FISER

CATALOG 1970-71

Portland Community College

the "OPEN DOOR"
Educational Shopping Center
12000 S.W. 49th Avenue, Portland, Oregon 97219
INDEX AND GUIDE TO MODULAR CONTENT

This is a modularized catalog – each program area is presented within its own module, or section within a module. Each section and module contains full information, in one place, on that program, including the curricular patterns and course descriptions. Each module and section is available separately, as well as in the bound catalog, thus making wide distribution of content feasible. You may obtain any module or section separately on request.

For ease in reference, the INDEX below lists specific content within any module, naming module in CAPITALS. Where a specific page contains the content, page numbers are given; if no page number appears you should check the module or section named for reference to the content desired.

Use the INDEX in company with the thumb-indexed Modules Content column at the right.

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GENERAL INFORMATION

COURSES OFFERED

and Transfer Program

ARTS

ART
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Graphic Arts
IMC Aide
Photography

BUSINESS EDUCATION

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Clerical-Secretarial
Legal-Medical
Touch Shorthand

BUSINESS MANAGEMENT

Merchandising
Real Estate, Property Appraisal
Transportation

COMMUNITY EDUCATION

Adult Education
High School Completion
Service Courses

DATA PROCESSING

ELECTRONICS

and RADIO-TV SERVICING

ENGINEERING

Apprenticeship and Trade Extension
Civil Engineering
Architectural Drafting
Mechanical Drafting

Mechanical Engineering
Airframe-Powerplant Mechanics
Automotive, Machine, Welding Technology

HOME ECONOMICS

HOSPITALITY SERVICES

Institutional, Food Services,
Hotel-Motel Management
Quantity Food Preparation

LANGUAGE ARTS

AND FOREIGN LANGUAGES

LIFE SCIENCES

Life Sciences
Dental Assistant and Dental Technician
Associate Degree Nurse, Lic. Practical Nurse
Physical Education

MATHEMATICS

PHYSICAL SCIENCES

PUBLIC SAFETY

RADIO-TV BROADCASTING,
SPEECH, DRAMA, JOURNALISM

SOCIAL SCIENCE

SUPERVISORY DEVELOPMENT

COLLEGE STAFF, ADVISORS
Members of the College Board of Directors are seven persons elected from specific zones: Robert A. Bissett, Zone 1; Howard Cherry, Zone 2; Lewis C. Nickerson, Zone 3; Manley J. Bakkensen, Zone 4; Carl R. Neil, Zone 5; Robert E. Thompson, Zone 6; and Howard McGilvra, Zone 7. (Left to right in photo above; Thompson, Nickerson, Neil, McGilvra, President Amo DeBernardis, Bakkensen, Bissett, Cherry.)

Campus Locations:
Main Campus, Mt. Sylvania
1200 S.W. 49th Avenue
Portland, Oregon 97219
Tel. 503-224-3040
(Connects all locations)
Shattuck Hall
1914 S.W. Park Avenue
Portland, Oregon 97201

Failing Hall
049 S.W. Porter Street
Portland, Oregon 97201

Airport Center
Portand International Airport

Multnomah Building
1736 S.W. Alder Street
Portland, Oregon 97205

Address all general correspondence to the Mt. Sylvania campus; if seeking specific information mark the envelope for the attention of a specific office: i.e., for Financial Aid Office, Registration, or Admissions.

Portland Community College is a member of the American Association of Junior Colleges, the Northwest Association of Junior Colleges, and the Oregon Community College Association. The College is a candidate for accreditation by the Northwest Association of Secondary and Higher Schools.
SO YOU ARE THINKING ABOUT COMING TO PORTLAND COMMUNITY COLLEGE

You are taking one of the most important steps toward shaping your future . . . planning for further education.

Your happiness and well-being throughout life depend on how well you prepare yourself for work and responsibility during all your coming years. It does not matter whether you are a high school senior, or already employed, or an older citizen seeking ways to enrich and strengthen your later working years . . . PCC offers programs to help you reach YOUR goals. We can help you to choose among a broad variety of programs designed to meet a wide range of needs, interests and abilities.

Our economy today depends upon well-educated people. Skills, knowledge and responsible attitudes are the base for our society, of which you must be a working member. Unskilled and unprepared people, at any age, will have an increasingly difficult time adapting to the growing demands placed upon us all.

PCC is dedicated to helping you with your education. We can’t give you an education; you have to do the learning for yourself. But we can provide effective, interesting, challenging means for learning, and an environment facilitating exploration, inquiry, and the search for your most satisfying interests and the most effective areas in which you can work.

There are a number of steps you can take to make the right decisions about your college career:
START YOUR OWN PLANNING NOW. Select a program which appeals to you, then take steps to enroll in that program at PCC.
IF YOU ARE IN HIGH SCHOOL, talk to your counselor right away; he is in a good position to assist you. He has application forms and other information, and can arrange to have your high school transcript forwarded to us.
IF YOU ARE ALREADY BEYOND HIGH SCHOOL, call or visit the PCC Counseling Center or the Office of Admissions, on the Mt. Sylvania Campus, or talk to a counselor at any PCC location. You can call 224-3040 for an appointment at any location, for more information, or to obtain admission forms.

We’ll welcome you at PCC, and we’ll help you in any way we can to find the studies that will appeal to you, and prepare you for a bright future.

Amo De Bernardis, President
FOR YOU ---
PORTLAND COMMUNITY COLLEGE
OFFERS UNIQUE OPPORTUNITIES

The OPEN DOOR
For YOU
PCC welcomes anyone who can benefit from the learning process. You are encouraged and assisted to continue as long as you are profiting from your educational program. You can leave for other opportunities in work or study, then return for more learning at PCC when you wish, and when your needs are clear.

Exploration
Encouraged Here
At PCC, we believe that education requires exploration to find the right kind or level of program for best self-development for YOU. If you're not sure of the field you want to study, PCC will help you to explore the wide variety of programs available here, to build background and gain information before you make a wise choice for your career. When you find your major interest, PCC counselors and your own personal advisor will help you plan a program to achieve your goals.

Dignity of
Choice
In our society, each person can have worth and dignity of his own, generated by what he makes of himself. At PCC, we assist each person to find a place in society which best fits his needs, interests and abilities; no distinctions are made between programs in this College: what is good for one may not be good for another. Each student is encouraged to excel and to develop personal performance levels, no matter what career he has chosen — draftsman, nurse, dentist, teacher, attorney, welder, salesman, secretary, auto mechanic or repairman.

Wide Variety of
Programs
PCC offers more than 500 separate courses, organized and integrated into a broad variety of career programs. You can find what you are seeking here, at several levels of development from basic exploration through truly professional skills.

Learn at YOUR Speed,
in YOUR OWN Way
Not everyone learns the same way, or at the same pace. At PCC we plan YOUR program to fit your needs and abilities in learning. PCC instructors work with many methods and techniques, and use many approaches to learning, supported with the best of learning media. You can work along in your own way, taking more time or less time than "the average," according to what you are liable to do and the time you can devote. Here the individual study program is built for YOU . . . to fit "people needs," not to conform to any rigid administrative time pattern.

Staff Assistance
For Every Student
At PCC, every one of our staff stands ready to assist any student, any time. Every student has a personal faculty advisor who helps him to make choices and to plan his program; every student has open access to skilled counselors to find the solution to any problem, personal or career planning. PCC helps every student in many ways; whatever your problem, you can count on friendly full effort to help you to solve it.

Placement on
YOUR Job
More than 100 selected groups from business and industry help to guide PCC career programs. Because of this close association with business and industry, PCC can be effective in assisting you to find work in your choice of areas. A placement office is available to help you with contacts and potential positions.
Portland Community College is a comprehensive community college serving a five-county region of more than 700,000 persons; the College district comprises a large segment of the metropolitan area surrounding Portland, Oregon's largest city. PCC became an Oregon community college in 1961, the College district was established by vote of residents of the five-county region in 1968.

The OPEN DOOR

The purpose of the College is to offer opportunity for learning beyond the high school level to anyone who can profit from the process.

PCC is called "the Educational Shopping Center" because its plan of organization, its facilities and its programs are all designed to make exploration and inquiry a natural part of the process of learning, facilitating your search for that area in which your interests and abilities coincide. Here you are encouraged to seek out your own interests, to learn at your own pace, and in your own individual style.

The Students

PCC is the largest community college in Oregon, and ranks among the first three or four collegiate institutions in the state; yet organization, structure and facilities permit personal and individual approach to your learning problems.

You will meet every kind of student here, from just-graduated high school seniors through young workers seeking new skills and new information in their career areas, to older persons studying to enrich and strengthen their later years.

The College serves more than 13,000 persons each term, and more than 30,000 in any year.

This variety and depth presents you with invaluable opportunities for social interaction and for important out-of-class learnings not available in other situations.

The Staff

There are nearly 700 full- and part-time members serving PCC students in credit and non-credit programs. Each one is highly qualified and carefully selected, and accredited or approved by appropriate authority.

The Programs

PCC offers a very broad range of courses and programs in Liberal Arts and General Studies, Technical-Vocational career programs, and Community Education offerings. Those seeking the first two years of college preparation in many areas can find complete curricula here; see Transfer Program for details. Those seeking to build skills and prepare for entry-level employment in business, industry and the technical fields will also find many curricula.

There is no differentiation between so-called "academic" and "vocational" courses at PCC; you will study with a variety of types and kinds of persons, seeking a variety of personal goals - an important component of college education sometimes lost.

Many courses are available in the Evening Program at PCC; programs operate in several locations, including the Main Campus on Mt. Sylvania; Shattuck Hall, Failing Hall, and the Multnomah Building in downtown Portland; and at other locations as needs arise.

Facilities

PCC's principal campus is on 125 acres of a beautiful, low-rising ridge called Mt. Sylvania, in Southwest Portland nearly at the geographical center of the College district.

Three main buildings - Automotive, Metals, Business-Social Science, and Science-Technology - provide space for most of the vocational-technical career programs and about half of the general studies and liberal arts courses.

A huge new College Services complex just completed surrounds a very large covered Mall, forming the "crossroads of the campus." Here are grouped the Library-Instructional Media Center; a variety of food service areas; Admissions, Registration, Student Services, Personnel and Administration areas; the College bookstore; and a number of class and conference rooms.

Still to come on the Mt. Sylvania campus are Health Sciences and Communications buildings, a Performing Arts structure with indoor and outdoor stages, and a Maintenance Technology building.

PCC also operates Shattuck Hall, near Portland State University, and Failing Hall, both in downtown Portland. The Multnomah Building, also downtown, houses special programs, and an Air Industries training complex at Portland International Airport is under development. The Community Education division operates adult and service courses of many kinds in school buildings and other facilities throughout the metropolitan area. Most recently, PCC has established a neighborhood Education Center in the former Cascade College facilities in Northeast Portland.

A new Washington County campus center is under development planning, for future construction; other facilities are expected to become necessary in other parts of the College district in the near future.

Financial Support

Financial support for Portland Community College comes from local, state and federal sources.

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Voters approved a tax base for the College district in November, 1968.
How You Can Enter PCC

Anyone Can Enroll

Any student may enroll at PCC; no high school diploma is necessary. In many cases students can complete high school work at the college.

Application forms are available from any high school counselor or from the Admissions office. Return the form with a $10 (non-refundable) deposit as soon as you can, since registration is accomplished in order of application. You will be notified of registration dates. Your deposit is credited to tuition when you are enrolled.

Your Records

If you are a high school graduate, forward a copy of your transcript to the Student Personnel office. If you are enrolling from another college, send your college transcript as well as your high school transcript.

Health Examination

If you plan to take physical education, you are required to have a physical examination by a licensed physician; a health form is mailed to you and must be on file in the Student Personnel office.

Other Requirements

Some programs necessarily have special admission requirements; some also may be temporarily filled, necessitating a waiting list. These usually include Quantity Food Preparation, Practical Nurse, Associate Degree Nurse, Dental Assistant and Dental Technologist, Medical Record Technologist, Medical Lab Technologist, and Key Punch programs. Admission in these programs must be arranged in person well in advance of registration date.

Testing Available, If Desired

There are no required entrance tests at PCC. You may be asked to take one or more placement examinations to help you decide the courses or programs which will best suit your needs and plans.

Registration

Detailed instructions will be sent to you prior to registration dates. Registration must be completed in person, except for Community Education courses. All new students are registered according to the date this application is received.

Your Personal Advisor and Counselor

PCC has a unique advisor-advisee relationship in which each staff member is assigned a group of students, with whom he meets individually to assist each with any problems. In addition, professional counselors are available to help you with educational, personal or vocational planning.

Course Changes

Approval of your advisor and of the instructors involved is needed prior to changing courses; deadlines for changes are listed in the Calendar of Instruction.

Withdrawal Permitted

You may withdraw from a class at your own discretion up till time of final examination; if done before the fourth week of a term, no class grade is recorded. After the fourth week, a W (for withdrew) is placed in your grade record; you can erase this W by repeating the course and achieving at a higher level. Withdrawal is accomplished by application to the Registrar, in person or by mail. Tuition refund depends upon time of withdrawal; consult the Registrar.

Tuition

Tuition is payable each quarter before you begin classes, unless other arrangements have been completed with the Business Office in advance. Full-time students are those enrolled for twelve or more credit hours.

Resident of College District

Full-time student $ 80
Part-time student per hour 8

Non-Resident of District

Full-time student $105
Part-time student per hour 9

Out-of-State Resident

Full-time student $120

Tuition may vary for some special programs; the College may chance tuition rates without prior notice. There is no student body fee; the cost of books and supplies will depend upon the student's individual program. Minimum tuition charge is $10.

GENERAL INFORMATION

Attendance

Absence due to illness or strictly unavoidable circumstance may be excused by the instructor, if he is completely satisfied as to the cause. Absences incurred by participation in field trips, intercollegiate games or trips arranged by the College may be excused if such trips have been scheduled by other instructors. Excuse for absence does not relieve you of responsibility for completing all course work.

Auditing a Course

You may audit a general studies class for no credit and with no academic requirements or grades, at regular tuition.

Credits

In general, a class meeting one hour a week for one term yields one credit; a class meeting three hours yields three credits. Laboratory and certain vocational technical career courses may vary from this pattern.

Credit by Examination

You may receive college credit by challenging a course through examination. No more than 24 credit hours may be earned thus; contact the Student Personnel Office for detailed procedures.

Degrees, Diplomas, Certificates

PCC confers degrees of Associate in Arts, Associate in Science and Associate in Applied Science. See the Student Personnel Office for degree and graduation requirements.

Diplomas or certificates are awarded to students enrolled in adult and vocational-technical career programs who complete a curriculum or course of less than two years duration, or who do not meet all the requirements for an Associate degree. A letter verifying your special training can also be sent to your employer.

High school diplomas and elementary certificates can be

Portland Community College
earned in the Adult Education program of the Community Education division.

Financial Aid

Many students today must seek financial aid to complete their college education. PCC has a number of sources for such aid, and often some kind of help can be found for students needing assistance. All programs are administered by the Financial Aids Office.

College Work-Study Program

Under a recent federal Act, PCC receives federal funds to provide part-time employment for eligible students, on or off-campus, sometimes in jobs which provide work experience connected with the student's program.

District Tuition Grants

Grants up to full tuition are available for residents of the College district, renewable from term to term if need continues and the student's record indicates that more aid is justified.

Educational Opportunity Grants

This is a federally-funded program designed to provide grants for students of exceptional financial need who would otherwise not be able to enter or remain in school.

Emergency Loan Funds

Small, short-term loans to meet certain student emergencies have been provided by several organizations and are available to students in good standing. Such loans are ordinarily repaid by the end of the term in which they are granted.

Guaranteed Student Loans

PCC participates in the State Guaranteed Student Loan Program, which allows a student to borrow up to $1,000 a year, up to a total of $7,500. Repayments begin nine to twelve months after leaving school. The student selects his own lending agency, and the loan is guaranteed by the State of Oregon through federal funding. It is not the function of the College to recommend or reject a loan applicant. The College issues the application and certifies the information concerning the student's relation with the college.

Loan Funds

Several organizations have made available funds for long-term loans designed to meet educational expenses. Students must be enrolled full-time and be in good academic standing; loans are repaid after graduation.

Scholarships

Many groups have made available funding for scholarships ranging from partial aid to full tuition; since availability of these scholarships varies from term to term, you should check with the Financial Aid Office for current information.

Tuition Loans

You may pay your tuition on an installment basis provided specific arrangements are made with the Business Office in advance of registration. The amount of the tuition may not be deferred beyond the end of the term covered.

Grading System

Grade points are computed on the basis of 4 points for each term hour of A, 3 points for B, 2 for C, and 1 for D. A grade point average (GPA) is found by dividing the total points by the number of hours.

Housing

Most students will commute to PCC every day; adequate private housing, both board and room and apartments, is available in the area.

Student Activities

Student activities are many and various at PCC, and are an important part of college life. Student government involves four executive officers, a fifteen-member Student Senate, and a number of activities committees working on student body problems and reporting to the Senate for action.

The Associated Women Students is a service organization engaged in selection of the "Girl of the Month", organization of student dances, teas, and other social and service events.

A number of special-interest clubs operate, including Circle K; a number of vocational clubs are also active on campus.

The College competes with other colleges and organizations in basketball, cross country and track and field, wrestling, golf, tennis, soccer, gymnastics and bowling. There is a well-organized intramural sports program.

The BRIDGE is the College newspaper, produced by students in Journalism as a practical working experience.

A Forensics squad takes part in public speaking contests throughout the Northwest.

Student Load

General studies students should schedule an average of 15 credit hours a term to accumulate 90 hours in two years, for junior-year standing on transfer to a four-year institution. No more than 19 hours may be taken any term without approval.

In many areas there are suggested curricula to cover oneor two-year programs, usually calling for at least 12 hours per term. Students who must work, or who for other reasons cannot devote the time usually called for, may schedule the same courses over a longer time. (See Curricular Pattern pages in the various modules)

If you must work part-time, remember that many classes require two hours of preparation for each class hour; you will need to adjust your work schedule to provide adequate study time, or register for fewer course hours per term.

You may mix your schedule by registering for some general studies classes and some vocational-technical career courses.

You are considered a full-time student if you are registered for 12 or more class hours in any one term.

Transfer

See Transfer Program for basic information. If you are planning to transfer to another institution, you should:

Decide early on the school;
Get their catalog and check requirements;
Confer with your advisor;
Check with the school when your program at PCC is set up.
Portland Community College is a true "Open Door" institution, offering educational opportunity to everyone.

Primary emphasis is placed equally on preparation for further study in four-year institutions and on preparation for employment after two years or less at PCC. To fill these needs, PCC offers a broad variety of courses as shown in the following pages.

In Applied Arts and Technology, courses and programs generally lead to the development of skills and knowledges necessary for effective employment and further study at specialized institutions.

In Liberal Arts and General Studies, courses and programs generally lead through the first two years of work toward the baccalaureate degree and also provide for broad personal development and enrichment. For full information on the transfer course program at PCC, see pp.

In Community Education, courses provide enrichment and general personal growth, inform and instruct in hobby and personal-interest areas, and furnish background, skills and knowledges useful to adults and persons seeking service courses. Basic Adult Education, Citizenship Preparation and other specialized areas are also covered.
TRANSFER PROGRAM AT
PORTLAND COMMUNITY COLLEGE

Many students are interested in building a broad base of knowledge and working towards a baccalaureate degree. For these students, Portland Community College offers a wide choice of general studies and liberal arts courses with credits transferable to four-year institutions.

All transfer courses in Oregon community colleges are, by law, approved by the Oregon State System of Higher Education, and all instructors in such courses are also approved, until the schools are accredited.

A manual titled TRANSFER CURRICULA, published by the Oregon State System of Higher Education, lists all transfer program requirements. This manual is available through every PCC counselor and advisor, in the PCC library, and in the offices of many high school counselors.

Each student is responsible for familiarizing himself with the requirements of the program in the institution to which he plans to transfer. You should discuss your transfer plans with your counselor and advisor to make sure you build the required coursework program at PCC. You should also contact the four-year school to which you plan to transfer, for approval of your plans. If you need assistance, PCC counselors or your advisor can help.

You may accumulate up to 93 transferable credits at PCC, the total allowed by the usual requirements of four-year institutions stating that credits beyond this total must be earned at that institution. Transferable credits obtained elsewhere than at PCC must be included in this total.

All transferrable courses are marked with a T in the course descriptions included herein.

<table>
<thead>
<tr>
<th>Program</th>
<th>Transferable To</th>
<th>Years at PCC</th>
<th>Program</th>
<th>Transferable To</th>
<th>Years at PCC</th>
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<td>Art</td>
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**The “Open Door” Educational Shopping Center**
COURSES OFFERED

ARTS

ART

T Art 110, 111 Recreational Use of Arts & Crafts 4 cl hr/wk, 2 cr/tm

An introductory study of arts and crafts that will involve basic techniques, principles and elements of various art practices based on a series of lecture-demonstrations followed by studio work, covering the maximum possible number of activities.

T Art 195, 196, 197 Basic Design 4 cl hr/wk, 2 cr/tm

Through this sequence student gains understanding of the basic elements of art inherent in all art forms. Fall: Two dimensional exploration of line, shape, scale, value, rhythm, texture and space. Winter: Color theory and its relationship to painting and graphic design. Spring: Exploration of three dimensional space and the use of the basic elements of art as they relate to architecture and sculpture.

T Art 201, 202, 203 Survey of the Visual Arts 3 cl hr/wk, 3 cr/tm

Student will investigate the artist's individual style and way of handling materials in the Visual Arts: painting, drawing, sculpture, architecture, prints, ceramics, etc.

T Art 204, 205, 206 History of Western Art 3 cl hr/wk, 3 cr/tm

Using the basic history of art as a reflection of man's interaction with his environment, student will explore, view, evaluate, and react to many art forms. Fall: Ancient art, Greek, Roman art. Winter: Early Christian, Medieval, Renaissance, Baroque art. Spring: 19th, 20th Century art.

T Art 217 Lettering 3 cl hr/wk, 1cr

For each alphabet there will be a demonstration and discussion, student practice and a final project. Fall: Introduction to Italic letter forms, basic strokes and methods of preparing surfaces for lettering and basic understanding of tools and materials. Winter: Introduction to upper and lower case Roman letters, stroke sequence and variations. Spring: Introduction to Uncial, Rustic, Blackletter, Bar- tarde, Legend, Humanist Bookhand and Spanish Rondo.

