic Nutrition, Normal Aging Process and Nursing Considerations (102 hrs.)

III. Patients Needs and Related Nursing Skills including Nursing Care of the Patient and Drugs (222 hrs.)

IV. Conditions of Illness and Related Nursing Problems including Common Conditions of Illness, Rehabilitation Nursing, First Aid, Maternal and Child, Psychiatric Nursing (248 hrs.)

Clinical Experience:
Learning experiences in the care of adults with medical, surgical and orthopedic conditions; mothers and newborn with some observations in labor and delivery room; the hospitalized child.
Participating hospitals include Emanuel, Multnomah, Physicians and Surgeons, Doernbecher Memorial, Providence and St. Vincent.

SCHEDULE OF TRAINING.

Day Program. Classes meet for the first three months from 8:30 a.m. to 2:30 p.m. daily Monday through Friday. The clinical portion of the program will consist of 40 weeks; 40 hours per week of which 8 hours a week will be spent in the classroom. Saturdays and Sundays are a part of the work week and some experience on evening duty will be included.

Evening Program. Pre-clinical classes meet two nights a week, three hours per night for a period of 28 weeks. The clinical portion consists of 40 weeks; 40 hours per week, of which 8 hours a week will be spent in the classroom. Saturdays and Sundays are a part of the work week, and some experience on evening duty will be included.
**Practical Nursing**

**COURSE OF STUDY**

I. PERSONAL AND VOCATIONAL RELATIONSHIPS  
- Orientation  
- Introduction to Relationships  
- Nurse—Patient Relationships  
- Community Health Agencies  
- Professional Responsibilities—Organizations, Employment  
  78 hrs.

II. NORMAL HEALTH, GROWTH AND DEVELOPMENT  
- Anatomy and Physiology  
  35 hrs.  
- Obstetrics  
  22 hrs.  
- Pediatrics  
  14 hrs.  
- Basic Nutrition  
  19 hrs.  
- Normal Aging Process and Nursing Conditions  
  12 hrs.  
  102 hrs.

III. PATIENT'S NEEDS AND RELATED NURSING SKILLS  
- Nursing Procedures  
  152 hrs.  
- Drugs  
  10 hrs.  
- Live Lab. Patient Care  
  60 hrs.  
  222 hrs.

IV. CONDITIONS OF ILLNESS AND RELATED NURSING PROBLEMS  
- Basic Nursing Problems and Ward Conferences  
  80 hrs.  
- Obstetrics  
  6 hrs.  
- Pediatrics  
  14 hrs.  
- Medical-Surgical including  
  - Diatherapy and Rehabilitation  
    118 hrs.  
  Psychiatric Nursing  
  20 hrs.  
  248 hrs.

**TOTAL HOURS OF INSTRUCTION**  
650 hrs.
CAROL CONNOLLY (Mrs.)
R.N. Sacred Heart Hospital,
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B.S. Gonzaga University
M.S. University of Oregon

GLADYS B. DAVID (Mrs.)
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B.S. Whitworth College
M.A. Oregon State University

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R.N. Presbyterian Hospital, Columbia
Medical Center, New York
B.A. Park College, Missouri
M.N. University of Washington

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R.N. St. James Hospital
Butte, Montana
B.S.N.E. St. Louis University

REBECCA A. LARIEMER (Mrs.)
R.N. Archbold Memorial Hospital
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MARY ANN LASALLE (Mrs.)
R.N. Children’s Hospital
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