T Art 255 Ceramics 6 cl hr/wk, 2 cr

Student experiences individual instruction in throwing, molding and hand-building clay forms, in glaze mixing and surface design and participates in stacking and firing the kiln.

T Art 257 Jewelry, Metalsmithing 1 cl, 5 lab hr/wk, 3 cr

You will design, handwork, form, shape, solder, cast and finish non-ferrous metals, and attach your products to other

Portland Community College
materials, in this introductory course to acquaint you with the design, processes and materials used in jewelry and metal objects. 3 terms.

T Art 290 Painting
4 cl, 2 lab hr/wk, 2 cr

Individual instruction in oil or acrylic mediums, appropriate to the background of each student. Fall: Still life with emphasis on space organization, color structure and light. Winter: Problems in design and figure composition with stress placed on experimentation with other media used in painting. Spring: Introduction to problems of landscape painting.

T Art 290 Painting: Life & Figure Composition
6 cl hr/wk, 3 cr

Students study human form from professional models, to acquire knowledge of human figure as expressed in art. You will experiment with new surface techniques. Stress is on growth, development of your concepts in painting.

Prerequisite: 6 hrs PAINTING with grade of C or better.

T Art 291 Drawing
4 cl hr/wk, 2 cr

Fall: You will experience basic drawing problems to introduce concept and techniques needed in composing a drawing, using a variety of materials, media. Winter: Continues basic concepts with composition from costumed figures; emphasizes expressive use of materials. Spring: Stresses problems in freehand perspective, structural investigation of natural forms, exploration with concern for observation, awareness.

T Art 291 Drawing: Life & Figure Composition
6 cl hr/wk, 3 cr

Through contour line, gesture and volume, the student will study structure and proportions of the figure. You will acquire an ability to sketch with spontaneity, expression, in a variety of media. Emphasis on composition in relation to surrounding areas, picture format.

Prerequisite: 6 hrs DRAWING or PAINTING with grade of C or better.

T Art 292 Water Color
4 cl, 2 lab hr/wk, 2 cr

Technique and use of water color; special attention to characteristics as a painting medium. Emphasis on landscape material.

T Art 293 Sculpture
6 cl hr/wk, 2 cr

The student explores the basic concepts of welding, modeling, constructing and carving three-dimensional forms in clay, plaster, metal and wood.

Art 2.312 Showcard Lettering
1 cl, 3 lab hr/wk, 2 cr/tm

Introduction to showcard and poster layout with instruction in brush and pen lettering, using tempera paints and ink.

Art 2.315 Advertising Layout
1 cl, 3 lab hr/wk, 2 cr/tm

Students will develop ideas and make roughs pertaining to a variety of approaches to advertising such as magazine, newspaper, television, etc.

Art 2.316 Advertising Copywriting
2 cl, 2 lab hr/wk, 3 cr

Student learns to develop copy that communicates and sells through magazine, newspaper media. Emphasis on practice on planning and writing copy for individual ads and for complete campaigns.

Art 2.322 Color, Line, Design
1 cl, 3 lab hr/wk, 2 cr

A study of the elements of design: color, line, texture, shape, scale, rhythm and value. The student will make use of the elements in development of designs for merchandising and display applications.

Bus 2.303 Fundamentals of Advertising
3 cl hr/wk, 3 cr

General principles and broad viewpoints, rather than specific techniques, to interest and inform you as an introduction to advertising practices, and to stimulate further study of advertising as a career.

GRAPHIC ARTS

Gra 4.300 Introduction to Graphic Reproduction
2 cl hr/wk, 2 cr

Survey of various printing processes and their uses in industry. Development, production and distribution of graphic materials; kinds of printing industries; job opportunities in graphics reproduction; employer-employee attitudes and responsibilities; personal work habits; safety measures; new developments; ethics of the trade.

Gra 4.302 Bindery Methods
1 cl hr/wk, 1 cr

Develops understanding and skill in collating, stitching, padding, bookbinding, diecutting, cutting, trimming, and folding.

Gra 4.305 Papers and Inks
2 cl hr/wk, 2 cr

Acquaints students with various papers, inks used in graphics reproduction industry.

Gra 4.306 Pricing and Estimating
2 cl hr/wk, 2 cr

Students learn estimating and pricing practices used in the industry, including elements contributing to total cost; the commercial shop; in-plant or captive shop; trade shop; and practical problems in estimating and pricing.

Gra 4.308 Offset Press Operation I
2 cl, 4 lab hr/wk, 2 cr

Acquaints the student with operation of an offset duplicator. Principles of lithography; feeder mechanism; feeder set-up and adjustment; delivery system; water and ink system; printing unit; maintenance.

Gra 4.310 Offset Press Operation II
6 cl, 6 lab hr/wk, 6 cr

Develops skill and understanding in operation of offset duplicator. Emphasis on settings for various sizes and...
weights of paper; the use of pressroom tools; press problems and solutions as they pertain to papers and inks; blending; and receiving plate images.

**Gra 4.312**  
**Offset Press Operation III**  
6 cl, 6 lab hr/wk, 6 cr  
- Develops skill and understanding in register and sheet control; printing both sides of sheet; ink mixing; plate and blanket packing and multi-color register. Advanced press problems and solutions.

**Gra 4.314**  
**Camera, Stripping, Platemaking I**  
2 cl, 4 lab hr/wk, 2 cr  
- Principles of photography. Camera operation, processing, proofs, layout requirements, negative position, and platemaking.

**Gra 4.316**  
**Camera, Stripping, Platemaking II**  
6 cl, 6 lab hr/wk, 6 cr  
- Advanced line work; principles of halftones, filters, stripping of multiple forms, and stripping and making of multiple exposure plates.

**Gra 4.318**  
**Camera, Stripping, Platemaking III**  
6 cl, 6 lab hr/wk, 6 cr  
- Special handling and control of halftones, duotones, stripping, halftones and screen tints, register techniques, use of "thins and spreads" and knockouts, techniques and care in making close register plates, adding and deleting work on plate, and general platemaking problems and solutions.

**Gra 4.320**  
**Copy Preparation I**  
2 cl, 4 lab hr/wk, 2 cr  
- Introduction to hot type: type styles; faces and sizes; tools; layout and design; ruled forms; cold type setting, paste-up; proofreading.

**Gra 4.322**  
**Copy Preparation II**  
6 cl, 6 lab hr/wk, 6 cr  
- Development of skills in cold type setting; equipment, layout and design; paste-up procedures.

**Gra 4.324**  
**Copy Preparation III**  
6 cl, 6 lab hr/wk, 6 cr  
- Develops understanding and skill in typing, layout and design, cold type setting, use of hot type proofs, and advanced paste-up procedures.

**INSTRUCTIONAL MATERIALS AIDE**

**IMC 4.900**  
**Instructional Materials Orientation**  
2 cl hr/wk, 2 cr  
- The student learns role of instructional materials in the learning process. He studies and works with programmed instruction, television, multi-media presentations, single-concept films, slide-tape shows. The student achieves understanding by completing assorted assignments of a creative nature, through observation of films, and latest teachings techniques demonstrated by the instructor.

**IMC 4.902**  
**Audio-Visual Equipment I, II**  
4 cl hr/wk, 2 cr  
- The student learns to operate, make minor repairs and service basic audio-visual equipment: 16mm projectors, filmstrip projectors, tape recorders, record players, slide projectors, opaque projectors, video tape recorders, public address systems. The student demonstrates ability by examinations under observation of the instructor, by making actual equipment setups for staff members.

**IMC 4.904, 4.905**  
**Instruction Materials Production**  
4.906  
1, II, III  
3 cl, 12 lab hr/wk, 5 cr  
- The student learns to prepare overhead transparencies, color slides, displays; construct models, mockups; prepare spirit duplicating masters, mimeograph stencils; make color changes on mimeograph equipment; prepare audiotape recordings. The student demonstrates ability by assignments in each area on current topics, with products evaluated as acceptable to an employer.

**IMC 4.911**  
**Survey of School Library Procedures**  
2 cl hr/wk, 2 cr  
- Survey of fundamental principles for operation of a school library. Objectives, budget, housing, personnel, materials and equipment, state and national standards.

**IMC 4.912**  
**School Library Materials**  
2 cl hr/wk, 3 cr  
- Emphasizes selection, evaluation of book and non-book library materials, with attention focused on selection aids needed for appropriate school materials.

**PHOTOGRAPHY**

**Pho 9.100**  
**Photography I**  
Darkroom operations; fundamentals of visual communications; development of basic photographic skills.

**Pho 9.102**  
**Photography II**  
- Shoting and processing assignments emphasizing importance of technical skills in journalism, public relations, general commercial photography.

**Pho 9.104**  
**Photography III**  
- Use of wide-angle lenses; portraits and close-ups; industrial scenes. Strong emphasis on meeting deadlines. Prepare students for commercial newspaper and news magazine, free-lance and commercial photography.

**BUSINESS MANAGEMENT**

**MANAGEMENT**

**T BA 2.145, BA 101**  
**Introduction to Business**  
4 cl hr/wk, 4 cr/trm  
- Enables you to make an effective choice of a field of specialization in business; to see place of business activity in our economic system, and its legal and regulatory environment. You will learn how business management functions to achieve maximum production, sales, net income, to make maximum contribution to owners, employees and society within government regulation.

**T BA 221**  
**Production**  
3 cl hr/wk, 3 cr  
- You will learn fundamental processes in production decisions; plant location and layout; materials handling; re-
search and development; procurement; production, inventory, and statistical quality control; time and motion study; operations research.

T BA 222 Finance
3 cl hr/wk, 3 cr

Effective handling of financial problems in establishment and operation of typical business organizations. You will become familiar with types of ownership and organization; acquisition of capital; management of income; functions of financial institutions for business financing; and necessary financial adjustments for changing business conditions.

T BA 2.402, BA 226 Business Law
3 cl hr/wk, 3 cr/trm

Experiences in evaluation of facts, circumstances involving business law; in precise use of language; and in forming judgments on matters governing and affecting people. Enables you to demonstrate, apply basic principles of business law (including Uniform Commercial Code) as governing business activities of our society.

BA 2.404 Introduction to Business Statistics
5 cl hr/wk, 5 cr

For the student of business data processing, other business-related programs: experiences will teach you statistical concepts such as index numbers: frequency distributions; measures of variability; normal curve of distribution; sampling-error theory (including test of Null Hypothesis); time series and their graphical representations; analysis of seasonal variation; secular trends and business statistics.

Prerequisite: One yr. high school algebra, Mth 4.202, or department consent.

Bus 2.330 Principles of Insurance
3 cl hr/wk, 3 cr

You will survey field of general insurance and learn various aspects of contracts in fire, marine, casualty, disability insurance.

Bus 2.400 Business Management
3 cl hr/wk, 3 cr

Enables you to apply basic principles for organization, marketing, financing, personnel, control, product development, facilities planning, budgeting, forecasting, and business relations aspects of general management in a business.

Prerequisites: BA 101, 211, or Bus 2101.

Bus 9.200 Practical Management for Small Business (Seminar)
3 cl hr/wk, 3 cr

Offered in cooperation with Small Business Administration as seminar for managers of small businesses. You will become familiar with current management information and techniques by discussing practical problems encountered in operation of a small business.

MERCHANDISING

T Bus 2.304 Fundamentals of Marketing
3 cl hr/wk, 3 cr

Student becomes aware of marketing of goods and services: channels of distribution involving producer, wholesaler, retailer and consumer. Learns marketing functions such as warehousing, standardization, grading, pricing, governmental regulation.

T Bus 2.307, BA 238 Salesmanship
3 cl hr/wk, 3 cr/trm

Familiarizes you with organization of selling, and with major kinds, with requirements, opportunities in each. You learn relationship of sales activities to other parts of marketing process such as advertising, sales promotion; experience handling customer buying problems; meet customer needs effectively, and present products/services persuasively.

(See note for Bus 2.304 re dual title)

Bus 2.203 Credit Procedures
3 cl hr/wk, 3 cr

You learn principles, methods of credit administration, evaluation of credit risks, credit controls, action for collection or legal remedies, how to assist in determining credit policy, securing credit information.

Bus 2.215 Buying
3 cl hr/wk, 3 cr

You become aware of major buying decisions—source, quality, timing, terms. You learn use of purchasing guides, including budgets or buying plans, catalogs, buying offices; and selection criteria. You will know how to develop limited buying plan and recognize steps to follow in your plan and how to evaluate results.

Prerequisite: Principles of Retailing.

Bus 2.305 Principles of Retailing
3 cl hr/wk, 3 cr

You study functions of retail store operation such as merchandising (buying and selling) sales promotion, store operation, finance and control, and personnel.

Bus 2.309 Problems in Retailing
3 cl hr/wk, 3 cr

You learn to analyze and diagnose representative case studies involving actual retail problems including all major retailing functions.

Prerequisite: Principles of Retailing or consent of instructor.

Bus 2.314 Small Business Operation
3 cl hr/wk, 3 cr

Through case studies, lectures and discussions you will learn general functions and procedures inherent in a small business.

Bus 2.317 Visual Merchandising
2 cl, 2 lab hr/wk, 3 cr

How to apply principles of line and design to merchandise display; how to treat problems of space utilization, improvisation, seasonal display, lighting, and organization of merchandise in a display. You will create displays and analyze your results.

CASHIERING AND CHECKING

Bus 2.325 Cashiering and Checking
4 wks, 20 lab hr/wk, 4 cr

You will learn to operate a cash register and handle problems which arise in money-handling, change-making,
check cashing, refunds or payouts. You will practice and
perfect your abilities to weigh, package, and identify mer-
chandise, to recognize can and package sizes, advertised
articles, and items requiring special action.
Your experiences will aid you to converse readily and
present yourself effectively to customers. You will acquire
the ability to keep adequate cash records, will become
acquainted with welfare stamps, trade coupons, sales tax or
other clerical matters commonly presented.
Bus. 2.340, 2.341. Work Experience–Lab & Seminar
2.342, 2.343 1 cl, 15 lab hr/wk, 3 cr/trm
Receives an approved merchandising or related position
which may lead to mid-managerial responsibility. From this
position, you will assess the business and social and self-
adjustment steps required to fill your position well, for
reasonable advancement.
You will write a job description, produce an organization
chart, and report on rules and regulations governing your
job. You will interpret your organization, its inter-personal
relationships, and especially its products and services, to
others in the seminar.
You will be expected to show progress in work perform-
ance and social traits on rating from your supervisor.

REAL ESTATE PROPERTY APPRAISAL
Bus. 2.220 Real Estate Principles I
3 cl hr/wk, 3 cr
You become oriented to real estate field, real property
appraisal, learn basic elements of property rights, nature,
characteristics of property ownership.
Bus. 2.221 Real Estate Principles II
3 cl hr/wk, 3 cr
You continue study of real estate principles, financing of
transactions, functions of brokerage, elements in property
evaluation, and trends in real estate development.
Bus. 2.222 Real Estate Practices, Field Activity
3 cl, 10 lab hr/wk, 6 cr
You will spend 10 hr/wk with worker in real estate, obser-
ving and reporting during 3 cl hr/wk on field practices,
thus building understanding of elements involved in market-
ing real estate: brokerage, mortgages, property management
and insurance, zoning, real estate advertising, leasing, other
legal aspects.
Bus. 2.223 Real Estate Finance and Law
4 cl hr/wk, 4 cr
Various methods for financing, laws governing acquisi-
tion, holding and transfer of real property.
Bus. 2.224 Real Estate Developments
3 cl hr/wk, 3 cr
Students analyze, overview, summarize, discuss, report
on economic, social, governmental trends affecting real
estate development in Oregon.
Bus. 2.225 Real Estate Appraisal I
4 cl hr/wk, 4 cr
You analyze, discuss, study and learn basic principles,
methods, techniques in determining value of real estate, in
connection with transfer of ownership, financing and credit,
just compensation in condemnation, as base for taxes.
Bus. 2.226 Real Estate Appraisal II
3 cl hr/wk, 3 cr
You study in greater depth subjects in APPRAISAL I,
with emphasis on income approach, market data approach
in establishing real property value.
Bus. 2.227 Real Estate Appraisal III
3 cl hr/wk, 3 cr
You learn elements of neighborhood, site analysis and
evaluation, and study building construction and utilities,
commercial and industrial functional utility, building mate-
rials, depreciation. Cost approach to real property value,
detailed consideration of income and market data ap-
proaches.
Bus. 2.230 Elements of Design, Construction
4 cl hr/wk, 4 cr
Students learn to read, use blueprints as tool for study
and analysis of various elements of building construction
design as related to determination of property value.
Bus. 2.232 Real Estate Taxation
2 cl hr/wk, 2 cr
You learn basic elements of property tax law in Oregon,
building understanding of the economics of property, taxa-
tion, fiscal importance of property tax, administration of
this tax, classification of property for taxation.
Bus. 2.240 Mapping, Photogrammetry
2 cl, 2 lab hr/wk, 3 cr
Student applies elements of cadastral mapping, rectangu-
lar survey systems to evaluation of property.
Bus. 2.242 Appraisal Work Experience, Seminar
1 cl, 15 lab hr/wk, 3 cr
Students are assigned to work situations in real estate
appraisal 15 hr/wk. In 1 hr/wk seminar you consider situa-
tions, problems relative to your experiences.
Bus. 9.240 Real Estate Fundamentals
3 cl hr/wk, 3 cr
You build working knowledge of purchasing, transfer,
lease, finance of land and property, site selection, home
building and lot evaluation.
Bus. 9.241 Real Estate Practices
3 cl hr/wk, 3 cr
You acquire specific knowledge of current practices in
real estate sales, brokerage, mortgage banking, capital gains
transactions.
Bus. 9.242 Real Estate Appraising
3 cl hr/wk, 3 cr
You learn specific factors affecting value of land, build-
ings; effect of zone and city planning; various techniques in
appraising; preparing appraisal reports.

TRANSPORTATION
Bus. 2.250 Principles of Motor Truck
Transportation
3 cl hr/wk, 3 cr
Importance, advantages of motor truck transportation;
types, organization and administration of carriers. Student

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learns basic elements of financing carriers; terminal operations; carrier loss and damage claims; economics of motor transportation; freight classifications, carrier rates and regulations.

**Bus. 2.251 Marketing Transportation Services**  
3 cl hr/wk, 3 cr  
You build knowledge of salesmanship for motor transport, develop skills in client analysis, persuasive communication, advertising for a service industry.

**Bus. 2.252 Office Procedures in Transportation**  
2 cl, 2 lab hr/wk, 3 cr  
You learn functions in a transportation office: handling sales, claims, billings, financial, personnel, payroll records. You acquire experience with office mailing, duplicating equipment, telephone, teletype, automation in the office, human relations.

**Bus. 2.253 Transportation Communications**  
3 cl hr/wk, 3 cr  
You acquire skills, understandings in communication's new role in business. You study, experience, analyze role in communications played by manager, supervisor; principles, techniques media of communication; uses of communication to achieve participation, in administering change. You learn to use media of interoffice communication.

**Bus. 2.255 Terminal Operations**  
3 cl hr/wk, 3 cr  
Students study, discuss, analyze various aspects of terminal operations: unloading, delivering, receiving; pickup and loading; freight protection; checking, marking; dispatching, scheduling; handling over, short, damaged, refused, undelivered, salvage freight; vehicle safety; terminal housekeeping, employee safety, storage, warehousing.

**Bus. 2.256 Purchasing Techniques**  
2 cl hr/wk, 2 cr  
You learn effective handling of managerial problems in purchase, control of materials, supplies, equipment in motor transport industry. You make a value analysis, study centralized vs. decentralized purchasing, negotiation, buyer-seller relations, reciprocal buying, legal aspects of purchasing.

**Bus. 2.257 State, Federal Regulations**  
3 cl hr/wk, 3 cr  
You learn basic fundamentals, practical application of Constitution, Common Law pertaining to motor transport; state vs. federal powers, Interstate Commerce Act, Part II, Related Acts, Leading Cases: Oregon regulations, statutes for licensing, fees, reporting.

**Bus. 2.258 Classifications, Rate Structures**  
2 cl hr/wk, 2 cr  
You become acquainted with classification rules: Division of Revenue, tariff circular requirements; rates; tariff and rate formulation; routing; special services in motor carrier activities.

**Bus. 2.259 Motor Carrier Finance**  
3 cl hr/wk, 3 cr  
You develop understanding of methods of financing long and short-term needs for motor carriers; cost of capital: rate of return; effective retained-earnings policies; dividends; capital structure (equity, debt); management of capital expenditures, equipment obligations.

**Bus. 2.260 Personnel Management in Transportation**  
4 cl hr/wk, 4 cr  
Students discuss, analyze, study local problems, solutions affecting personnel within framework of current labor contracts, to learn principles of personnel management requisite for mid-management.

**BUSINESS EDUCATION**

**ACCOUNTING — BOOKKEEPING**

**BA 2.110, BA 2.111 Principles of Accounting**  
3 cl hr/wk, 3 cr/trm  
The student will gain an understanding of the accounting cycle: reporting conditions of a business on the balance sheet; measuring of changes in condition on the income statement according to principles of accrual accounting. Recording of financial data for service, merchandising businesses; handling cash; managing accounts receivable, with emphasis on control techniques which protect property, provide data for management decisions.  
Prerequisite: 1 yr. high school bookkeeping or Bus 2.101.

**T BA 2.112, BA 2.113 Principles of Accounting**  
3 cl hr/wk, 3 cr/trm  
The student will learn to analyze impact of inventory valuation methods on reported income and on balance sheet; control of expenditures; recording of expenses by responsibility lines. Problems of recording acquisition, use of plant and equipment; effect of depreciation methods on income statement, balance sheet. You will be able to examine critically reporting of owners’ interests in partnership, corporate forms of business organization, and evaluate interests of long-and-short-term creditors.  
Prerequisite: BA211 or BA 2.110.

**T BA 2.114, BA 2.115 Principles of Accounting III**  
3 cl hr/wk, 3 cr/trm  
The student will learn to relate accounting principles to solution of management accounting problems, analyzing records for management, interpreting significance as basis for planning, control, decision-making.  
Prerequisite: BA 212 or BA 2.112.

**Bus 2.101 Applied Accounting I**  
3 cl hr/wk, 3 cr  
Student learns principles of double-entry bookkeeping, general journals and ledgers, business forms, simple financial statements, completion of bookkeeping cycle.

**Bus 2.103 Applied Accounting II**  
3 cl hr/wk, 3 cr  
Student learns principles of special journals, ledgers, business forms, and demonstrates use in typical bookkeeping transactions.

**Bus 2.105 Applied Accounting III**  
3 cl hr/wk, 3 cr  
An advanced course in basic bookkeeping-accounting. You will learn basic elements of analysis and interpretation; functions of entries for promissory notes, adjustments for prepaid, unearned, accrued items; depreciation of assets; voucher system; payroll records; property sales; taxes.
Bus 2.116 Cost Accounting
3 hr/hr/wk, 3 cr
Understanding basic cost accounting methods, procedures to provide data for controlling, analyzing costs, profits, for management planning and decision.
Prerequisite: BA 213

Bus 2.405 Analysis of Financial Statements
3 hr/hr/wk, 3 cr
You will learn to use basic principles, methods of analysis, interpretation of financial and operating reports of commercial and industrial businesses as basis for appraisal of operating efficiency, investment value, credit rating of particular firms and operations.
Prerequisite: BA 213

Bus 9.700 Credit Union Accounting
2 hr/hr/wk - 9 wks, 1 cr
You will learn how to participate in the establishment, maintenance of a simple system of financial records for operation of a credit union.
Prerequisite: Activity in, referral by a credit union.

SS 2.111 Essentials of Accounting
3 hr/hr/wk, 3 cr
Applying principles of record keeping or basic bookkeeping to financial operation of a professional or service enterprise.

CLERICAL — SECRETARIAL

Bus 2.519 Business Relations
3 hr/hr/wk, 3 cr
Student learns practical application of business etiquette; effective public, employee-employer relations; business customs, ethics; social side of business. Stresses importance of personality impact, relationships with others, self-appraisal and self-improvement.

T SS 2.503, SS 122 Typing
5 hr/hr/wk, 2 cr/trm
You will develop your touch speed up to 50 words/minute for 3 minutes. You will be able to produce neat, accurate work in minimum time and type manuscripts, different styles of letters, tabulations, business forms.
Prerequisite: Typing speed 30 wds/min.

T SS 2.505, SS 123 Typing
5 hr/hr/wk, 2 cr/trm
You will develop your skills, abilities sufficiently to plan, type correspondence, business forms, reports, manuscripts, tabulations with efficient use of time and materials. You will acquire experience in proofreading, placement to assume responsibility for determining acceptability, mailability of your work.
Prerequisite: Typing speed 50 wds/min., knowledge of materials in SS 121, SS 122.

T SS 124 Typing
5 hr/hr/wk, 2 cr
In this course you will gain experience, control, confidence, endurance necessary for accurate typing. You will gain in accurate typing speed to meet the proficiency standards for SS 122. OR, through drills you will gain speed, accuracy to meet or exceed standards for SS 123.

T SS 211 Applied Stenography
6 hr/hr/wk, 3 cr
You will build your shorthand skills to 80-110 wds/minute for 3 minutes, transcribing with minimum error, from unpreviewed dictation. You will learn to transcribe letters into readable copy rapidly, from your shorthand notes, working with business forms, carbons, envelopes.
Prerequisite: SS 133 and SS 123 or equivalents.

T SS 212 Applied Stenography
6 hr/hr/wk, 3 cr
You will increase your shorthand speed to 90-120 wds/minute for 3 minutes, from unpreviewed dictation, transcribing with minimum error at 25-45 wds/minute into readable letter form. Advanced vocabulary, business forms.

T SS 213 Applied Stenography
6 hr/hr/wk, 3 cr
Your shorthand speeds will reach 100-140 wds/minute 3 minutes, from unpreviewed dictation, transcribing with minimum error at 35-50 wds/minute into readable letter form. You will learn expert speed shortcuts.

T SS 2.521, SS 215 Business Machines
5 hr/hr/wk, 2 cr/trm
You will learn to perform the 4 fundamental arithmetic processes on five office machines: key-key adding, full-keyboard adding, printing calculator, rotary calculator, key-drive calculator.
Prerequisite: Math 2.308.

T SS 2.523, SS 216 Business Machines
5 hr/hr/wk, 3 cr/trm
Advanced arithmetical calculations: percentage, reciprocals, proration, interest, merchandising, on at least two different calculators. Optional problems using bookkeeping machines.
Prerequisite: SS 215 or SS 2.521.

Portland Community College
LEGAL — MEDICAL

SS 2.507, SS 2.509 Medical Typing I, II
5 lab hr/wk, 3 cr/trm

Taken concurrently with Medical Terminology I and II, this course will equip you to type, with a high degree of understanding and accuracy, medical case histories, clinical reports, medical insurance forms, and medical correspondence and research materials.

Prerequisite: Accurate typing, 50 wds/min.

SS 2.508 Legal Typing
2 cl, 3 lab hr/wk, 4 cr

You will learn to type accurately, rapidly, with a high degree of accuracy. You will learn to recognize each medical word as a part-of-speech and use it correctly; you will become familiar with the medical dictionary and learn to divide medical words correctly.

SS 2.531 Medical Transcription
4 lab hr/wk, 2 cr

Through specialized lab experiences you will build your accurate transcription speeds, from machine dictation, to 780 wds/hr, national average for medical secretaries. You will develop absolute respect for confidential information, errorless transcription, efficient handling of assigned work.

Prerequisite: Medical Typing I, II.

SS 2.538 Medical Secretary Internship & Seminar
1 cl, 15 lab hr/wk, 3 cr

This seminar and internship places you in the office of a practicing physician, preparing you through actual experience to seek employment in a medical office. You will improve your skills, during 15 lab hours/week in receiving patients, answering the telephone, typing case histories and correspondence from recorded shorthand dictation, keeping records, preparing the examination room, and assisting the doctor.

Prerequisite: 6th term status in Medical Secretary program.

TOUCH SHORTHAND

SS 2.550 Touch Shorthand I (Stenograph) & Scripthand
5 cl, 5 lab hr/wk, 6 cr

Working with the Stenograph, you will learn to produce words on the keyboard from their sound. You will study, practice letter combinations, abbreviations, theory of the phonetic system of Touch Shorthand. Your experiences will offer you training in specific techniques of desirable human relations, and the application and impact of business information systems.
SS 2.570  Transcription
1 cl, 3 lab hr/wk, 3 cr
You will learn to transcribe letters of varying difficulty and length with emphasis on punctuation, spelling, grammar on personalized “learn-at-your-own-rate” basis.

SS 2.575  Office Operations
6 lab hr/wk, 3 cr
You will learn office operations by actually performing clerical or secretarial tasks in a model office supportive of the accounting, purchasing, sales, production and records departments.

SS 2.601  Legal Terminology
3 cl, 2 lab hr/wk, 4 cr
Specialized learning experiences teach you to identify, pronounce, spell commonly used legal terms and apply your knowledge to usual legal situations and transactions.

SS 2.606  Medical Terminology for the Legal Secretary
3 cl, 2 lab hr/wk, 4 cr
You learn to identify, pronounce, spell the more usual and advanced legal terms and the more commonly used medical terms applied in law practice.

SS 2.610  Legal Office Work Experience, Seminar
1 cl, 15 lab hr/wk, 3 cr
This seminar and internship places you in the office of a practicing attorney, preparing you through actual experience under guidance and supervision to seek employment in a law office. You will put into practice office skills, techniques and knowledge learned in your legal secretarial courses, and you will experience other situations specific to the office where you intern during 15 lab hours/week.
Prerequisite: 6th term status in Legal Secretary program.

Introduction to Data Processing  10, 2 hr sessions
Beginners build a basic understanding of data processing by automatic systems.

Typing, Review  10, 2 hr sessions
For those who know fundamentals, wish to improve speed, accuracy and familiarize themselves with business forms.

Typing, Progressive  10, 2 hr sessions
For both beginners and those wishing to “brush up”; some practice on electric machines.

CITIZENSHIP AND G.E.D.

Citizenship  10, 2½ hr sessions
For foreign-born Americans preparing for the citizenship examination.

English for the Foreign-Born  20, 2½ hr sessions
For any student to whom English is a second language. Discussion and critique of each student’s conversational style: practice: pronunciation of words, clarity of expression. Vocabulary and writing skills developed.

GED Preparation (High School Equivalency)  10, 3 hr sessions
Review in Math, English to prepare for the GED High School Equivalency test. If you desire a high school diploma from one of the high schools contact the Center Coordinator.

Reading Improvement  10, 2 hr sessions
Begins with diagnosis of reading ability; develops basic skills to increase speed, vocabulary, and comprehension.

CONVERSATIONAL FOREIGN LANGUAGES

Conversational French  10, 2 hr sessions
For those who have had some previous instruction in French. Emphasis on conversation for practical occasions.

Conversational German  10, 2 hr sessions
For those who have had some previous instruction in German. Emphasis on conversation for practical occasions.

Conversational Spanish  10, 2 hr sessions
For those who have had some previous instruction in Spanish. Emphasis on conversation for practical occasions.

FAMILY LIFE

FL 75  Talking It Over  5, 2 hr sessions
For parents and their seventh and/or eighth-grade students to promote understanding, improve communications between adolescents and parents. Available upon request of the elementary P.T.A.

Parenthood In A Free Nation  10, 3 hr sessions
Helps parents acquire knowledge of how children grow and develop, gain increased understanding of children’s needs at various ages, and develop greater insight into
SEWING AND TAILORING

CL 1  Clothing Selection  10, 3 hr sessions
Study of creative selection with emphasis on color, line, design and figure type; practical application to each person.

CL 5  Personal Improvement  10, 3 hr sessions
Improving posture, grooming, wardrobe selection, makeup; walking, sitting and standing, to help the student feel more at ease in all situations.

CL 6  Personality Development  10, 3 hr sessions
Emphasis on mental health, diet, personality, voice, etiquette.
Prerequisite: CL 5.

CL 10  Beginning Sewing  10, 3 hr sessions
A variety of attractive useful articles, simple garments constructed, to develop skill, confidence in use of the sewing machine, selection and handling of cotton fabrics, and use of a pattern.

CL 15  Basic Dressmaking  10, 3 hr sessions
Fundamental construction techniques are taught through construction of an apron, blouse, skirt and simple dress, all using cotton fabrics. Preparation of fabric; simple alterations; zipper application; finishing techniques for those with little or no knowledge of sewing.
Prerequisite: CL 10.

CL 20  Advanced Dressmaking  10, 3 hr sessions
Gives the home-sewer confidence in proceeding independently achieving professional look, through the construction of two or three garments with more advanced dressmaking techniques: pattern alternations; interfacings; underlinings; matching plains; bound buttonholes; gussets.
Prerequisite: CL 15

CL 23  Making Your Basic Pattern  10, 3 hr sessions
Construction of a basic pattern altered to meet individual fitting needs to eliminate problem of fitting oneself, time-consuming alterations.

CL 24  Pattern Adaption  10, 3 hr sessions
Instruction practice in using pattern in altering commercial patterns and simple designing.
Prerequisite: CL 15, CL 20, CL 23.

CL 25  General Sewing  10, 3 hr sessions
Construction of a wide variety of garments for the individual or family members, to help give the student confidence in applying various dressmaking techniques.

CL 26  Sewing With Knits  10, 3 hr sessions
Demonstration of construction techniques using knit and stretch fabrics, including poor boy, shell, skirt, sweaters, pants, swim suit. Creativity in selection of fabric, trim and design is stressed.

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

CL 28  Pattern Drafting  10, 3 hr sessions
How to adapt an individual's sloper to different designs by changing basic construction lines and drafting various types of collars, sleeves, etc.
Prerequisite: CL 27.

CL 30  Basic Tailoring  10, 3 hr sessions
Fundamentals of tailoring techniques, handling and pressing of wool, making a simple lined coat or suit.
Prerequisite: CL 20.

CL 35  Advanced Tailoring  10, 3 hr sessions
Increased skill in tailoring with advanced techniques in handling wool fabrics, design detail, custom finishes.
Prerequisite: CL 30 or equivalent.

CL 38  Tailoring Men's Sports Coats  10, 3 hr sessions
Advanced tailoring techniques involved in making men's and boys' coats. Knowledge of basic tailoring methods recommended.
CL 40  Making Shirts and Slacks
10, 3 hr sessions
Making men's sports shirts construction of slacks, capri pants, shorts and shirts for women and children.
Prerequisite: CL 10 or equivalent.

CL 45  Remodeling, Restyling Garments
10, 3 hr sessions
Salvaging good fabric from out-dated or ill-fitting garments through analysis of restyling possibilities, use of remodeling techniques.

CL 50  Children's Clothing
10, 3 hr sessions
Construction techniques in sewing for children, including self-help details, growth features, suitable fabrics and styles, closures, trimming. Knowledge of basic dressmaking techniques necessary.

CL 75  Knitting
10, 2 hr sessions
Basic knitting fundamentals: binding off, casting on, increasing, decreasing, reading directions, measuring and gauging; sizing; assembling; other skills required for completion of knitted garments.

CL 80  Creative Stitchery
10, 3 hr sessions
Demonstration and practice of decorative stitches for wall hangings, draperies, pillow covers, sweaters; creating or enlarging designs; hints on color coordination; use of materials and textures.

OCCUPATIONAL SEWING

3.995  Clothing Alteration Specialist
10, 5 days/wk, 6 hr/day
Prepares experienced seamstresses for employment in dress shops, department stores, dry cleaners or private business. Practice in basic repairs, fitting, altering and restyling; power machine operating; altering, repairing men's clothing; care and handling of fabrics.

3.990  Power Sewing
4, 5 days/wk, 6 hr/day
Prepares persons for profitable employment as power sewing machine operators in the garment industry. Continuous throughout year.

HOBBY AND GENERAL

Acrylic Techniques 10, 3 hr sessions
Instruction in the use of acrylics as an art medium. Covers water, oil, and collage. Can be done on canvas, paper, wood, other materials.

Ballet & Gymnastics 10, 2 hr sessions
Basic steps for beginners.

Art of Bonzai 6, 3 hr sessions
Oriental art of dwarfing trees for beginners. Techniques for selecting, potting, pruning, and caring for bonzai.

Beginner's Bridge 10, 2½ hr sessions
For beginners in contract bridge. Emphasis on learning how to bid, using Goren point-count system, basic fundamentals of play, defense and etiquette.

Cake Decorating 10, 3 hr sessions
Basic skills in decorating cakes for all occasions and seasons. A hobby class for both men and women.

Calligraphy 10, 3 hr sessions
A study of italic lettering: beautiful script for formal uses which, when mastered, results in an elegant handwriting that is fast, easy, and fun to do.

Candy Making 10, 3 hr sessions
Learn professional candy-making techniques from a specialist. How to make hard candies, divinity, rocky road, chocolate and fruit creams, turtles and others.

Ceramics 10, 3 hr sessions
Development of individual needs and ideas in the creation of objet d'art using clays, glazes, and individual decorating methods.

Decoupage 10, 3 hr sessions
Step-by-step method for using papers, prints, and other materials to decorate furniture, boxes, trays, other surfaces. Includes techniques on wood, glass, metal.

Drawing, Painting 10, 3 hr sessions
For beginners and those who like to experiment. Personal interpretation emphasized. Visual exploration of the world around us using: charcoal, pen and ink, pencil, watercolor, tempera, other mediums, on a variety of surfaces.

Father-Son Shop 10, 3 hr sessions
Open to father-son teams only. Organized for work on small projects of mutual interest while spending an evening together. No age limit. Cost of materials extra.

First Aid 6, 2 hr sessions
An American Red Cross course in first aid. May be taken to secure the standard certificate.

Creative Food Preparation 5, 3 hr sessions
Learn new ways to prepare delicious, attractive, yet inexpensive meals for family and guests.

Graphoanalysis 8, 2 hr sessions
Handwriting analysis for fun and profit. Graphoanalysis is used by parents, psychologists, counselors, and personnel managers to understand the character and personality of the writer. Easy to learn.

Beginning Folk Guitar 10, 3 hr sessions
Group instruction to learn principal chords in a variety of keys; how to read, play simple melodies. Folk singing as time allows. Nylon strings are recommended for ease of playing.

Holiday Decorating 3, 3 hr sessions
How to prepare decorations for walls, table surfaces, or gifts. Using commercial and natural materials, and other materials from around the home.

Creating Home Accessories 10, 2 hr sessions
Students learn to make flowers, wood plaques, wall hangings, decorative pillows, window shades, paper-mache items, and placemats. Other topics covered are flower arrangements, purchasing of furniture, framing and placement of pictures, and housekeeping hints.

Income Tax Procedures 8, 2½ hr sessions
How to prepare your own income tax return and understand the laws behind it.

Portland Community College
Jewelry Making 10, 3 hr sessions
Three-dimensional design, tools, and techniques of jewelry making introduced through individual student problems with semi-precious materials and non-ferrous metals; soldering; metal enameling; etching; forming; stone setting; wax casting.

Landscaping 10, 2 hr sessions
For homeowners who want to develop their own landscaping plans and learn more about the selection and care of plant materials.

Macrame' 10, 2 hr sessions
Techniques in knotting threads or cord in patterns to design hangings, curtains, etc.

Numismatics 10, 2 hr sessions
History of coinage, art of collecting for pleasure and profit. For the amateur collector.

Oil Painting 10, 3 hr sessions
Basic exercises to acquaint or reacquaint the student with the use of oil paint, students encouraged to work with subjects which interest them individually.

Photography 10, 3 hr sessions
For those who wish to know more about basic photographic processes. How to see and record images, impressions of the beauty in everyday subjects through photography. Participants furnish camera, film, and other supplies. No darkroom procedures.

Pottery 10, 3 hr sessions
For beginners or people who want to learn more about pottery. Wheel-thrown and hand-built pottery; no mold work.

History of Race & Minority Relations 10, 2 hr sessions
A study of racial, cultural and religious minorities and their relationship to the dominant society. Major emphasis on current inter-group relations and problems; more and less-effective techniques used to resolve relation problems, particularly in the U.S. today.

Recorder Playing 10, 1 1/2 hr sessions
Introduces you to the fun of recorder playing: easy to learn, minimal in cost. For music lovers, with or without a musical background.

Rocks, Minerals, & Fossils 10, 2 hr sessions
Identification of basic minerals in rocks of interest to class members. Combines work in classroom and field trips to nearby areas of geological interest. Purchase of kit required.

Securities & Investments 8, 2 1/2 hr sessions
Covers investment objectives. Methods of investing; reading financial news; a study of the New York Stock Exchange; and the functions of a broker.

Tole Painting for Beginners 10, 3 hr sessions
Beginners learn fundamentals of an interesting, worthwhile hobby. Preparation of wood and metal articles; design application; painting technique; antiquing.

Tole Painting, Advanced 10, 3 hr sessions
Advanced techniques of stroke control and shading. Patterns include fruits or flowers.

Understanding Your Car for Women 5, 2 hr sessions
Operation, simple maintenance, and care of the automobile. Demonstrations, films, and discussions. For women only.

Water Colors 10, 3 hr sessions
New, relaxed approach, geared for enjoyment. Each session will have a demonstration: painting, color mixing, and sketching.

Winemaking 10, 2 hr sessions
Learn to make your own wines at home. An exciting and new hobby taught by professionals from the Portland area.

Woodworking (Beg.) 10, 3 hr sessions
Use of hand tools basic in wood construction; introduction to power tools. For both men and women.

LEADERSHIP

FL 50 Lively Leadership (Group Development) 3, 2 hr sessions
Fundamentals of group development; organizing and planning meetings and discussion groups, program planning and program presentation.

FL 51 Advanced Leadership 10, 2 hr sessions
Training and experience in group leadership; emphasis on child growth and development and parent-child relations.
Prerequisite: Lively Leadership.

FL Leadership Seminar 10, 2 hr sessions
Advanced leadership techniques for those interested in further experience in group development and leadership.

FL 60 Leadership (Parliamentary Procedure) 10, 2 hr sessions
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. Form, nature of constitution and by-laws, meeting procedures; writing minutes, kinds of motions, how to preside. Practice in these processes. Completion qualifies for membership in the National Association of Parliamentarians or the American Institute of Parliamentarians.

DATA PROCESSING

EDP 2.100 Survey of Electronic Data Processing 4 cl, 1 lab hr/wk, 4 cr
Acquaints student with function of electronic data processing: need for processing data; history and development of data processing machines; overview of equipment; operating principles, possibilities, limitations; most effective uses. Particularly suited as basic understanding of data processing for students in any program.
EDP 2.102 Fundamentals of Machine Operations
3 cl, 3 lab hr/wk, 4 cr

Student learns operation of data tape encoders, including key punch, sorter, reproducer, interpreter, collator, other accounting machines. Lab sessions include practical problems, exercises.

EDP 2.103 Key Tape Operation
5 cl, 10 lab hr/wk, 2 cr

Students learn operation of data tape encoders, including tape handling and concepts. Extensive practice sessions.

EDP 2.105 Basic Operating Systems
4 cl hr/wk, 4 cr

Student attains knowledge of computer software in disc and tape operating environments. Topics include hardware/software relations; operation of supervisors; programming languages; utility programs; set-up-and-run procedures; interpretation, handling of error conditions.

EDP 2.106 Systems and Design
4 cl hr/wk, 4 cr

Familiarizes future programmers with concepts of business systems, procedures in systems development: analysis of existing systems; determining system requirements; design, installation, maintenance of new systems. Topics include information gathering, flow charting, documentation, input/output requirements, processing procedures, tape and disc files, and PERT. Liberal use of case studies, with students applying principles on systems projects.

EDP 2.107 Key Punch Operation
12½ cl hr/wk, 3 cr

Intensive training on operation of IBM card-punch, building skills to job entry level.

EDP 2.108 Programming I
4 cl, 2 lab hr/wk, 4 cr

Student learns to write simple programs in assembly language, gains thorough knowledge of basic assemblers, becomes familiar with instruction set of a computer and understands its use, and learns simple programming logic.

EDP 2.109 Programming II
3 cl, 4 lab hr/wk, 4 cr

Brief overview of Programming I fundamentals introduces more sophisticated instructions, methods, techniques. Student learns how to write sub-routines and macros, and solve more complex problems.

EDP 2.110 Introduction to Programming
5 cl, 4 lab hr/wk, 5 cr

Introduces student to language of data processing, related mathematics; data representation; unit record equipment and digital computers; computer software; data processing systems. Experience in writing machine language programs, preparing test data, using debugging aids. Basis for all programming coursework.

EDP 2.111 Computer Operations I
3 cl, 3 lab hr/wk, 4 cr

Operating a digital computer. Topics include structure of computer systems; operations, use, care of peripheral devices; typical machine-room run procedures. Student acquires "hands-on" experience as assistant operator.

EDP 2.112 Computer Operations II
3 cl, 3 lab hr/wk, 4 cr

Operation of central processors; use of control panels; maintaining efficient job flow; error and recovery procedures; communications; multiprogramming environments. Prerequisite: Computer Operations I

EDP 2.117 Compiler Language I—Fortran
4 cl, 2 lab hr/wk, 4 cr

Formula Translation language and its use for technical and business operations. Students write programs solving variety of problems. For technical programmers; previous programming experience required.

EDP 2.118 Computer Operations
2 cl, 1 lab hr/wk, 2 cr

Familiarizes student with physical aspects of digital computer systems, supplies experience in working in a computer installation. Equipment includes central processors, readers, punchers, printers, tape drives. Extensive work involving file structures, program devices. Student learns operation, use, care of each device; run procedures; system operation; error procedures. Intended for computer programming students.

EDP 2.120 Compiler Language II—Cobol
4 cl, 2 lab hr/wk, 4 cr

Common Business Oriented Language and its use for business problems. Students build detailed knowledge of language through solving business problems. Previous programming experience required.

EDP 2.123 Basic Assembly Language I
4 cl, 2 lab hr/wk, 4 cr

Students learn basic instructions for this language as used on IBM 360, Univac, RCA computers. Problems solved using appropriate strategies. Prerequisite: Accomplished programming skills or consent of instructor.

EDP 2.125 Basic Assembly Language II
4 cl, 2 lab hr/wk, 4 cr

Continues BAL I, using more advanced instructions to solve more difficult problems. Prerequisite: BAL I or consent of instructor.

EDP 2.130 Tape/Disk Programming
4 cl, 2 lab hr/wk, 4 cr

Students solve problems related to tape disc programming. Extensive work involving file structures, program logic. Case examples, file update, table lookup. Programming in basic assembly language.

EDP 2.131 Operating Systems
3 cl, 2 lab hr/wk, 3 cr

Students learn to use their programs with monitors, explore construction of monitors and role in operating system, how to link together and with sort routines.

EDP 2.132 Advanced Programming
4 cl, 2 lab hr/wk, 4 cr

Student uses skills to solve advanced programming problems, involving use of advanced instructions and techniques.

EDP 2.139 Communication Systems
4 cl, 2 lab hr/wk, 4 cr

Basic concepts in designing communication systems. Student solves case examples using principles learned, writes
programs in assembly language using communications monitor.

EDP 2.141 Field Project
1 cl, 12 lab hr/wk, 6 cr

Individually selected projects of practical value are assigned. Student plans project, carries out all phases of system design, machine programming, design of forms, testing of representative data, writing of operational procedures. Demands practical application of skills and techniques acquired in previous courses.

EDP 2.150 Data Processing Management
3 cl/hr/wk, 3 cr

Students explore problems in computer facility management. Topics include personnel policies, equipment acquisition, supplies, scheduling of work and in-service training.

Prerequisite: Employment in data processing field.

ELECTRONICS and INSTRUMENTATION

El. 6.204 Electrical Circuits
3 cl, 4 lab hr/wk, 4 cr

The student will demonstrate his knowledge of the theory and his ability to apply the basic methods of frequency selection and rejection. He will also exhibit an understanding of basic complex wave form theory and be provided with practical applications and design experience through a coordinated lab.

Prerequisite: El 6.303 or approval of department.

El 6.210 Intro. to Tubes and Transistors
3 cl, 3 lab hr/wk, 4 cr

The student will be provided with a unified treatment of the basic DC characteristics of active devices with emphasis on graphical techniques, practical in-circuit measurements, and simplified analysis of basic amplifiers. He will demonstrate his ability in proper maintenance and measurement techniques in the coordinated lab.

Prerequisite: El 6.301 or approval of department.

El 6.211 Tube and Transistor Analysis
4 cl, 6 lab hr/wk, 6 cr

The student will demonstrate an advanced knowledge of the analysis of basic circuits. Emphasis on algebraic solutions involving impedance, gain, frequency response, power dissipation and thermal stability. He will explore cause, effect, and methods of measurements of factors such as noise and distortion in the coordinated lab.

Prerequisite: El 6.210 and 6.204 which may be taken concurrently.

El 6.212 Advance Circuits
3 cl, 3 lab hr/wk, 4 cr

The student will acquire a knowledge of the theory and application of the special or newer types of electronic devices. The coordinated lab provides work with SCR, unijunction, FET, and integrated circuits.

Prerequisite: El 6.214.

El 6.214 Amplifiers Circuits
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate confidence in design and analysis of the advance amplifier circuits involving special techniques and methods such as: feedback, peaking, long-tailing, etc. The coordinated lab provides opportunity to become familiar with hi-fi, gain controlled, wide band or video, tuned, distributed, operational, DC, and parametric amplifier measurements and operation.

Prerequisite: El 6.211 and Electrical Math 6.115 which may be taken concurrently.

El 6.228 Television I
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate his skill in the analysis and systematic trouble-shooting procedures of TV receiver circuits. He will be introduced to the basic system requirements and later to the deflection and synchronizing circuits in the coordinated lecture and lab.

Prerequisites: El 6.214 and 6.311 both of which may be taken concurrently.

El 6.229 Project Laboratory
6 lab hr/wk, 2 cr

The student will construct a proto-type circuit under simulated industrial conditions. He will be provided with the preliminary circuit and specifications and will then breadboard, test, modify and layout the circuit. He will then draw, print and etch the circuit board, mount the components and test the completed circuit for instructor approval.

Prerequisite: 6th term standing.

El 6.234 Pulse and Digital Circuits
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate an ability to design, build, and analyze various pulse, digital and switching circuits. He will successfully solve selected design and application problems in both anoloe and digital circuits in the coordinated lab.

Prerequisite: El 6.240 may be taken concurrently.

El 6.235 Television II
3 cl, 6 lab hr/wk, 5 cr

The student will demonstrate ability in system analysis and systematic “trouble-shooting” of color television circuits and antenna systems. He will perform major repair and alignment operations designed to give him on-the-job experience in maintenance procedures and demonstrate his ability to use specialized instrumentation for color television, during the coordinated lab.

Prerequisite: El 6.228 and 6.313 which may be taken concurrently.

El 6.240 Digital Control and Logic
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate his knowledge of the principles of electronic digital computers and switching circuits. He will display competence in the application of Boolean algebra to the logical design of the switching and logic circuits and construct various arithmetic and control sections of specialized computers in the coordinated lab.

Prerequisite: El 6.211 or department approval.

El 6.242 Microwaves
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate a knowledge and understanding of transmission line theory and various methods of measurement. He will also demonstrate a knowledge of the theory, application and measurement of microwave frequen-
cies by using various types of microwave equipment and "plumbing" including klystrons, directional couplers, time-domain Reflectometers slide screw tuners, slotted-lines, etc. in the coordinated lab.

Prerequisite: EI 6.211 or approval of department.

EI 6.301 D. C. Fundamentals
3 cl, 6 lab hr/wk, 5 cr

The student will be provided with the basic concepts of unidirectional current flow and demonstrate his ability to use network analysis and "Blackbox Theory" in the coordinated lab. 
Prerequisite: EI 6.135 taken concurrently or approval of a department head.

EI 6.303 A. C. Fundamentals
3 cl, 6 lab hr/wk, 5 cr

The student will demonstrate his ability to analyze and design low frequency alternating currents. He will successfully solve problems involving various combinations of resistance, inductance, and capacitance in the coordinated lab. 
Prerequisite: EI 6.301, 6.136 concurrently or approval of department.

EI 6.311 Transmitters and Receivers I
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate his knowledge of the fundamental theory, circuits and methods of measurements associated with the communications field. The coordinated lab places the emphasis on amplitude modulation techniques, tuning and alignment, high-power R.F. amplifiers, maintenance techniques and FCC licensed preparation. 
Prerequisite: EI 6.214 which may be taken concurrently.

EI 6.313 Transmitters and Receivers II
3 cl, 3 lab hr/wk, 4 cr

The student will continue his studies of EI 6.311 and demonstrate his ability in FM, phase and single side band modulation techniques and circuits. He will also demonstrate competence in the basic antenna and transmission line theory necessary for the 1st Class FCC License during the coordinated lecture and lab. 
Prerequisite: EI 6.311.

RADIO-TV SERVICING

EI 6.410 Radio & TV Servicing
10 cl, 20 lab hr/wk

The student builds an understanding of basic electronic theory and circuits. Through coordinated lecture and lab he will demonstrate an understanding of the basic electronic systems and an ability to analyze DC and AC circuits. He will also demonstrate his knowledge of maintenance procedures in troubleshooting power supply circuits on color television chassis. 
Prerequisite: 1 year of high school Algebra or equivalent.

EI 6.420 Radio & TV Servicing
10 cl, 20 lab hr/wk

The student will demonstrate his understanding of the basic audio and video amplifiers circuits. In the coordinated lab, he will also demonstrate proper techniques of measurement and fault analysis. 
Prerequisite: EI 6.410 or approval of department.

EI 6.430 Radio & TV Servicing
10 cl, 20 lab hr/wk

The student will demonstrate his understanding and ability to analyze and service the RF, IF, detector circuits, and antenna systems for AM, FM and TV receivers. He will also demonstrate an understanding of the proper maintenance and set up procedures for the color TV deflection circuits. 
Prerequisite: EI 6.420 or approval of department

EI 6.440 Radio & TV Servicing
10 cl, 20 lab hr/wk

The student will demonstrate his ability to analyze and service the color circuits of a color TV receiver and later be provided with concentrated practical experience under simulated shop conditions. 
Prerequisite: EI 6.430 or approval of department.

ENGINEERING

CIVIL ENGINEERING

CE 6.101 Plane Surveying I
1 cl, 6 lab hr/wk, 4 cr

Leads the students to understanding of concepts in plane surveying: the tangent plane to a sphere; differential leveling; horizontal distances by chaining; horizontal angles; open and closed transitng.

Lab periods indoctrine students in use of standard surveying equipment: chain, level, and transit. Emphasis on slope staking, stake marking, stationing, and note taking.

CE 6.103 Plane Surveying II
1 cl, 6 lab hr/wk, 4 cr

Utilizes background gained in 6.101 and 6.500; it is essentially a lab course. Class works in groups of four to five; each group lays out a five-sided polygon, then does all activities required to compute enclosed area. Area is then parcelled, each side of every parcel computed for length and location, then placed in the field. One side is specified as a road centerline, requiring the group to slope stake. The bearing to one line is computed from star observations taken in the field.

CE 6.107 Strength of Materials I
3 cl, 3 lab hr/wk, 4 cr

A study of the stresses and strains that occur in bodies when subjected to tensile, comprehensive 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, forsonal members and beams. Practice problems emphasize the materials studied.

CE 6.108 Materials of Construction
3 cl, 2 lab hr/wk, 4 cr

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.

CE 6.109 Applied Mechanics
3 cl, 3 lab hr/wk, 4 cr

A study of energy at rest (equilibrium); includes resolution of forces, equilibrants of forces in one plane, simple
mances, experiments clarify principles and procedures.

CE 6.112  Hydraulics I
2 cl, 2 lab hr/wk, 3 cr
Fundamental properties of fluids; relationship of hydrostatic pressure and center of gravity; effect of hydrostatic pressure exerted against plane surfaces.

CE 6.114  Hydraulics II
2 cl, 2 lab hr/wk, 3 cr
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.

CE 6.118  Contracts and Specifications
3 cl, 3 hr/wk, 3 cr
Acquaints student with common usage and practice in preparation of contracts and attendant specifications. Existing contracts covering current jobs used with practical problems designed to teach the application of theory learned.
Prerequisite: Second-year standing or approval of instructor. Technical report writing or equivalent recommended.

CE 6.124  Soil Mechanics I
2 cl, 3 lab hr/wk, 3 cr
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.

CE 6.126  Soil Mechanics II
2 cl, 3 lab hr/wk, 3 cr
The student will study gravitational water, flow nets and seepage forces. He will learn to calculate pressure on retaining walls and bearing capacities. He will learn to analyze stabilities of slopes and solve pile and pile-driving formulas.

CE 6.128  Strength of Materials II
3 cl, 3 lab hr/wk, 4 cr
Advanced theory in materials characteristics. Field trips enable the student to observe use of different materials in actual installations.

CE 6.135  Engineering Problems I
3 cl, 1 lab hr/wk, 3 cr
The student will study the slide rule and learn to shift and locate decimal points by inspection; basic laws of exponents and equations; to shift decimal points and locate decimal points by scientific notation, utilizing basic laws of exponents and equations; the ability to read and use these slide scales: C and D, A, B, K, C inverted, D inverted, and the trigonometric scales. The student will be introduced to right angle trigonometry, the resolution of forces into X and Y components, and vectors.

CE 6.136  Engineering Problems II
3 cl, 1 lab hr/wk, 3 cr
Continues E.P.I. with use of common logarithmic slide rule scales and natural logarithmic scales. Covers theory of common logarithms, theory of e and its use as a logarithmic base as background for effective use of slide rule, in approximately half the term. Other half covers analyzing problems by units, acquainting students with the free-body diagram, and studies of the basic units of engineering as work, horsepower, force, and moment.

CE 6.137  Engineering Problems III
3 cl, 1 lab hr/wk, 3 cr
The student will continue the use of the slide rule in solving advanced engineering problems involving forces and moments.

CE 6.300  Project Engineering
18 lab hr/wk, 6 cr
Gives each student an insight into problems encountered in the field and office during the design phase of a project that could be built. An earth-filled dam project is currently used to provide opportunities to bring into play all abilities learned in each course; any type of engineering project may be selected. Each student is involved in: critical path diagramming; contour mapping from stadia survey, volume computations by planimeter; open channel flow design for the emergency spillway and trickle tube; analysis and classification of soil in the foundation and fill; design of filling using soil information from the analysis; hydrology of the watershed area; design of the valving system utilizing a commercial valve; design of an energy dissipator; design of a structural tower over the valve; design of a road ramp from dam to tower; generating of plans and specifications suitable for presentation to the office of the State Engineer and suitable for bed purposes; and finally staking of the project in the field and referencing it into township-range system and State Plane Coordinate System.

CE 6.305  Sanitary Engineering
2 cl, 3 lab hr/wk, 3 cr
The student will study water use and sewage volume, water distribution, water treatment and sewage treatment. He will learn to perform tests for physical and chemical properties of drinking water, water quality and sewage and air pollution.

CE 6.310  Construction Inspection
3 cl, 1 hr/wk, 3 cr
The student will study building codes as they relate to Civil Engineering.

CE 6.500  Survey Computations
1 cl, 6 lab hr/wk, 4 cr
Students learn activities required for closed transit: Bearings; adjustment of measured angles; adjustment of measured distances by Compass Rule or Crandall Method; and computation of areas by planimeter. Volume calculations, Simpson's Rule, and determination of North by star computation are also covered. Lab sessions for problem solving.

CE 6.508  Route Surveying
1 cl, 6 lab hr/wk, 4 cr
Students learn the basics of highway curve design and placement, using simple curves, spirals, and vertical curves. The labs are used to place, in the field, located centerline

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from a “P” line, laying in student-designed curves and spirals. Note taking, staking, and stationing are emphasized. Mass diagrams are also covered.

CE 6.540 Photogrammetry
1 cl, 3 lab hr/wk, 2 cr

The student will learn to prepare maps and charts from aerial photographs by ground surveying and steroscopic methods, using computational forms.

DRAFTING AND TECHNICAL ILLUSTRATION

DRF 4.100 Introduction to Fabrication Practices
2 cl, 2 lab hr/wk, 3 cr

A basic course in manufacturing methods, structures and welding process. Emphasis on Machine Shop practices, the building trades, the welding process, and how they relate to mechanical and architectural drafting.

DRF 4.101 Drafting I
2 cl, 6 lab hr/wk, 5 cr.

The student will learn the basic elements of drafting through the application of drafting instruments, lettering, geometric construction, orthographic projection, sections and conventions and isometric drawing. He will demonstrate his knowledge by preparing pencil drawings.

DRF 4.103 Electronic Drafting
4 lab hr/wk, 2 cr

Gives the student a basic understanding of drafting techniques. Emphasis on application of drafting instruments, templates, lettering, isometric and oblique, orthographic projection and geometric constructions. Techniques applied to drawing of chassis and schematics.

DRF 4.104 Industrial Lettering
2 lab hr/wk, 1 cr

The student will learn serif and sans-serif lettering as applied to architectural and engineering drawings. He will demonstrate his knowledge by preparing lettering plates. Individual criticism and demonstrations stressing letter form and layout rendered in pencil and pen.

DRF 4.105 Drafting II (Arch)
1 cl, 6 lab hr/wk, 5 cr

Advances the student in fundamental of understanding drafting techniques. Emphasis placed on linework, lettering, dimensioning, symbols, conventions used in architectural drawing.

DRF 4.105 Drafting II (Mech)
2 cl, 6 lab hr/wk, 5 cr

The student acquires skills needed for dimensioning, tolerances, screw threads, and fasteners as used on working drawings. He will demonstrate his understanding by preparing drawings with suitable linework to be reproduced on a ozalid machine.

Prerequisite: Drf. 4.101.

DRF 4.107 Drafting III (Arch)
2 cl, 6 lab hr/wk, 5 cr

Completes the basic knowledge and skills a student will need to choose a major field of drafting. Emphasis on drawings of construction details and plot plans involving contour lines and site locations.

DRF 4.107 Drafting III (Mech)
2 cl, 6 lab hr/wk, 5 cr

The student will demonstrate a comprehension of machine assembly and sub-assembly, welded parts, piping, structural members, maps and topography, and charts and graphs. His comprehension will be shown by preparing working drawings. Completes basic knowledge, skills needs to choose a major field of drafting.

Prerequisite: Drf. 4.105.

DRF 4.109 Architectural Drafting
2 cl, 6 lab hr/wk, 5 cr

The student will learn methods, proc edures for architectural drawings. He will apply his knowledge for letter, layout and design to both construction and display drawings. He will be taught basic rendering for display drawings.

DRF 4.110 History of Architecture
3 cl hr/wk, 3 cr

The student will learn the periods of architecture and philosophy and conditions which influenced each; theories of design and construction.

DRF 4.111 Industrial Construction Drawing
2 cl, 6 lab hr/wk, 5 cr

The student will demonstrate an understanding of the steps of construction for commercial and industrial buildings. He will apply this knowledge to working drawings. Discussion of modern construction techniques, materials drawing requirements, inter-relationship of Architectural, Civil, Mechanical and Electrical as used in industrial construction.

DRF 4.113 Structural Drafting
2 cl, 6 lab hr/wk, 5 cr

The student will demonstrate a comprehension of civil and structural drafting procedures by completing function and design of general plans; stress diagrams; shop drawings; foundation or masonry plans, erection diagrams; falsework plans; sheet metal layouts; bills of materials; rivet lists; draw indexes; design considerations and strength of joints.

DRF 4.119 Project Drafting I
8 lab hr/wk, 4 cr

The student will learn operational procedures common to industrial drafting departments and will complete drawings requiring all of the skills previously learned. Methods for detail layout, reading specifications, materials of fabrication, checking and back-checking drawings and material take-offs.

DRF 4.121 Project Drafting II
8 lab hr/wk, 4 cr

The student will gain additional knowledge and experience in industrial drafting practices. Drafting room standards of local industries will be discussed. Projects and drawings will be graded for speed and accuracy.

DRF 4.123 Project Drafting III
8 lab hr/wk, 4 cr

The student will demonstrate a comprehension of actual working conditions and drawing requirements acquired in Engineering Department including - speed dimensioning, drafting room administration, coordination of specifications and design.
DRF 4.125 Advanced Machine Drafting I
2 cl, 6 lab hr/wk, 5 cr

The student will learn basic elements of machine design. He will demonstrate understanding of kinematics; motion analysis, including velocity and acceleration; and the study of cams, by means of reports and drawings.

DRF 4.126 Advance Machine Drafting II
2 cl, 6 lab hr/wk, 5 cr

The student will gain knowledge and experience in the advanced elements of machine design. He will demonstrate this knowledge by preparing reports and drawings pertaining to dimensional analysis, casting and weldments, fasteners, springs, power screws, couplings, clutches and brakes.

DRF 4.127 Technical Illustration I
2 cl, 6 lab hr/wk, 5 cr

The student will learn the basic elements of isometric pictorial drawing and will demonstrate his understanding by preparing pictorial assembly and exploded drawings as used within the industrial drafting room. He will learn the use of isometric protractor; isometric eclipse and isometric hex templates; inking pens.

DRF 4.128 Technical Illustration II
2 cl, 6 lab hr/wk, 5 cr

The student will acquire skills needed for diametric and trimetric pictorial drawing through the use of protractor, angle eclipse, hex angle and spring templates. He will demonstrate his knowledge by preparing working drawings as used in the drafting room.

Prerequisite: Tech. Illus. 4.127.

DRF 4.129 Advanced Machine Drafting III
2 cl, 6 lab hr/wk, 5 cr

The student will acquire skills needed to strengthen his knowledge of design fundamentals by solving practical problems dealing with drive mechanisms, gears and gear trains, bearings and lubrication and vibration analysis. He will learn the principles of geometric and positional dimensioning and tolerancing techniques and interpretation.

DRF 4.130 Technical Illustration III
2 cl, 6 lab hr/wk, 5 cr

The student will demonstrate a comprehension of trimetric and perspective drawings as used in industry for catalogues, sales, repair and training manuals. He will learn the use of inking and shading techniques.

Prerequisite: Technical Illustration 4.128 or equivalent.

DRF 4.131 Technical Illustration IV
2 cl, 6 lab hr/wk, 5 cr

The student will gain knowledge and experience needed to prepare pictorials and layouts for reproduction by multilith and other commercial printing methods. He will demonstrate this knowledge by completing a portfolio containing samples of completed illustrations needed for job application.

Prerequisite: Technical Illustration 4.130 or equivalent.

DRF 4.135 Air Brush Illustration I
4 lab hr/wk, 2 cr

Function, manipulation, care of the air brush. Training techniques, procedures in photo retouching and continuous tone rendering with air brush.

DRF 4.855 Geometric and Positional Dimensioning and Tolerancing
2 cl, 4 lab hr/wk, 4 cr

Further develops skills, understandings in definition and use of a technical language which enables an Engineer, Designer, or Draftsman to define completely and accurately the functional parameters of any set of related mechanical parts.

DRF 4.857 Introduction to Geometric and Positional Dimensioning and Tolerancing
2 cl, 2 lab hr/wk, 3 cr

Acquaints the student with the definitions and basic applications of a technical language. Students learn to identify, interpret, and specify the total functions of mechanically related parts.

DRF 6.110 Construction Estimating
2 lab hr/wk, 2 cr

The student will develop skills in estimating the amount and cost of materials required, and labor cost involved in various types of construction. He will demonstrate these skills by making estimates of material and labor quantities and costs for representative types of construction.

DRF 6.122 Construction Codes
2 lab hr/wk, 2 cr

The student will learn the practices required in local, state and federal construction codes.

DRF 6.127 Practical Descriptive Geometry
4 lab hr/wk, 2 cr

The student will demonstrate his understanding of the theory of auxiliary view true length shape, angle and point of intersection developed from point-line-plane through the use of revolution. An introduction to graphical solution of simple vector problems will be taught.

Prerequisite: DRF III 4.107 or Math II 4.204

MECHANICAL ENGINEERING

Mch 4.240 Machine, Weld Shop
2 cl, 6 lab hr/wk, 4 cr

A two-part one term course in which the student will become familiar with welding and machine shop equipment, practices and techniques by spending actual time in the shops.

ME 6.100 Engineering Concepts I
10 cl, 6 lab hr/wk, 13 cr

The student will learn elementary algebra, trigonometry, the slide rule, logarithms, exponents, and graphical solution of functions, and demonstrate his understanding by using proper forms and methods in solving basic engineering problems involving applied mechanics (statics), vectors, force systems, and friction. The student will demonstrate his ability to write standard English sentences, read effectively, and spell correctly.

ME 6.101 Engineering Concepts II
10 cl, 6 lab hr/wk, 13 cr

The student will learn elementary analytical geometry, basic statistics, trigonometric equations, and demonstrate
his understanding by solving problems involving basic concepts of strength of materials, applied mechanics (dynamics), and basic hydraulics. The student will demonstrate his ability to apply objective language to communicate useful information in both writing and speech, with particular attention to the purpose of writing, the audience being addressed, and the validity of the evidence offered.

Prerequisite: ME 6.100

**ME 6.102** Engineering Concepts III 10 cl, 6 lab hr/wk, 13 cr

The student will learn concepts of work and energy, heat and power, heat transfer, simple DC and AC electric circuits, plane surveying, and elementary calculus. The student will demonstrate his understanding by solving problems in these areas. The student will demonstrate his ability to write brief informative compositions, to communicate orally about engineering subjects.

Prerequisite: ME 6.101

**ME 6.105** Engineering Seminar 8 lab hr/wk, 4 cr

The student will demonstrate his ability to apply his mathematical skills by solving basic engineering problems. Taken concurrently with ME 6.101.

**ME 6.108** Fluid Power I 3 cl hr/wk, 3 cr

The student will solve basic problems in pressure, horsepower, fluid characteristics, fluid flow and friction losses, and pump performance. The student will select basic fluid power system components.

Prerequisite: ME 6.101.

**ME 6.110** Fluid Power II 3 cl hr/wk, 3 cr

The student will solve problems involving fluid power principles for hydraulic and pneumatic system analysis and design.

Prerequisite: ME 6.108.

**ME 6.114** Applied Heat and Power I 3 cl, 2 lab hr/wk, 4 cr

The student will learn and demonstrate his understanding by solving problems involving heat and power equations, perfect gas and energy equations, energy measurements, energy sources, heat transfer, and basic internal combustion engine cycles.

Prerequisite: ME 6.102

**ME 6.116** Applied Heat and Power II 3 cl, 2 lab hr/wk, 4 cr

The student will learn and demonstrate his understanding by solving problems involving energy transfer, vapor power cycles, steam processes, boilers, refrigeration, and system design.

Prerequisite: ME 6.114.

**ME 6.118** Machine Design I 3 cl, 2 lab hr/wk, 4 cr

The student will learn the skills to design basic machine elements such as shafts, beams, keys, pulleys, etc., and demonstrate his understanding by making calculations to evaluate the functional requirements of various machine elements.

Prerequisite: ME 6.102.

**ME 6.119** Machine Design II 3 cl, 2 lab hr/wk, 4 cr

The student will learn skills needed to design machine elements such as bearings, clutches, fasteners, and springs and demonstrate his understanding by using these elements in the design of a machine or system.

Prerequisite: ME 6.118.

**ME 6.120** Machine Design III 3 cl, 2 lab hr/wk, 4 cr

The student will demonstrate the skills to perform basic design and selection of machines and machine elements, methods of manufacture and choice of materials, by executing a complete design project.

Prerequisite: Sixth Term standing.

**ME 6.128** Strength of Materials I 3 cl, 2 lab hr/wk, 4 cr

The student will learn and demonstrate his understanding by solving problems involving stress and strain, riveted and welded joints, torsion, centroids and moments of inertia, and shear and moments in beams.

Prerequisite: ME 6.102.

**ME 6.129** Strength of Materials II 3 cl, 2 lab hr/wk, 4 cr

The student will learn and demonstrate his understanding by solving problems involving stresses and deflections of beams, design of beams, fitting analysis, statically indeterminate beams, combined stresses, columns, strain energy and dynamic loading.

Prerequisite: ME 6.128

**ME 6.131** Instrumentation 3 cl hr/wk, 3 cr

The student will learn the basic techniques and instruments used in measurement of weight, pressure, vacuum, liquid level, fluid flow, temperature, humidity, electricity, position, and motion. The student will demonstrate his understanding by solving problems of systems analysis and hardware selection.

Prerequisite: ME 6.100.

**ME 6.133** Product Research 2 cl hr/wk, 2 cr

The student will apply his engineering communication skills in learning where and how to obtain, organize, file, and effectively utilize catalogs, trade magazines, journals, specifications, proposals, reports, and other technical literature found in the engineering office.

**ME 6.135** Project Design 4 cl, 12 lab hr/wk, 10 cr

The student will demonstrate knowledge and skills by executing a design project of his own concept, including studies of feasibility, marketing, economy, layout, proposal, design; all calculations; drawings ready for production; and a complete project report.

Prerequisite: Sixth Term standing.

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**AIRFRAME & POWERPLANT MECHANICS**

(See Mechanical Engineering Module)
HOME ECONOMICS

T H.Ec Introduction to Home Economics
2 cl/hr/wk, 1 cr

A preview of the home economics field including opportunities for employment and the purpose of the program for the homemaker. Emphasis on both personal values and areas of specialization.

T CT 210 Clothing Construction
2 cl, 4 lab hr/wk, 3 cr

Basic clothing construction principles, fitting.

T CT 211 Clothing Selection
3 cl/hr/wk, 3 cr

Principles of selecting clothing considering economic, psychological and aesthetic factors.

T CT 250 Textiles
2 cl, 2 lab hr/wk, 3 cr

Study of the identification, selection, use and care of textile fibers and fabrics.

T FL 222 Marriage Preparation
2 cl/hr/wk, 2 cr

The social, legal, psychological aspects of marriage. Open to men and women.

T FL 223 Family Living
2 cl/hr/wk, 2 cr

Principles, concepts, and alternatives in family behavior during the first years of marriage and the child bearing period.

T FL 225 Child Development
3 cl, 1 lab hr/wk, 3 cr

Basic principles in the development of the infant and pre-school child.

T FN 225 Nutrition
3 cl hr/wk, 3 cr

Fundamentals of nutrition; optimal diet for health; present day problems.

T HAd 240 Management in Family Living
2 cl/hr/wk, 2 cr

Developing a workable philosophy of homemaking; selection, use and care of modern home equipment; budgeting of time, energy, and family income.

HE 7.250 Family Living
3 cl/hr/wk, 3 cr

Patterns of family living in modern society including the varying roles and interaction of family members; factors affecting family life including urban-suburban living, socio-cultural, racial, and economic. Relationship of the family to such community resources as represented by health, welfare, educational, and counseling organizations.

HE 7.280 Parent-Community Relationships
2 cl/hr/wk, 2 cr

Establishing and maintaining school and community programs for parent education. Conferences, meetings, and community resources as tools for fostering parent-child relationships.

HE 7.300 Nutrition
2 cl/hr/wk, 2 cr

To acquaint the student with the standards of adequate nutrition, how they can be achieved in daily food selections, and how they can be modified to apply to dental health, family nutrition, and community welfare. Required for dental assistants.

HE 7.320 Child Nutrition and Health
3 cl/hr/wk, 3 cr

Nutritional needs and food habits of the young child with practical application to the day care setting. Childhood diseases, first aid procedures, good health habits, including observations and demonstration with center dietitian and nurse.

HE 7.350 Food Preparation
2 cl, 4 lab hr/wk, 3 cr

An introductory course to acquaint the student with the selection and use of food for optimum nutrition and satisfaction of the family. The basic principles of food preparation, food values, and standards of quality are included.

HE 7.402 Principles of Early Childhood Education (Facilities and Resources)
3 cl, 1 lab hr/wk, 3 cr

History and objectives of early childhood education; developing curriculum and implementing it; examination of facilities and resources in the community.

HE 7.404 Infant and Child Care
3 cl, 1 lab hr/wk, 3 cr

General principles of development and care of the infant and very young child with emphasis in practical application.

HE 7.410, 7.411 Observing, Guiding Behavior of Young Child I, II
3 cl, 6 lab hr/wk, 5 cr/trm

Individual patterns of growth and behavior with techniques of recording and reporting; the role of adults in working with young children and techniques of guidance.

HE 7.420 Early ChildhoodEducation Curriculum I
4 cl/hr/wk, 4 cr

Children's literature, story telling, creative dramatics; art media, crafts, other constructive materials including blocks and carpentry. Stages and functions of play.

HE 7.421 Early Childhood Education Curriculum II
4 cl hr plus lab/wk, 4 cr

Music, rhythms, games, materials for physical and motor development; science and nature experiences; planning field trips; cognitive experiences.
HE 7.430 Disadvantaged Child in Preschool
3 cl hr/wk, 3 cr
Effects of cultural-economic deprivation on the development of personality and intelligence of the young child; analysis of current planning efforts and curriculum development; promoting parent involvement.

HE 7.440, 7.441 Directed Participation With Young Children I, II
2 cl, 10 lab hr/wk, 6 cr/trm
Supervised teaching of young children in a pre-school, day-care center, or kindergarten.

HE 7.450 Creative Activities
2 cl, 2 lab hr/wk, 3 cr
Examination of and experimentation with play activities that promote creative growth in the young child.

HE 7.480 Administration of Child-Care Centers
3 cl hr/wk, 3 cr
Operation of cooperative preschools, nursery schools, Head Start and day-care centers, and private kindergartens. Program planning, organizational structure, budgeting, personnel, interviewing, operational codes, and licensing.

HE 7.500 Personal Development
2 cl hr/wk, 2 cr
To help the individual feel more at ease in all situations through improving posture, grooming, wardrobe selection, make-up and habits of walking, sitting, and standing. Required for dental assistants.

HE 7.600 Textiles I
2 cl, 2 lab hr/wk, 3 cr
Basic study of fibers used in textiles, including natural and man-made; consideration of their individual properties, and the satisfactions relating to use by the consumer. Handling and testing of common fabrics, becoming acquainted with the advantages and disadvantages in usage.

HE 7.601 Textiles II
2 cl, 2 lab hr/wk, 3 cr
Further study of textiles, going into yarn and cloth construction. Suggested for students wishing more complete information and further experience in the handling of fabrics. Examination of construction of yarns and fabrics, tests for fiber content, and study of fabric finishes.

HE 7.650 Beginning Clothing
2 cl, 4 lab hr/wk, 3 cr
Fundamental techniques in clothing construction; designed for the beginning seamstress.

HE 7.700 Home Furnishings
3 cl hr/wk, 3 cr
Application of color and design principles to the home and its furnishings in relation to family housing needs; selection of furniture, floor coverings, draperies and accessories from the artistic and practical standpoint.

HE 7.750 Home and Family Management
3 cl hr/wk, 3 cr
Principles of time, energy, and money management with emphasis on the problems of combining the role of homemaker and wage earner.

HE 7.760 Textiles II
2 cl, 2 lab hr/wk, 3 cr
Further study of textiles, going into yarn and cloth construction. Suggested for students wishing more complete information and further experience in the handling of fabrics. Examination of construction of yarns and fabrics, tests for fiber content, and study of fabric finishes.

HE 7.780 Home and Family Management
3 cl hr/wk, 3 cr
Principles of time, energy, and money management with emphasis on the problems of combining the role of homemaker and wage earner.

HOSPITALITY SERVICES

HR 3.110 Orientation to Food Service
1 cl, 1 lab hr/wk, 1 cr
Overview of many types of food service in today's society. Differences in types, problems peculiar to each. Philosophies of different types of food service.

HR 3.112 Food Preparation I
2 cl, 6 lab hr/wk, 4 cr

HR 3.113 Food Preparation II
2 cl, 6 lab hr/wk, 4 cr
Menu planning; importance of understanding persons to be served; nutritionally adequate meals for captive clientele. Emphasis on estimates of raw materials needed; percent of loss (both economic and nutritive) through various pre-preparation, cooking methods.

HR 3.114 Food Preparation III
2 cl, 6 lab hr/wk, 4 cr
Menus and problems in preparation, service of buffets, gourmet, ethnic foods.

HR 3.115 Food Science I
2 cl, 2 lab hr/wk, 4 cr
Topics common to basic courses in science as related to foods. Use of metric system; use of units; use of different scales of temperature; temperature control, bacterial growth.

HR 3.116 Food Science II
2 cl, 2 lab hr/wk, 3 cr
Scientific principles underlying modern food theory and practice. Relation of food preparation to physical, chemical properties of proteins, starches, sugars, leavening agents and pigments; properties of true solutions and principles of crystallization; colloidal systems: sols, gels, foams, emulsions.

HR 3.117 Food Science III
2 cl, 2 lab hr/wk, 3 cr
Objective tests in food research. Sensory judging of products and relationship to quantity feeding.

HR 3.200, 3.201, 3.202 Institutional Food Preparation I, II, III
2 cl, 6 lab hr/wk, 4 cr/ea
Application of basic cookery principles to large-quantity production; effect on nutritive value, aesthetic appeal of foods; standardization of food quality, menu planning and production costs.

HR 3.245 Equipment Layout and Design
3 cr hr/wk, 3 cr
Determination of large and small equipment requirements for food service units; factors governing quality, capacity, care, operation, amintenance of institutional equipment; arrangement of working units for maximum
efficiency. Work methods, work simplification procedures, flow of work.

HR 3.250 Equipment Layout and Design
3 cl hr/wk, 3 cr
Determination of large and small equipment requirements for food service units: factors governing quality, capacity, care, operation, maintenance of institutional equipment; arrangement of working units for maximum efficiency. Work methods, work simplification procedures, flow of work.

HR 3.250 Purchase and Cost Control I
3 cl hr/wk, 3 cr
Methods, procedures for purchasing food, supplies for hotels, restaurants, institutions; markets: federal and trade grades; governmental regulations; packaging; comparative versus price buying; yields and quality controls.

HR 3.251 Purchase and Cost Control II
3 cl hr/wk, 3 cr
Pre-cost, re-control methods relative to the menu; production control; purchasing, receiving, inventory control; profit of food service systems and supplies.

HR 3.260 Dining Room Services
1 cl, 4 lab hr/wk, 3 cr
Proper procedures in set-up, operation of different types of dining rooms. Duties, responsibilities of dining room personnel: Maitre de hotel, hostess, head waiter, waiter, waitress, busboy.

HR 3.300, 3.301 Hotel-Restaurant Organization & Management I, II
3 cl, 3 lab hr/wk, 3 cr/ea
Nature, scope of departmental functions in the hospitality industry; emphasis on operating practices and problems.

HR 3.305 Sales Promotion
3 cl hr/wk, 3 cr
Development, discussion, study of tools available in sales and promotion of food-service employee attitude; menus, signs; special food; special day promotions; radio, newspaper application.

HR 3.306 Property Management
3 cl hr/wk, 3 cr
Principles involved in acquisition of property by purchase and lease. Problems involved in maintenance, repair, refurbishing and renovation of hotels and motels.

HR 3.307 Hotel-Motel Law
3 cl hr/wk, 3 cr
Presents highly technical subject in non-technical language. Purposes: to illustrate consequences of lack of foresight by management; to help student to understand attitudes of the courts in litigation involving an innkeeper; to create awareness of responsibilities law imposes upon the innkeeper. Provides safe and sound rules to assist those who make, or interpret, managerial decisions avoid lawsuits and legal pitfalls.

HR 3.308, 3.309 Personnel Management I, II
3 cl hr/wk, 3 cr/ea
Responsibilities of a supervisor in the hospitality industry: organization, duties, responsibilities; human relations, grievances; training; rating, promotion; quality-quantity control; management-employee relations.

HR 3.310 Sanitation & Safety
3 cl hr/wk, 3 cr
Emphasizes the importance for safety in all aspects of food service, safeguards developed. Stress on three leading hazards: cuts, burns and falls; and how to avoid them. Importance of protection of the public health in proper handling of foods. Personal appearance, cleanliness of food service personnel stressed.

QUANTITY FOOD PREPARATION

HE 7.305 Nutrition I
3 cl hr/wk, 3 cr
Introductory study of food nutrients, their importance in promoting health, preventing disease. Nutritional requirements through the life cycle, with attention to various food cultures and the application of nutritional requirements to basic food groups.

HE 7.306 Nutrition II
2 cl, 2 lab hr/wk, 3 cr
Study of various nutrients and interrelations. Review of need for individualization of diets for cultural, emotional, economic factors; emphasis on various age groups, with specific nutritional needs; fad diets, food fads in general.

HE 7.307 Therapeutic Nutrition
2 cl, 2 lab hr/wk, 3 cr
Application of dietetic principles to health maintenance; dietary modifications necessary in pathological conditions. Characteristics of most commonly used modified diets; nutritional adequacy analyzed, effects of prolonged use reviewed.

Care and Use of Hand Tools
The student will learn the use and care of hand tools initially in the classroom. This instruction will be followed by the student's learning, by actually using in the kitchen, the proper use and care of the French knife, boning knife, butcher knife, paring knife, slicer (knife) spatula and whip.

Catering
The catering business is becoming a large part of the food service industry. The student will learn, by actual experience, the problems involved in the use of proper containers and the transporting of food from preparation to serving area.

Conservation of Leftovers
In this class the student will learn to plan a continuing menu to utilize leftover foods. This area of instruction must, of necessity, be tied very closely to cost control.

Cooking
During the first term the student will learn both in the classroom and the laboratory the basics of kitchen work. After learning the fundamentals of cooking, the student will move into fry work and "heavy" cooking under the close supervision of the chef instructor. Third term, students will learn responsibility for the preparation of daily entrees to be served in the college cafeteria as well as assuming responsibility for the supervision of different areas in food preparation, food service and kitchen maintenance.
Cost Control
The student learns that every cost in relation to the operation of a food service must come from the sale of the individual plates of food. Every minute item is covered in this cost breakdown. The advanced student learns labor cost control, purchasing and storeroom procedures.

Menu Planning
The student will learn the proper planning of menus as concerns: the proper vegetable and potato with the many different entrees to be served, color combinations on the plate, coordination of purchasing, planning and pricing, availability of product, weather, time of year, "special" days, etc.

Safety and Sanitation
The student will learn the importance of and the safeguards developed for safety in all aspects of food service. Stress will be placed on the three leading hazards: cuts, burns and falls, and how to avoid them.

The student must learn also the importance of protecting the public's health as regards to the proper handling of foods. Classroom and laboratory areas will develop this concept. Personal appearance and cleanliness of the food service personnel fall within this area.

Station Duties
The student will learn, during the first term, the work expected of him (her) in the following stations in the kitchen: range, pantry, fry, storeroom, vegetables, cold storage, pastries and desserts. During subsequent terms the student will assume increasing responsibilities in the performance of these duties with the more capable students experiencing considerable supervision in the various stations.

Vocabulary
The student will learn the vocabulary necessary to communicate with other employees in the kitchen. This skill will be learned primarily in the classroom with constant practice in the kitchen in the day to day operation of the cafeteria.

LANGUAGE ARTS & FOREIGN LANGUAGES

Eng. 50, 51, 52 Effective Reading
3 cl hr/wk, 3 cr/trm

To increase reading comprehension as well as improve other study skills, regardless of the student's beginning level of achievement. Individual instruction and directed self-instruction help each student progress at his own rate, making use of tachistoscopes, pacers, films, and a variety of special techniques.

T Eng. 101, 102, 103 Survey of English Literature
3 cl hr/wk, 3 cr/trm

Survey of English Literature will deepen the student's understanding of the language and literature that have had the most direct bearing on the American cultural heritage. Eng. 101: Anglo-Saxon beginnings to Shakespeare. Eng. 102: Milton to Wordsworth. Eng. 103: Byron to present. Must be taken in sequence.

T Eng. 104, 105, 106 Introduction to Literature
3 cl hr/wk, 3 cr/trm

The student learns to read various types of literature with increased awareness of meaning. He will study a number of works to learn what kinds of questions he might ask in evaluating any kind of literature. Eng. 104: Fiction. Eng. 105: Drama. Eng. 106: Poetry. Need not be taken in sequence.

T Eng. 107, 108, 109 World Literature
3 cl hr/wk, 3 cr/trm

The student becomes acquainted with works of Ancient, Medieval, Renaissance, and modern literature that have had notable influence and wide appeal outside their own country. (English and American literature usually excluded; Oriental and/or ethnic literature may be included. Consult instructor.) Should be taken in sequence.

T Eng. 199 Contemporary Minority Literature
3 cl hr/wk, 3 cr

Introduces student to important writings of Black, American Indian, Jewish, and other writers representing minority points of view. He will discover a variety of literary styles and life-patterns and become aware of certain problems of belonging to a sub-culture.

T Eng. 201, 202, 203 Shakespeare
3 cl hr/wk, 3 cr/trm

The student will read, discuss, and investigate five or more of Shakespeare's plays, and certain sonnets, each term. The course will increase the student's enjoyment of poetry and drama, develop his appreciation of the power of language, and expand his awareness of the human condition. Should be taken in sequence.

T Eng. 253, 254, 255 Survey of American Literature
3 cl hr/wk, 3 cr/trm

The life of the American mind as manifested in the work of writers of the past three hundred years. Besides acquainting himself with much noteworthy literature, the student will acquire, against this background, a clearer perception of current artistic, social, and political trends. Eng. 253: Colonial Times to Melville. Eng. 254: Poe to James. Eng. 255: To current periods. Should be taken in sequence.

T Eng. 275 The Bible as Literature
3 cl hr/wk, 3 cr

Study of the literary qualities of the English Bible, with some reference to its influence on English and American Literature.
Eng. 2.104, 2.105 Appreciation of Literature 3 cl hr/wk, 3 cr/trm

For the student who wishes to study literature for personal enrichment or to complete a requirement for the A.A. degree. Reading and discussion of poetry and short stories. Non-transfer.

T Sp 160 Introduction to Film 4 cl hr/wk, 3 cr/trm

The student will view a number of representative films. Through discussion and guest lectures he will learn about the history of this medium and various techniques of the art of film-making. He will learn to see film as related to other arts such as drama and literature, but distinct as a contemporary form of art and communication.

Wr. 11, 12, 13 Preparatory Reading and Writing 3 cl hr/wk, 3 cr/trm

Preparatory courses for students who need help in spelling, the structure of sentences and paragraphs, and in reading for understanding. Preparatory Reading and Writing is strongly recommended for most Portland Community College students before entering college transfer courses. Communication Skills, or Business Communications. The student can expect to increase his working vocabulary, to broaden his understanding of the English language, and to improve his ability to communicate. Placement in a specific section will be made on the basis of a departmental recommendation.

Wr. 11 is intended for the student who needs to improve his ability to write standard English sentences and to deal with problems of usage, spelling and punctuation.

Wr. 12 continues the work begun in Wr. 11 and stresses various paragraph constructions. A student should expect to increase his working vocabulary, to review sentence elements, and to continue perfecting his writing skills. Wr. 11 is a prerequisite.

Wr. 13 stresses reading for understanding. It may be taken in sequence or in conjunction with other writing courses. The student who enrolls in Wr. 13 can expect to increase his ability to read analytically, to discern the author's ideas more accurately, and to write short papers expressing his own thinking.

Wr. 30, 31, 32 English as a Foreign Language cl hr vary; cr varies

Provides practice in speaking, reading, and writing standard English for students whose native language is not English. Foreign students who have encountered language difficulties in their other college classes or in meeting requirements for a vocation will benefit from this practice and from gaining an understanding of the structure and idiom of American English.

Wr. 1.107, 1.108 Spelling 3 cl hr/wk, 3 cr/trm

Through a combined oral-aural-visual-kinetic approach, the student will learn specific words and roots, as well as phonics and special rules. He should achieve measurable improvement in spelling skills. Individual diagnosis and programs, as well as group study.

T Wr. 111, 112, 113 English Composition 3 cl hr/wk, 3 cr/trm

Currently most of the institutions of the State System of Higher Education will accept Writing 111, 112, 113 as fulfilling the nine-hour writing requirement for graduation. If in doubt whether the school of his choice will accept any term of Freshman Composition, the student should check with the registrar's office of that college. At present, English departments do not plan to require transfer students to enroll in a third-year term of Composition at the Junior level, but this situation may change.

Only two terms of English Composition are required for an Associate Degree in Arts or in Science at Portland Community College.

Frequent conferences with the instructor are an important factor in every term of every English Course. The student is urged to avail himself of his instructor's aid at any stage in the writing of a paper or with any other course-related problem.

Wr. 111: The student may expect considerable writing, reading and discussion. By the end of the term he should be writing well-organized, logical papers of about 500 words, making use of some elementary research techniques.

Wr. 112: Wr. 111 with a grade of C or better is a prerequisite. The student will continue developing skills emphasized in Wr. 111, with stress on principles of logical argument. He will investigate techniques of writing a term paper, and will write a well-documented, logically developed term paper.

Wr. 113: Offers the student who has completed Wr. 111 and 112 additional time to strengthen writing skills, to overcome weaknesses, to develop a style, to further the development of his reading and thinking processes. Recommended for non-transfer students who wish to improve writing skills for mature students returning to college after long absence, and for transfer students whose critical faculties will be increasingly called upon as they advance to upper division work.

T Wr. 121, 122 English Composition 3 cl hr/wk, 3 cr/trm

The principles and forms of composition, including the library research paper. The student will write impromptu and prepared essays on topics of some significance, with special attention to organization and logical development.

T Wr. 214 Business Correspondence 3 cl hr/wk, 3 cr/trm

A study of modern practices in business correspondence and business report writing. A student enrolled in Business Correspondence will be expected to analyze and to write the principal types of business correspondence.

Prerequisite: Wr. 111 and 112 or consent of instructor.

T Wr. 241, 242, 243 Creative Writing 3 cl hr/wk, 3 cr/trm

Offers the student an opportunity to explore and to experiment with the writing of short stories, verse, and other literary forms as agreed upon between student and instructor. While all work submitted by the student will receive careful reading and commentary, each student will be able to present at least some original selections for group discussion in a workshop setting.

Wr. 1.101, 1.102 Communication Skills 3 cl hr/wk, 3 cr/trm

Communication Skills is a two-term sequence course de-
FOR EIGN LANG UAGES

T RL 50  First-Year French  
4/5 cr

For the student with no previous experience in French, emphasizes listening and speaking. Introduction of verb system of regular and irregular verbs in the present tense. Work with simple declarative, negative and interrogative structures, greetings, numbers. Introduction of the adjective system. Language lab practice required. Foreign students must have instructor's consent.

T RL 51  First-Year French  
4/5 cr

Emphasizes listening and speaking. Some reading introduced. Exercises in elementary grammar and composition. Work with more complex verb structures in past, future and conditional tenses. Language lab practice required. Prerequisite: RL 50 or equiv.

T RL 52  First-Year French  
4/5 cr

Emphasizes speaking and reading with composition introduced. An additional reader may be added this term. Work in the perfect tenses and the subjunctive. Language lab practice required. Prerequisite: RL 52 or equiv. For proper placement, see instructor.

T RL 101  Second-Year French  
4/5 cr

Begins with thorough review of verbs in all tenses. Class discussions deal largely with readings and are conducted largely in French. Thorough review of the grammatical structures presented in RL 50, 51, 52. Language lab practice required. Prerequisite: RL 52 or equiv. For proper placement, see instructor.

T RL 102  Second-Year French  
4/5 cr

Continuing review of grammar. Readings of increased difficulty discussed in French. Composition requiring increasing mastery of language. Language lab required. Prerequisite: RL 101 or equiv.

T RL 103  Second-Year French  
4/5 cr


T RL 114, 115, 116  French Conversation  
2 cr

Taken concurrently with or independently of RL 101, 102, 103. A minimum of writing, reading, a maximum of oral work to develop conversation ability. Language lab practice required. Prerequisite: RL 50, 51, 52 or equivalent.

T GL 50  First-Year German  
4/5 cr

For the student beginning study of German; emphasizes listening, speaking and rudimentary writing skills. Detailed analysis of the VERB in the present and future tenses and the NOUN as subject and object, or the case system, is provided through classroom and laboratory practice. Writing introduced through dictation. Brief reading selections.

T GL 51  First-Year German  
4/5 cr

Basic structures introduced in the first term are reviewed. Analysis and practice on the past tenses, plural forms, adjective endings, pronouns, conjunctions and word order are given. Discussion of reading to extend vocabulary is in-
cluded along with short-writing assignments. Practice in the language laboratory may be required. Prerequisite: Successful completion of GL 50 or the equivalent with instructor's consent.

**T GL 52 First-Year German**  
4/5 cr/hr/wk, 4 cr

Emphasis on increasing conversational ability and reading skill. Hypothetical situations requiring use of subjunctive forms receive major attention. The alternate subjunctive as it occurs in the written language and in colloquial speech is discussed. Command forms, passive voice, a complete review of idioms are included. Written assignments based on short, contemporary reading selections after thorough discussion in German in class. Laboratory practice in dictation may also be required.

**T GL 101, 102, 103 Second-Year German**  
4/5 cr/hr/wk, 4 cr/hr/trm

These courses provide an intensive review of grammar in approximately the same sequence as presented in the first year courses. Major emphasis on programmed reading selections, class discussions based on these readings, and original writing. Exercise in and analysis of grammar are included in writing assignments which range in difficulty from brief revisions of stories to original composition based on equivalent discussions. Prerequisite: Successful completion of GL 52 or the equivalent with instructor's consent.

**T GL 111, 112, 113 German Conversation**  
2 cr/hr/wk, 4 cr/hr/trm

To be taken concurrently with or independent of GL 101, 102, 103. This is an advanced second year course in which very brief assignments dealing with many phases of German life are the basis of each class discussion. Notes on each student's comments are provided at the end of each hour. No writing is required. Grades based on attendance, improvement in conversational ability.

**T RL 60 First-Year Spanish**  
4/5 cr/hr/wk, 4 cr

The beginning student will learn the sound system of Spanish, vowels, consonants, pronunciation and stress and intonation patterns. He will learn to manipulate the basic structures of noun-adjective agreement, the present tense and pronoun usage. Listening and speaking practice with short programmed readings and writing exercises. Additional practice with tapes is required.

**T RL 61 First-Year Spanish**  
4/5 cr/hr/wk, 4 cr

The student will increase his basic vocabulary and will learn to manipulate additional basic structures especially the past tense. He will do directed listening, speaking, reading and writing activities suggested in a supplementary reader. Practice with tapes is required.

**T RL 62 First-Year Spanish**  
4/5 cr/hr/wk, 4 cr

The student will intensify his knowledge of basic structures and vocabulary. More extensive reading, writing and oral activities. Structural emphasis is on the future and conditional tenses, more complex sentences and the command forms derived from the present subjunctive. Student will become more aware of deep and formal Spanish culture. Required tape exercises provided by native models. Prerequisite: Successful completion of RL 61 or the equivalent with the instructor's consent.

**T RL 107 Second-Year Spanish**  
4/5 cr/hr/wk, 4 cr

Student will review basic vocabulary and structures of First-Year Spanish and do exercises and activities that will enable him to express himself understandably in a variety of situations. Prerequisite: Successful completion of RL 62 or the equivalent with instructor's permission.

**T RL 108 Second-Year Spanish**  
4/5 cr/hr/wk, 4 cr

Student will develop more extensive ability to understand by listening to a series of taped presentations by native models. He will read, discuss and write about contemporary Spanish-American short stories and become aware of their deep and formal cultural content. He will learn to form and use the subjunctive in relation to previously learned structures.

**T RL 109 Second-Year Spanish**  
4/5 cr/hr/wk, 4 cr

Student will develop proficiency through discussions, readings and compositions so that he may initiate a conversation and cope with basic conversational needs independent of lab or textual aids. He will develop a sense of linguistic and cultural differences and similarities inherent in Spanish.

**T RL 117, 118, 119 Spanish Conversation**  
2 cr/hr/wk, 2 cr/hr/trm

Provides an opportunity for the student who has attained a level of proficiency to intensify his practice primarily of understanding and speaking. Conducted in Spanish. May be taken independently or concurrently with RL 107, 108, 109 with instructor's permission.

**LIFE SCIENCES & HEALTH PROFESSIONS**

**ANATOMY & PHYSIOLOGY**

**Sci 5.930, 5.931 Anatomy and Physiology**  
3 cr/hr/wk, 3 cr

Fundamental principles of anatomy, physiology with emphasis on function. Provides a comprehensive understanding of man as a functionally integrated organism. All systems of the body including developmental anatomy and physiology are discussed.

**BIOLOGY**

**T GS 101, 102, 103 General Biology**  
3 cr, 2 lab hr/wk, 4 cr

Survey for liberal arts majors covering fundamental principles of life in plants and animals. Emphasis is on function to a greater extent than structure; special reference to ecological problems. Terms must be taken in sequence.

**DA 5.500 Human Biology**  
3 cr/hr/wk, 3 cr

Combines anatomy, physiology of human body as it relates to health. Student studies systems of the body in relation to each other.
LICENCED PRACTICAL NURSE

Fundamentals of Practical Nursing  
11 wks. 16 cr  
Introduction to practical nursing. Health problems, health facilities, and needs of all people. Student gains understanding of self and others, normal function and structure of the body, patient's environment; planning and meeting needs of dependent patient, normal nutrition. Selected learning experience in the clinical areas to correlate theory to practice. Beginning skills in observations, recording signs and symptoms of disease are developed. 
Prerequisite: LPN entrance requirements.

Adult Care I  
11 wks. 16 cr  
Introduces student to deviations from normal body function; nursing principles related to therapeutic methods and diagnostic procedures. Fundamental needs of the medical-surgical-orthopedic patient. Selected learning experiences with patients having less complex nursing needs, dietary therapy, drug therapy. 
Prerequisite: Fundamentals of Practical Nursing.

Maternal-Child Health  
11 wks. 16 cr  
Provides understanding of normal obstetrical patient: the new-born: the child; patterns of normal growth and development. Elements of anatomy, physiology, nutrition applied for this group. Introduces the student to common illness of the child; selected learning experience with maternal and child patients from simple to more complex nursing needs. Altered body function, disease process, and nursing needs, with concurrent learning experience. Third and fourth quarter work on sections: some students have maternal-child care experiences, others have learning experiences with medical-surgical-orthopedic patients. At mid-quarter, sections reverse so all students will have similar nursing care problems to solve. 
Prerequisite: Practical Nursing Fundamentals, Adult Care I.

Adult Care II  
11 wks. 16 cr  
Develop further understanding of deviations from normal body function: aspects of psychosomatic illness; disaster nursing; care of selected patients with more complex nursing needs. Understanding of nursing trends developed to prepare for employment; legal aspects of nursing; licensing procedure. 
Prerequisite: Fundamentals of Practical Nursing, Practical Nursing I, Practical Nursing II.

ASSOCIATE DEGREE NURSE

Sci 5,400 Orientation to Health Services  
1 cr  
Sensitizes the student to many areas of health services, the public and private agencies involved. The student learns to define health and major health problems; identify major health care facilities in the community; recognize need for preparation of health care personnel; identify health team members, and appreciate need for education and learning as a life-long process.

Sci 5,515 Microbiology  
2 cl. 2 lab hr/wk. 3 cr  
Surveys major areas in microbiology. Groups of microorganisms characterized to reveal their nature. Principles of biology using bacteria, molds, yeasts, viruses, rickettsia, protozoa and algae. Relationship of micro-organisms to disease; grouping of etiological agents according to method of transmission and portal of entry is closely related to the student's background and experience.

Nu 5,700 Fundamentals of Nursing  
2-3 lec.  9-12 lab hr/wk. 6 cr  
Foundation for subsequent nursing courses. The student learns to perform nursing care that assists people to meet their basic needs; recognize need for meaningful communication in the life process; understand how to problemsolve. Learning experiences occur in hospitals, nursing homes and community agencies.

Nu 5,701 Fundamentals of Nursing with Obstetrics  
2-3 lec.  9-12 lab hr/wk. 6 cr  
Continues development of knowledge and skills focusing on selected nursing problems in long-term disability, illness, and the maternity cycle. The student will plan, give and evaluate care of individuals to meet basic needs. A variety of community agencies and hospitals are used during these two terms.

Nu 5,711, 5,712 Physical and Mental Nursing with Pediatrics  
3-4 lec.  12-15 lab hr/wk. 8 cr  
Builds on prior courses to enable the student to meet nursing needs of individuals in increasingly complex nursing situations. The student will develop a method of nursing care that considers the physical, social and emotional needs of the individual; plan, perform, evaluate care for selected individuals with major health problems. Learning experiences are provided in general and psychiatric hospitals and in related community agencies.

Nu 5,713 Advanced Nursing  
3-4 lec. 12-15 lab hr/wk. 8 cr  
Develops depth of understanding, ability to coordinate knowledge, skill and judgment necessary for registered nurse. Planning, implementing and evaluating nursing action based on synthesis of knowledge gained from social and natural sciences and previous nursing courses. 
Prerequisite: Learning experience.

Nu 5,714 Seminar in Nursing Trends  
2 cl hr/wk. 2 cr  
Offered concurrently with Advanced Nursing to explore issues and trends in nursing. The student learns to identify legal and personal responsibilities of the registered nurse; identify effects of social change on nursing; identify current changes in nursing service and nursing education; and recognize relationships of members of the health team.

DENTAL ASSISTANT

DA 5,505 Oral Anatomy  
2 cl. 2 lab hr/wk. 2 cr  
Growth and development of oral structures; tooth form and function. Laboratory emphasizes development of physiologic occlusion and morphology in wax.

Portland Community College
DA 5.506, 5.507  Clinical Lab I, II, III  
5.508  9/12/12 lab hr/wk, 3/4/1 cr  
Mixing and handling of dental materials, instruments and equipment, leading gradually to more complex features of Roentgenology, tray-setups, and chaiside assisting.

DA 5.510  Histology, Pathology  
2 cl hr/wk, 2 cr  
Structural elements of normal tissue and organs and their responses to disease and injury.

DA 5.512  Oral Histology, Pathology  
Microbiology  
1 cl hr/wk, 1 cr  
Emphasis given to common oral diseases, their characteristics and manifestations, microbiology of oral flora.

DA 5.515  Dental Pharmacology  
1 cl hr/wk, 1 cr  
A brief study of drugs used in the dental office.

DA 5.520, 5.522  Roentgenology I, II, III  
5.524  1 cl, 1 lab hr/wk, 1 cr  
The student learns how to make intra-oral roentgenograms and how to process, mount and file them; learns of radiation hazards and precautions for roentgenographic certification by Oregon State Board of Dental Examiners.

DA 5.530, 5.532  Dental Materials I, II  
1 cl, 1 lab hr/wk, 1 cr  
The student learns identification, characteristics, and manipulation requirements of dental materials commonly employed in the dental office. Lectures and lab exercises.

DA 5.535  Pre-Clinical Orientation  
1 cl, 1 lab hr/wk, 1 cr  
Introduction to profession: responsibilities, objectives, opportunities and scope of service: code of clinical ethics: patient management.

DA 5.538, 5.539  Clinical Practice I, II  
2 cl, 2 lab hr/wk, 3 cr  
General chairside assisting; supplies, maintenance of equipment. Practical applications of dental procedures; health objectives; preventive dentistry, first aid in patient care.

DA 5.540  Dental Specialties  
1 cl hr/wk, 1 cr  
Specialists in oral surgery, orthodontics and other dental areas acquaint the student with all types of specialization.

DA 5.550  Dental Office Records  
2 cl hr/wk, 2 cr  
Acquaints the student with variety of office record keeping: The appointment book; patient records; daily ledger; financial arrangements; recall systems.

DA 5.551  Dental Office Seminar  
2 lab hr/wk, 1 cr  
Office situations in on-the-job training in the dental office. A general over-all review of the dental assistant program.

DA 5.552  Office Practice  
20 lab hr/wk, 5 cr  
The student works one-half day in a dental office, alternating between morning and afternoon hours, to become acquainted with the office procedures of a practicing dentist. Third term, arranged.

DENTAL TECHNICIAN

DT 5.506. 5.507  Oral Anatomy  
2 cl hr/wk, 2 cr/trm  
Student learns basic knowledge of the oral cavity as foundation for dental prosthetics. Histology, physiology of structures of the head and neck.

DT 5.630  Dental Technology  
2 cl hr/wk, 2 cr  
Familiarizes student with use and care of dental laboratory equipment and small hand tools.

DT 5.650, 5.652  Dental Materials I, II  
2 cl hr/wk, 2 cr/trm  
Properties and manipulation of materials used in the dental laboratory.

DT 5.660, 5.662  Denture Techniques I, II  
2 cl hr/wk, 2 cr/trm  
Complete denture techniques, including waxing of dentures, balanced occlusion, curing, finishing and polishing, custom trays, bite blocks, repairs, immediate dentures, re-base, reclines, and esthetics.

DT 5.680  Professional Ethics  
2 cl hr/wk, 2 cr  
Acquaints student with history of dental profession, auxiliary organizations. Principles of ethics and jurisprudence as they apply to dental laboratory technicians. Role on the dental health team.

DT 5.700  Inlay Casting  
2 cl hr/wk, 2 cr  
Making of dies, waxing, casting of inlays. Problems and techniques in the construction of inlays.

DT 5.705  Crown and Bridge  
3 cl hr/wk, 3 cr  
Techniques in construction of crowns and fixed bridge, utilizing different types and facings: Waxing, casting, soldering, Construction of acrylic bridges.

DT 5.710  Partialis, Clasp, Bar  
4 cl hr/wk, 4 cr  
Design, construction of partials, clasp and bar. Waxing, investing, processing, benching, polishing and finishing.

DT 5.720  Ceramics  
3 cl hr/wk, 3 cr  
Composition, physical properties, fundamentals of dental porcelain. Dies, matrix adaptation, firing, grinding, glazing related to baked porcelain.

DT 5.800  Dental Laboratory Technology I  
20 lab hr/wk, 5 cr  
Nomenclature, terminology used in dental profession. Dental materials used in a dental technican laboratory: acids: waxes; gypsum products: abrasives and polishing agents; artificial teeth; separating materials: acrylic resins; impression materials: laboratory gases: investments and fluxes.
The student learns basic practices and procedures routinely used in bacteriology, parasitology, and mycology, including sterilization techniques, collection, handling, and processing of specimens; preparation, use of media, methods of inoculation of media; diagnostic procedures for cultivation, identification of species; methods of planting and reading antibiotic sensitivity studies.

MLT 5.465 Immunochemistry
1 cl, 2 lab hr/wk, 2 cr

Brief survey of blood banking, including ABO grouping and Rh factor typing, factors affecting blood grouping reactions. Performance of many serological tests used in the clinical laboratory.

MLT 5.468 EKG - BMR
1 cl, 1 lab hr/wk, 1 cr

Survey of theory and usage of electrocardiograph and the common BMR machines.

MLT 5.469 Clinic Seminar
4 lab hr/wk, 2 cr

Times arranged during the term to review practices and procedures already learned, and to guide the student into areas where more practice and proficiency are needed.

MLT 5.470, 5.471 Clinical Lab
5.472, 5.473 Practice I, II, III, IV
12/20/32 lab hr/wk, 3/5/5/8 cr

Students are assigned to various clinical laboratories within the metropolitan area to become familiar with organization, surroundings of clinical laboratory, gain practice, and experience in performance of procedures required of a laboratory technician. Students are under direct supervision of a Registered Medical Technologist -- M.T. (ASCP) -- or a Pathologist at all times.

MEDICAL RECORD TECHNICIAN

MRT 5.470 Medical Record Science I
5 cl hr/wk, 5 cr

An introductory course in medical records science. History of medicine and hospitals; content and uses of medical
records; methods of filing and preserving records; medicolegal aspects of medical records.

MRT 5.471 Medical Record Science II
5 cl hr/wk, 5 cr

Medical and vital statistics, nomenclature and classification systems, indexes, and registers.

MRT 5.472 Medical Record Science III
3 cl hr/wk, 3 cr

Medical staff organization; health science library; accrediting, approving and licensing agencies; Medicare administrative rules; organization of a medical record department.

MRT 5.473 Medical Record Seminar
4 lab hr/wk, 2 cr

MRT 5.482 Directed Practice III Seminar discussions: Supervision, organization and management; forms preparation and control; the professional organization (national and state); problems encountered in Directed Practice.

MRT 5.475, 5.476, Medical Record Lab I, II, III
5.477 4/4/2 lab hr/wk, 2/2/1 cr

Accompanies Medical Record Science I, II, III. In these labs, the student practices and demonstrates proficiency in use of techniques and procedures of medical record science.

MRT 5.480, 5.481, Directed Practice I, II, III
5.482 12/20/36 lab hr/wk, 3/5/5 cr

Supervised learning experiences in well-organized and well-staffed medical record departments under the supervision of experienced medical record librarians. Students are assigned for specified periods of practice in medical record departments of hospitals accredited by the Joint Commission of Accreditation of Hospitals and other medical care facilities.

RADIOLOGY

XT 5.614, 5.615, Radiographic Clinic I, II, III,
5.616, 5.617, 16 hr/wk
5.618, 5.619, IV, 40 hr/wk
5.620, 5.621, V, VI, VII, 24 hr/wk
5.622, 5.623, VIII, IX, X, 40 hr/wk, 30 cr

Practical work experience in hospital radiologic departments under supervision of radiologists, technologists, instructors. Students instructed in operation of equipment, handling of patients. Practice under close supervision, then general supervision, finally unaided. Students do no radiographic examinations until qualified for safety to patient and personnel. Continuous through thirty months of program, provides approximately 3000 hours in radiology at one of the participating hospitals. Thirty credits are granted upon completion of the entire program.

Prerequisite: For each term, satisfactory completion of previous term.

XT 5.626 Survey of Disease
2 cl hr/wk, 2 cr

Acquaints the student with changes in disease, injury, their application to radiology. Understandings enable technologist to handle serious ill or injured patients more intelligently; to produce more informative radiographs; to obtain greater satisfaction from work.

XT 5.600 Orientation and Ethics
1 cl hr/wk, 1 cr

An overall view of radiologic technology; part radiology plays in medicine; relation to complete medical services structure. Acquaints student with general structures of applied medicine, ethical principles. Outlines responsibilities in becoming a member of a paramedical profession. Relationship of radiologic technologists to other technologists, the patient, radiologists attending physicians, other members of the hospital staff.

XT 5.625 Nursing Procedures
2 cl hr/wk, 3 cr

Principles of nursing care as related to radiography. Specific applications to techniques used by well-trained technologists.

XT 5.603 Radiographic Technique I
2 cl, 1 lab hr/wk, 2 cr

Develops knowledge, skills for thorough, efficient darkroom procedures. History, development of X-ray film and darkroom accessories; functions of chemicals; darkroom and processing apparatus; manual, automatic processing techniques. Radiographic positioning: intensifying screens, function, care, tube, part, film alignment for quality radiographs.

XT 5.604 Radiographic Technique II
3 cl, 1 lab hr/wk, 3 cr

Theory of radiographic technique correlated with practical application as basis for all radiologic examinations. Students develop ability to devise technique based on sound principles and practice. Film critique to gain knowledge, familiarize student with visual aspects of radiographs, enable student to interpret accurately requests for radiological examinations; properly positioning the part or area to be radiographed; recognizing structures and organs visualized.

Prerequisite: Radiographic Technique I

XT 5.605 Radiographic Technique III
3 cl, 2 lab hr/wk, 4 cr

Principles of radiographic exposure, radiographic positioning, film critique continued; acquaints the student with common procedures in radiography involving the use of contrast media. Equipment and media used, reactions and contra-indications to these media.

Prerequisite: Radiographic I, II

XT 5.606 Radiographic Technique IV
8 cl, 4 lab hr/wk, 10 cr

Principles of radiographic exposure, radiographic positioning, film critique continued; special radiographic procedures; image recording; rapid film cameras; rapid film changers; other recording media.

Prerequisite: Radiographic Technique I, II, III.

XT 5.607 Radiographic Technique V
6 cl, 2 lab hr/wk, 7 cr

Principles of radiographic exposure, radiographic positioning, film critique, special radiographic procedures continued; intraoral radiography: dental, oral radiography, radiation therapy.

Prerequisite: Radiographic Technique I, II, III, IV.

XT 5.608 Radiographic Technique VI
8 cl, 4 lab hr/wk, 10 cr

Principles of radiographic exposure, radiographic positioning, film critique continued; departmental function, organization, supervision, intra and inter-departmental relationships; attitudes and policies in personnel management.

PHYSICAL EDUCATION

T PE 180 Physical Education (Women)
3 cl hr/wk, 1 cr

Variety of activities for physiological recreational values. Sections for restricted, corrective and specialized work.
Classes offered: Fundamental body conditioning; basic tumbling; basic apparatus; gymnastics; basketball; volleyball; badminton; modern dance; beginning swimming; intermediate swimming; advanced swimming; life saving; water safety instructor course; synchronized swimming; tennis; beginning golf; advanced golf; personal defense tactics; skiing; ice skating; bowling; track and field; folk and square dance; cross country; archery; softball.

T PE 190  Physical Education (Men)
3 cr
Variety of activities for physiological and recreational values. Sections for restricted, corrective and specialized work. Classes offered: Body conditioning-weight training; basic tumbling; basic apparatus; gymnastics; basketball; beginning swimming; intermediate swimming; advanced swimming; life saving; water safety instructor course; aquatic games; volleyball; badminton; tennis; beginning golf; advanced golf; folk and square dance; cross country; archery; softball; track and field; wrestling.

T PE 195  Professional Activities
Basketball (Men)
2 cr
Methods, teaching techniques, and basic skills for PE professionals.

T PE 234  Relays & Games of Low Organization
3 lab hr/wk, 1 cr
Exploration, observation, instruction, and practice in the leadership of games, stunts, and relays for children. Emphasis is given to basic movement patterns as utilized in these activities.

T PE 291  Lifesaving in Aquatic Programs
3 cr
Student becomes more capable of taking care of himself and better able to aid and rescue anyone in danger of drowning. The student increases safety and rescue skills; becomes mentally, physically ready to act in aquatic emergencies, recognized responsibility of being a trained lifesaver. Successful completion leads to award of American Red Cross Senior Lifesaving Certificate.
Prerequisite: PE 190, Intermediate Swimming or its equivalent or swimming ability test.

T PE 292  Swimming, Lifesaving Instruction in Aquatic Programs
3 cr
The student learns how to teach aquatic skills of popular swimming strokes and lifesaving techniques and skills, further develops own swimming and lifesaving techniques and skills. Successful completion leads to award of American Red Cross Water Safety Instructor's Certificate.
Prerequisite: 18 yrs. old, hold a current Senior Red Cross Lifesaving Certificate or its equivalent.

T RM 150  Recreation in Society
3 cr
Concept of community recreation, scope of recreation and leisure in American life, the role of recreation, parks and sports in human experience and the structure of community living.

T RM 252  Recreation Leadership
3 cr
The role of the recreation leader with emphasis upon methods of working with individuals and groups. Examples of leadership techniques utilizing various program activities in public and voluntary agency settings. A guide in the development of recreation programs.

T RM 290  Camp Counseling
3 cr
Introduction and orientation to counseling in camps; examination of the values and objectives of organized camps; understanding campers; knowledge and understanding of camp programs and staff responsibilities.

Rec 5.200  Specialized Recreation for Mentally Retarded
3 cr
Offered by Portland Community College Department of Physical Education, Recreation, and Athletics in cooperation with City of Portland Bureau of Parks and Recreation. The instructor for the course will be the Director of Specialized Recreation for the City of Portland Bureau of Parks and Recreation. The course is basic to a work-training program in the field of specialized recreation and is designed to provide the student with information relative to the programming and teaching of recreational activities designed to meet the needs of the exceptional individual. Participants in the course will be selected by interview and recommendation of the course instructor and the student's college advisor.

MATHEMATICS

T Mth 95  Intermediate Algebra
4 or 5 cl hr/wk, 4 cr
The student will gain familiarity with and demonstrate his comprehension of the real numbers with emphasis on radicals and the four basic operations (addition, subtraction, multiplication, and division) involving these radicals. He will also study and demonstrate his knowledge of quadratic equations and use of the quadratic formula, radical equations and inequalities involving real numbers, rational exponents, variations. Cartesian products and the concept of graphing, relations and functions, inverse relations and inverse functions with special emphasis on the linear function and the quadratic function. The student will demonstrate his comprehension of absolute value functions, the graphing of these functions, inverse functions or relations of special functions, systems of linear equations, the graphing of such systems, graphing of linear inequalities and graphing of systems of inequalities, and elementary introduction to exponential and logarithmic functions with applications.
Mth 95 will transfer to Oregon State institutions as 4-credit elective.
This course is recommended for students who have completed one year of high school algebra and one year of geometry with high or very high grades, two years of high school algebra and one year of geometry with average or low grades, or four years of academic math in high school with average or lower grades. Any student that has not had a background of "modern" mathematics should enroll in Mth
4.202. Prerequisite: Mth 4.204 or consent of the department.

The following are examples of problems in the course:

Math 95

1. \( \sqrt{9} - 64 = -4 \) (T F)
2. \( \sqrt{(-3)^2} = -3 \) (T F)
3. \( (8)^{2/3} = ? \)
4. \( x^{2/3} \div x^{1/2} = ? \)
5. \( (a^{2/3} - b^{1/2})(a^{1/2} + b^{1/2}) \)
6. Simplify: \( \sqrt{9x^2} + \sqrt{16x^2} \)
7. Rationalize the numberator:
   \[ \frac{2 + 3}{2 - 3} \]
8. Find solution set of the following: Domain is the set of real numbers.
   a) \( \sqrt{3x} + 6 = x \)
   b) \( |x + 4| = 3 \)
   c) \( |2x - 5| + 10 \)
9. Given \( F(x) = 3/4x + 6 \)
   a) \( f(4/3) = ? \)
   b) What is the slope of the graph?
   c) What is the y-intercept of the graph?
10. Given the points (6, 8) and (2, 3):
    a) What is the slope of the straight line determined by these two points?
    b) What is the equation of the straight line determined by these two points?
11. Find solution set of the following system:
    \[ \begin{align*}
    2x + 4y - 5 & = 0 \\
    x - 2y - 15 & = 0 
    \end{align*} \]
12. Given:
    \( f = ((x, y))y = 4(x - 3)^2 + 5 \)
    a) What is maximum or minimum value of the function?
    b) What is the equation of the axis of symmetry?
    c) What are the coordinates of the point where the maximum or minimum value occurs?
    d) Write the equation in the form
        \( y = ax^2 + bx + c \)
Mth 101 College Algebra

Prerequisite: Mth 95 or the consent of the department.

T Mth 102 Trigonometry
4 or 5 cr hr/wk, 4 cr

The student will study and demonstrate his comprehension of circular functions, graphs of circular functions, trigonometric functions, relationships between circular and trigonometric functions, inverse relations and inverse functions of specific trigonometric functions, equations involving trigonometric functions, complex numbers and theory of equations. The emphasis of the course will be on analysis. The student will study and demonstrate his knowledge of the solutions of the right and oblique triangles.

Prerequisite: Mth 101 or consent of the department.

T Mth 103 Probability and Statistics
4 or 5 cr hr/wk, 4 cr

The student will study and demonstrate his knowledge of methods of descriptive distribution of measurements, probability, random variables, probability distributions, and statistical inference.

Prerequisite: Mth 101 or consent of the department.

T Mth 106 Elementary Calculus
4 or 5 cr hr/wk, 4 cr

Introductory calculus primarily for majors in the biological and social sciences. The student will study and demonstrate his knowledge of the basic concepts of calculus and their applications to the biological and social sciences.

Prerequisite: Mth 101 or consent of the department.

T Mth 110 Analytic Geometry
4 or 5 cr hr/wk, 4 cr

The student will study and demonstrate his knowledge of points, lines; equations and locus of circular parabola, ellipse, hyperbola; algebraic and transcendental curves; and parametric and polar equations.

Prerequisite: Mth 102 or consent of the department.

T Mth 114, 115, 116 Mathematics in Business Applications
3 or 5 cr hr/wk, 3 cr/trm

Mth 114: The student will study and demonstrate knowledge of relations, functions, equations, inequalities and their graphs, linear programming, exponential functions, logarithmic functions, matrices, and the applications of these concepts to business.


Acceptable as a lower divisional science sequence for a degree in Business Administration only at P.S.U. Mth 115 credit will not be allowed for students who have had one term of transferable calculus. Mth 116 credit will not be allowed for students who have had one term of transferable statistics.

Prerequisite: Mth 95, or 11: years of high school algebra, or the consent of the department.
T Mth 191, 192, 193 Math for Elementary Teachers
3 cr hr/wk, 3 cr/trm

The student will study and demonstrate knowledge of the basic processes (addition, subtraction, multiplication, and division) in relationship to arithmetic, and how these ideas are related to more advanced mathematics which includes material that is largely inductive. The student will study and demonstrate comprehension of the language and nature of deductive reasoning, elements of set theory and how the operations on specific sets are used to present arithmetic concepts: numeration systems, elementary number theory, and the fundamental operations on sets of whole numbers, integers, rational numbers ("decimal" and "fractions"), and real numbers; basic properties of algebra and geometry.

Primarily for the student who has had one year of high school algebra and one year of high school geometry. Students who have not had these two courses should enroll in Mth 4.202, 4.204, and Mth 4.206 (Geometry). Geometry may possibly be taken concurrently with Mth 191 or Mth 192.

Sequence not applicable to science group requirements for graduation from an Oregon State System of Higher Education institution.

Prerequisite: Mth 4.204 for Mth 191, Mth 191 for Mth 192, Mth 192 for Mth 193, or consent of the department.

T Mth 200, 201, 202. Calculus with Analytic Geometry
203 4 or 5 cr hr/wk, 4 cr/trm

Mth 200: The student will study and demonstrate knowledge of differential and integral calculus from an intuitive basis; and he will also demonstrate knowledge of plane analytic geometry including conic sections, translations and rotations in the plane.

Mth 201: The student will gain familiarity and demonstrate his knowledge of the graphing of polynomials, rational expressions including first and second derivatives; trigonometric functions and inverses; logarithmic functions, exponential functions and hyperbolic functions; integrals of trigonometric functions; evaluation of integrals by partial fractions, substitutions and by parts; the concept of limit; the Mean Value Theorem; and the existence and evaluation of definite integrals including Fundamental Theorem of Integral Calculus.

Mth 202: The student will study and demonstrate knowledge of calculus by solving problems related to the maximum and minimum concept, related rates, force, work, and moments, polar coordinates by curve sketching, intersections and loci including the conic sections, and he will further demonstrate knowledge in solid analytic geometry.

Mth 203: The student will study and demonstrate knowledge of partial differentiation, applications-in-three-space (multiple integrals), and infinite series including Taylor's Theorem.

The student needs good background in college algebra and trigonometry; it is beneficial to have studied mathematics from the "modern" viewpoint. The student with four or five years of academic mathematics in high school with very high achievement may be able to start with Mth 200.

Prerequisite: Mth 102 or the consent of the department for Mth 200; the preceding course for Mth 201, Mth 202, Mth 203.

T BA 232 Introduction to Business
Statistics
3 cr hr/wk, 3 cr

The student will study and demonstrate knowledge of modern business decision theory and use of statistics as a tool for business decision making, statistical description (tables, charts, and frequency distribution), elements or probability, consideration of modern data processing, index numbers and time series analysis (trend, cyclical and seasonal adjustments) of modern business data.

Prerequisite: Mth 95 or consent of the department.

Mth 232 Introduction to Numerical
Computation
3 cr hr/wk, 3 cr

The student will study and demonstrate his knowledge of the basic principles of computation, programming, and computer program language.

Prerequisite: Mth 101 or consent of the department.

Mth 2.128 Computer Math and Logic
5 cr hr/wk, 5 cr

The student will study and demonstrate knowledge of mathematical logic involving basic operations on propositions and their truth values, truth tables and tautologies, the algebra of logic, Boolean algebra, sets and operations on sets, the algebra of sets, quantifiers, equivalence of conditions, implications, properties of implications, and notations systems (including the binary and octal systems).

Prerequisite: Mth 4.204, one year of high school algebra from a "modern" viewpoint, or the consent of the department.

Mth 2.308 Business Mathematics
(Dental Assistants)
2 cr hr/wk, 2 cr

The student will study and demonstrate knowledge of invoices, discounts, commissions, profit and cost selling, interest, payroll and depreciation, insurance, taxes and managerial control balance sheets, income statements, inventory, turnover and business statistics. Specific mathematics applications for dental assistants.

Prerequisite: Mth 4.200 or consent of the department.

Mth 2.308 Business Mathematics
3 cr hr/wk, 3 cr

The student will study and demonstrate knowledge of arithmetic and the applications of arithmetic to basic bookkeeping accounts, reconciliation of bank statements, invoices, conversions of one mathematical system to another; problems encountered in business, mathematics of invoices including purchases and sales invoices, trade discounts, commissions on sales and purchases; borrowing and lending money, depreciation including straight line depreciation, book value depreciation, and payroll, including hourly rate, straight piece rate and payroll deductions.

Prerequisite: Mth 4.200 or consent of the department.

BA 2.404 Business Statistics
5 cr hr/wk, 5 cr

The student will study and demonstrate knowledge of statistical concepts, such as index numbers, frequency distributions, measures of variability, normal curve of distribu-
tion, sampling-error theory including the test of the Null Hypothesis, time series and their graphical representations, analysis of seasonal variation, and secular trends and business statistics. For students in business data processing, other business-related programs.

Prerequisite: One year of high school algebra, Mth 4.204 or consent of the department.

Mth 4.200 Basic Mathematics
4 or 5 cl hr/wk, 4 cr

The student will gain familiarity and demonstrate knowledge of the basic concepts of numbers, the number line, systems of numeration, operations with whole numbers (addition, subtraction, multiplication and division), rational numbers written as fractions and decimals, percent, square root and conversions of denominate numbers. For students who need thorough review of basic arithmetical processes. Examples of problems in this course:

1. \(\frac{389}{766} + \frac{7}{498} = \frac{252}{252}\)

2. \(946.3 - 857.39 = ?\)

3. \(\frac{4}{5} + \frac{1}{3} = ?\)

4. \(9\frac{1}{3} + 3\frac{11}{12} = ?\)

5. \(\frac{964.3 - 857.39}{180} = ?\)

6. \(\frac{504}{x90} = ?\)

7. \(30\frac{1}{2} \times 16 = ?\)

8. \(0.4 \times 4.0 = ?\)

9. \(\frac{146}{100} = \frac{3.6938}{(place \ decimal)}\)

10. \(\frac{5}{9} = \frac{??}{%}\)

11. \(1.24 = \frac{??}{%}\)

12. \(\frac{9}{100} = \frac{??}{(decimal)}\)

13. \(75\% = \frac{3}{18}\) (fraction)

14. \(\frac{4}{9} = \frac{12}{27}\)

15. \(?\% \text{ of } 30 = 6\)

16. \(\frac{.18934}{100} = \frac{??}{%}\)

17. \(12\frac{1}{2}\% \text{ of } 16 = ?\)

Mth 4.200 Basic Mathematics
(Dental Assistants)
2 cl hr/wk, 2 cr

The dental assistant student will study and demonstrate his knowledge in basic mathematics.

Mth 4.200 Basic Mathematics
(Machinists, Auto Mechanics, Welders, Nurses, Cooks, Medical Record Technicians, etc.)
Variable hr, 3, 4, 5 cr

The student will study and demonstrate his knowledge of arithmetical processes of whole numbers as well as rational numbers, decimals, percentages and conversion of units in the particular curriculum that he is studying.

Mth 4.200, 4.202 Dental Technician Mathematics
3 cl hr/wk, 3 cr/trm

The student will study and demonstrate his knowledge of the basic operations on the set of whole numbers and rational numbers, decimals, fractions, basic algebraic concepts, and fundamental geometric concepts in relation to the needs of the dental technician.

Mth 4.202 Mathematics I
4 or 5 cl hr/wk, 4 cr

The student will study and demonstrate knowledge of the basic operations on whole numbers and integers, the "modern language" of algebra, the concept of sets, the application of these sets to the development of whole numbers and integers, the mathematical structure of whole numbers and integers, fundamental operations on equalities, inequalities and absolute values and applied problems. For the student who has had no previous instruction in algebra; needs a review of elementary algebra; or has had previous algebra courses but has not been exposed to the "modern" concept.

Prerequisite: Mth 4.200 or the consent of the department.

Examples of problems in this course:

Given:

\[
\begin{array}{c}
A \\
\cup \\
B \\
\cap \\
= \\
\setminus \end{array}
\]

Set \(A = \{1,2,3,4,5\}\)
Set \(B = \{2,3,4,5,6,8,9\}\)
Set \(U = \{0,1,2,3,4,5,6,7,8,9\}\)

1. \(A \cup B = \{ \}\)

2. \(A \cap B = \{ \}\)

3. \(\{4,5\} \in A \) (true or false)

4. \(A \cap B = \{ \}\)

5. \((4x^2)(-3x) = ?\)

6. \(5 - 3 = ?\)

7. \((b + c)^2 = ?\)

8. \((x + 2)(x - 3) = ?\)

9. \((3x - 2)(2x + 3) = ?\)

10. \(3 - 5 = ?\)

11. \(-15 + 3 = ?\)

12. \(7 - 3 = ?\)

13. \(-[(9 - 8)(-4) + (0)(5)] = ?\)

Find the solution set of the following given the domain is the set of integers.

14. \(5x + 10 = 3x - 20\)

15. \((x - 3)(x - 4)(x - 5) = 0\)

16. \(-5x = 15\)

Factor the following:

17. \(ax + bx\)

18. \(x^2 - 16\)

19. \(x^2 - 5x + 6\)

20. \(6a^2 + 7a + 2\)

Mth 4.204 Mathematics II
4 or 5 cl hr/wk, 4 cr

The student will study and demonstrate knowledge of rational numbers, equalities, inequalities, absolute value, other representations of rational numbers, scientific notation, verbal problems, and the basic operations on rational expressions.

Prerequisite: Mth 4.202 or the consent of the department.

Examples of problems in this course:
Reduce:
1. \( \frac{3xy}{6x(x-y)} \)
2. \( \frac{x^2 + x}{x} \)
3. The least common multiple of \( ab^2, a^2b, ab^3 \)
4. \( \frac{2m}{x} + \frac{3m}{2x} \)
5. \( \frac{x}{x^2 - y^2} - \frac{x + y}{x - y} \)

Multiply:
6. \( \frac{a^2 \times 2ab + b^3}{(a - b)^2} \times \frac{(a - b)^3}{a + b} \)

Simplify:
7. \( \frac{1 + \frac{1}{x}}{x - \frac{1}{x}} \)

Find the solution set given the domain is the set of integers.
8. \( \frac{x}{3} + \frac{1}{3} = 3 \)
9. \( \frac{1}{x} = 3 \)
10. \( x^2 - 7x + 12 = 0 \)
11. \( \frac{12}{x} = \frac{10}{x} + 2 \)
12. \( (15x - 1)(6x + 5) = 0 \)
13. \( \frac{2x}{4x^2} = \frac{x}{2x} \)
14. Write as a terminating decimal: \( 0.454545 \)
15. Solve using scientific notation:
\( \frac{(340) \times (0.0035)}{(5000) \times (0.017)} \)

16. A firm has an alloy of copper and tin that contains 10 per cent tin and an alloy of copper and tin that is 25 per cent tin. If the firm wishes to produce two tons copper and tin alloy that is 20 per cent tin, how much of the 10 per cent alloy must be used?

17. A man invested $10,000 in two different mutual funds. He made a profit of 8 per cent from one of his investments, but he lost 3 per cent in his other investment. If his total income from both investments for the year was $470, how much did he invest in each mutual fund?

Mth 4.206  Plane Geometry
4 or 5 cl hr/wk, 4 cr

The student will study the basic concepts and demonstrate knowledge of plane (two-space) geometry, including critical thinking and deductive reasoning; elementary constructions; properties of triangles; properties of parallel and intersecting lines; ratio and proportion; similar polygons; areas and perimeters; special right triangles; circles and their properties; and areas and volumes of plane and solid figures.

Prerequisite: One year of high school geometry or the student who had below average achievement in high school geometry and plans to continue in a mathematical sequence.

Mth 6.115  Electrical Mathematics
4 or 5 cl hr/wk, 3 cr

The student will study and demonstrate knowledge of fundamental concepts or mathematics including function, rates and limits, derivatives, differentials, integrals and definite integrals; trigonometric function, logarithmic functions and exponential function, hyperbolic function, partial derivatives, double integrals, and Maclaurin's Series, Taylor's Series, Fourier Series. A terminating mathematics course for the electronic student.

Prerequisite: Mth 6.263 or consent of the department.

Mth 6.261  Technical Mathematics I
4 or 5 cl hr/wk, 3 cr

The student will study and demonstrate knowledge of functions and graphs, linear functions and straight line graphs, systems of linear equations, determinants, exponents and radicals, complex numbers, quadratic equations, introductory trigonometry and logarithms. The student will also demonstrate his knowledge of the application of mathematics to physical problems.

Prerequisite: Mth 4.204; one year of high school algebra or consent of the department.

Examples of problems in this course:
1. Solve for \( x \):
   a) \( 26 - 5(3 - 2x) = x - 4(x + 9) \)
   b) \( \frac{3}{x} = b + c \)

2. Graph: \( f(x) = \frac{2}{3}x - 6 \)

3. Write equation of graph given slope of a straight line is \( -3/4 \) and passes through the point \((4, 6)\).

4. Find the equation of the straight line determined by the points \((2, 3)\) and \((-4, 3)\).

5. Solve for \( x \) and \( y \):
   \( 3x - 2y = 10 \)
   \( x - y = 1 \)

6. Find the value of:
   a) \[ \begin{vmatrix} 6 & 3 \\ -2 & 5 \end{vmatrix} \]
   b) \[ \begin{vmatrix} 8 & 7 & 3 \\ 5 & 4 & 1 \\ -6 & 7 & 2 \end{vmatrix} \]
7. \( x^{2/3} \cdot x^{1/2} = ? \)

8. Multiply:
\[
(m^{1/2} + n^{1/2})(m^{1/2} - n^{1/2})
\]

9. Simplify:
\[
a^2b^2 + a^2c^2 = ? \text{ Where } a \neq 0
\]

10. Combine:
\[
\sqrt{75} - \sqrt{27} + \sqrt{48} = ?
\]

11. Multiply:
\[
\left(\sqrt{2} - \sqrt{3}\right)\left(\sqrt{3} - \sqrt{2}\right)
\]

12. Solve for \( x \):
\[
x^2 - 81 = 0
\]

13. Given: \( x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \)
Find the roots of the equation
\[
8x^2 - 2x - 15 = 0
\]

14. Solve for \( x \):
\[
x^3 - 10x^2 + 9 = 0
\]

15. Solve for \( x \):
\[
3x + 7 = x + 1
\]

16. Solve for \( x \):
\[
(x - 4)(x + 8) = (x - 4)
\]

**Mth 6.262** Technical Mathematics II
4 or 5 cl hr/wk, 3 cr

The student will study and demonstrate knowledge of logarithms and their uses: polar and rectangular coordinates; trigonometric functions; right triangles; oblique triangles; the laws of sines, cosines, tangents, half angles; areas of triangles; applications of trigonometry; vectors and their applications; trigonometric formulas, identities and equations; and graphs of trigonometric functions.

Prerequisite: Mth 6.261 or consent of the department.

**Mth 6.266** Technical Mathematics III
4 or 5 cl hr/wk, 3 cr

The student will study and demonstrate his knowledge of simultaneous quadratic equations; ratio and proportion, and variation; the binomial theorem, arithmetical and geometric progressions; exponential functions and their applications; complex numbers and vector algebra.

Prerequisite: Mth 6.262 or consent of the department.

**Mth 6.270** Technical Mathematics IV
4 or 5 cl hr/wk, 3 cr

The student will study and demonstrate knowledge of graphical methods of differentiation, including rates of change, summation of areas, calculation of vector quantities and scalar functions, graphical introduction to derivatives and maximum-minimum values, function of a function, sine and cosine function, natural logarithm function, product and quotient and repeated differentiation, and an introduction to integration including the indefinite integral, the constant of integration, the differential of a function, analysis of motion, areas under graphs, the definite integral, and volume by integration.

Prerequisite: Mth 6.266 or consent of the department.

**PHYSICAL SCIENCE**

**CHEMISTRY**

**T Ch 101, 102, 103** General Chemistry
2 cl, 3 lab hr/wk, 3 cr/trm

A terminal course for liberal arts, other non-science majors.

The student will study and demonstrate his knowledge of scientific method; laws, theories relating to physical properties and chemical changes; and contemporary problems of chemistry in a non-mathematical approach.

Sequence satisfies requirements in pre-nursing and home economics. Terms must be taken in sequence.

Prerequisite: Basic high school math is beneficial.

**T Ch 104, 105, 106** General Chemistry
3 cl, 2/1/1 rec, 3 lab hr/wk, 5/4/4 cr/trm

Introduction to general chemistry. The student will study and demonstrate his knowledge of the basic principles of general chemistry. For science majors with little or no previous background in chemistry. Sequence fulfills prerequisites for Quantitative Analysis (Ch 234), Organic Chemistry (Ch 226, 227), and general chemistry for engineering students.

Prerequisite: High school algebra or its equivalent or consent of the department.

**T Ch 201, 202, 203** General Chemistry
3 cl, 3 lab hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of the scientific method, nature of matter, atomic structure, molecular structure, stoichiometry, gases, liquids,
and solids; (Ch 202): solutions, acids, and basic colloids, kinetics, equilibrium, electrical chemistry, aqueous solutions, nuclear chemistry; (Ch 203): the various groups of elements.

Prerequisite: High school chemistry and one year of high school algebra or consent of the department.

T Ch 204, 205, 206 General Chemistry
3 cl, 1 rec, 3 la, 6 hr/wk, 5 cr/trm

Introduction to general inorganic chemistry. The student will study and demonstrate his knowledge of the basic principles of general chemistry. Recommended for science majors; fulfills general chemistry requirements for pre-professional, life sciences, engineering, and chemistry majors.

Prerequisites: Ch 204: One year of high school chemistry. One year of high school algebra or its equivalent, or the consent of the department. Ch 205: Ch 204; Ch 206: Ch 205 or Ch 106.

Ch 226, 227 Organic Chemistry
3 lec, 6 la, 6 hr/wk, 5 cr/trm

An introductory course in organic chemistry. The student will study and demonstrate his knowledge of aliphatic compounds, aromatic compounds, and their derivatives. This course may be taken by pre-medical, pre-dental, pre-veterinarian, and medical technology students. Chemistry and chemical engineering majors are usually allowed partial fulfillment of their organic chemistry requirements by completing this course sequence.

Prerequisite: Ch 106, 203, 206 or consent of the department.

T Ch 234 Quantitative Analysis
3 lec, 6 la, 6 hr/wk, 5 cr

The student will study and demonstrate his knowledge of the principles of gravimetric analysis, volumetric analysis, and instrumental analysis.

Prerequisite: Ch 106, 203, 206, or an equivalent course.

PHYSICAL SCIENCE

T GS 104, 105, 106 Physical Science
3 cl, 2 la, 2 hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of fundamental principles of physics (GS 104) chemistry (GS 105), astronomy and geology (GS 106). The student will also study and demonstrate his knowledge of the fundamentals of measurement and basic concepts of the scientific method.

No credit will be allowed for GS 104 after a transferable course in physics has been completed, nor in GS 105 after a course in chemistry, nor in GS 106 after a course in geology. A student should also check the catalog of the institution he plans to transfer to after completing his studies at Portland Community College. The course is intended to provide a broad background in physical science for the liberal art student and non-science major.

Prerequisite: One year of high school algebra or its equivalent for GS 104 is advisable; GS 104 for GS 105 and 106; or the consent of the department.

T G 201, 202, 203 Geology
3 cl/hr/wk, 3 cr/trm

(G 201) The student will study and demonstrate his knowledge of the general view of the earth, component parts, forces, present materials of the earth's crust, field study and labs, volcanic, active weathering and soils, erosion; (G 202) glacier action, wind action, deformation of the earth's crust; (G 203) history of the earth and its geology and its life forms.

T G 204, 205, 206 Geology Laboratory
3 lab/hr/wk, 1 cr

Laboratory and field work to accompany G 201, 202, 203.

PHYSICS

T Phy 201, 202, 203 General Physics
2 lec, 2 rec, 2 la, 6 hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of (Phy 201) mechanics; (Phy 202) heat, light, sound; (Phy 203) electricity, and magnetism and modern physics. Introductory physics for science majors.

Prerequisite: Mth 101 (College Algebra) previously or parallel with Phy 201, Phy 201 for Phy 202, and Phy 202 for Phy 203; or consent of the department.

T Phy 207, 208, 209 Introductory Classical Physics
2 lec, 2 rec, 3 la, 6 hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of mechanics, heat, light, sound, electricity, magnetism and modern physics for students majoring in engineering.

Prerequisite: Mth 200, 201, 202 parallel with or previous.

Sci 4.300 Introduction to Physics
3 cl, 2 lab/hr/wk, 4 cr

The student will study and demonstrate his knowledge of the basic principles of practical physics covering matter, measurement, mechanics, and machines. Laboratory time is provided to help clarify the principles of procedures by demonstration and experimentation by the student.

Prerequisite: One year of high school algebra or its equivalent, or the consent of the department.

2 lec, 2 lab/hr/wk, 3 cr/trm

The student will study and demonstrate his knowledge of basic scientific measurements, basic mathematical manipulations applied to the physical world, systems of measurement, elementary problem solving, measurement with basic measuring devices, basic physics and chemistry principles.

This course is designed for the student that has had no physics or chemistry in high school and a minimum of mathematics. If the achievement of the student is low-average or low in math and/or science in high school, he should enroll in these courses for background before enrolling in Physical Science or Chemistry. The two courses may be taken parallel with Mth 4.202 and Mth 4.204. These two courses will also fulfill the two-term physical science requirement for the dental technology student.

Sci 5.441, 5.442 Basic Science Principles
3 cl, 2 lab/hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of the concepts of physics and chemistry that he will find applied in hospital situations and in medical practice. These will include psychological methods of problem solving,
measuring systems, and conversions to other systems, physics, mechanics, simple machines, heat, electricity, magnetism, matter, atomic structure, chemical bonding, chemical reactions, elements, solutions, acids, bases, and salts, radioactivity, organic chemistry, biochemistry, and physiological chemistry.

6.372 3 lec, 2 lab hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of fundamentals of measurement, vectors, motion, momentum, work, machines, angular vectors (I), heat, optics, sound (II); and electricity and magnetism (III).

This course is designed for the technology student.
Prerequisite: Tech Mth 1 (6.261), or the consent of the department.

XT 9.401, 9.402, Physics for X-Ray Technicians
9.403 2 lec, 2 lab hr/wk, 3 cr/trm

This course is for Radiologic Technologists only. The student will study and demonstrate his knowledge of the elements of physics, and specifically electricity, as these apply to medical radiography. Some topics included are D.C. circuits, A.C. circuits, transformers and other electromagnetic devices, valve tubes and solid state rectifiers, radiographic tubes, the complete X-ray circuit, the production and nature of X-radiation, the interaction of X-rays and matter, and radioactivity in medicine.

PUBLIC SAFETY
FIRE PROTECTION TECHNOLOGY

FP 4.853 Blueprint Reading, Sketching for Firemen
2 cl, 2 lab hr/wk, 3 cr

Orthographic and pictorial freehand sketching of building layouts, structural components, maps, schematics and diagrams. Interpretation of standard symbols and drawings used in building construction.

FP 5.237 Fire Investigation
3 cl, 2 lab hr/wk, 4 cr

Effect on fire prevention by isolating cause of fire; study of burning characteristics of combustibles; interpreting clues, burn patterns leading to point of origin; identifying incendiary indications, sources of ignition and materials ignited; preservation of fire scene and evidence.
Prerequisite: Student must be a member of a fire department or law enforcement officer.

FP 5.250 Fire Fighting Skills I
9 lab hr/wk, 3 cr

Individual skills using small tools, minor equipment; practices in forcible entry; use of masks; salvage and overhaul, safety practices.

FP 5.251 Fire Fighting Skills II
9 lab hr/wk, 3 cr

Practice in team skills used in fireground operation including hose and ladder evolutions; salvage; overhaul; rescue; fire attack; other activities requiring team effort.

FP 5.252 Fire Fighting Skills III
1 cl, 6 lab hr/wk, 3 cr
Practices in skills involving multi-company operations; simultaneous activities of ladder, engine and salvage companies; manning large stream appliances; coordinating communications.

FP 5.253 Fire Apparatus and Equipment
2 cl, 2 lab hr/wk, 3 cr

Familiarization with fire apparatus; principles of application; care and preventive maintenance; safe operating practices, emergency and non-emergency; National Board standards.

FP 5.254 Introduction to Fire Protection
3 cl, 2 lab hr/wk, 3 cr

History, development of fire service, safety and security movements. Role of fire service, protection and safety personnel. Ancillary organizations. Identification of general fire hazards, their causes, application of fire protection principles.

FP 5.256 Elementary Science for Fire Fighting
3 cl, 2 lab hr/wk, 4 cr

Characteristics and behavior of fire; fundamentals of physical laws and chemical reactions occurring in fire and fire suppression; analysis of factors contributing to fire cause; rate of burning; heat generation and travel; by-products of combustion; confinement, control and extinguishment.

FP 5.257 Fire Department Hydraulics
3 cl hr/wk, 3 cr

Review of basic mathematics; hydraulic laws and formulae as applied to the fire service; application of formulae and mental calculations to hydraulic problems; fire ground water supply problems; Underwriter's requirements for pumps and accessories.

FP 5.258 Fire Company Organization, Station Management
3 cl hr/wk, 3 cr

Fire company organization and operation; company responsibilities in station; record keeping; station communications and watch; housekeeping and house privileges; tours and public relations; company organization for response to alarms; company morale.

FP 5.260 Hazardous Materials I
3 cl hr/wk, 3 cr

Review of basic chemistry; identification of hazardous materials by color, symbol, and marking; recommended safe practices for storage and handling of solids, liquids, and gases; methods for fire control of these materials.

FP 5.261 Hazardous Materials II
3 cl hr/wk, 3 cr

A study of electrical, exotic metal and space age fuel fires; the effect of the atomic age on the fire service; handling of radioactive materials involved in fire; the use of monitoring equipment; personnel safety practices.

FP 5.262 Fundamentals of Fire Prevention
3 cl hr/wk, 3 cr
Fundamentals of fire inspections including standards, techniques of evaluation of hazards as to degree of the hazard, and practical recommendations. Reports including maps and sketches of each building inspected. On-the-site
inspections of buildings to locate hazards and to recommend safe practices and improvements.

Prerequisites: FP 4.853, FP 5.264.

FP 5.263 Fire Pump Construction, Operation
3 cl, 2 lab hr/wk, 3 cr

For command officers, pump operators. Fire pump hydraulics and measurement including velocity of flow, friction loss; engine and nozzle pressure; discharge; stream range; drafting water; pumping from hydrants; and relaying by hose or tanker.

FP 5.264 Building Construction for Fire Protection
3 cl hr/wk, 3 cr

Classification of buildings; structural features affecting fire spread; effect of fire on structural strength; fire stops and ratings of materials; fire retardants; Sanborn maps.

FP 5.267 Fire Department Communications.
Alerting Systems
3 cl hr/wk, 3 cr

Receiving, dispatching and radio communication procedures; FCC regulations; municipal alarm; telephone and tone-activated alarm: recording messages; tap-out procedures, running cards.

FP 5.268 Fire Service Rescue Practices
2 cl, 2 lab hr/wk, 3 cr

Trains fire company personnel to render emergency service in life saving and rescue work. Development and organization of a rescue company; rescue equipment; training for rescue service; practices and procedure, using a mechanical device for artificial respiration, as well as manual skills.

FP 5.269 Water Distribution Systems
3 cl hr/wk, 3 cr

Water main systems; hydrants: size, gridding, valving, distribution; residential and commercial districts; fire flow requirements; pumping stations; high pressure systems; storage tanks and cisterns; mobile supplies.

FP 5.272 Fixed Systems, Extinguishers
3 cl hr/wk, 3 cr

Portable extinguisher equipment; fire alarm and detection systems; sprinkler systems and standpipes; protection systems for special hazards; explosion release; ventilation systems; inert atmospheres and static bonding.

FP 5.274 Fire Fighting Tactics, Strategy
3 cl hr/wk, 3 cr

Response and size-up; fire ground tactics; analysis and post-mortem; prefire survey and planning; combined operations; mutual aid; disaster planning; problems in unusual fire operations.

FP 5.275 Fire Science I
3 cl, 2 lab hr/wk, 3 cr

Practical physics for skilled fire workers, covering matter measurements, mechanics, and machines. Lab for demonstrations and experiments to clarify principles and procedures covered.

FP 5.277 Fire Science II
2 cl, 2 lab hr/wk, 3 cr

Physical and chemical properties of substances; chemical changes; elements, compounds, gases, chemical combinations; weights and measurements; theory of metals; acids, bases, salts, solvents, solutions and emulsions. In addition, study of carbohydrates; electrochemistry, electrolytes, and electrolysis in their application of chemistry to industry.


FP 5.281 Pump Operation, Fire Streams
2 cl, 2 lab hr/wk, 3 cr

For instructors, command officers, pump operators. Fire pump hydraulics and measurement including velocity of flow, friction loss, engine and nozzle pressure, discharge, water in mains and supply.

Prerequisite: FP 5.263.

FP 5.282 Fire Codes, Related Ordinances
3 cl/hr/wk, 3 cr

Fire code, building, exit, flammable liquid and other fire prevention codes followed by supervised building inspection field trips. Primarily for fire department inspectors.

FP 5.286 Fire Insurance Principles, Grading Schedules
3 cl/hr/wk, 3 cr

Insurance grading schedules and their principles of application. Methods of analyzing fire hazard and the effects of fire hazards on fire insurance rates. A study of the National Board Grading Schedule in detail; other schedules covered briefly. The fundamentals of fire insurance rating methods, loss records, municipal gradings, etc.

FP 5.287 Training Programs, Techniques
3 cl/hr/wk, 3 cr

Purposes of fire service drills and training programs. The development and operation of the departments' training program. Facilities and equipment necessary for modern training. Selecting and training the instructional staff. Psychology of learning; four-step method; lesson planning. Instruction techniques; training aids, tests, workbooks; training objectives and curriculum development; conducting conferences, and meetings.

Prerequisite: FP 5.262.

FP 5.288 Fire Reports, Records
3 cl/hr/wk, 3 cr

Fire department record systems; principles of report writing; applications in the areas of pre-fire surveys; post fire reporting; research and planning.

FP 5.289 Legal Aspects of Fire Protection
3 cl/hr/wk, 3 cr

History and background of laws relating to the fire service; tort liability of municipalities, municipal employees, and members of the fire service; clarification of legal terminology; civil service laws and requirements; pensions, mutual aid, and fire prevention codes.

LAW ENFORCEMENT

EDP 2.100 Survey of Electronic Data Processing
5 cl/hr/wk, 4 cr

First five weeks include general orientation to data processing; need for processed data; history; development of
mechanical and electronic machines for processing data: brief description of equipment, how it operates; possibilities, limitations; how to use machines to best advantage. Last six weeks cover special application of data processing to law enforcement agencies; conversion from manual records system to an automated records system in municipal police departments; projected uses in communications, investigations.

LE 111 Police and Society
3 cl hr/wk, 3 cr
Critical issues of crime facing police and society today: crime, delinquency, and social change; relation of crime and law; reporting of crime; range of criminal behavior; involvement of juveniles in delinquency; major behavioral deviations related to crime; role of the victim; new developments in law enforcement and criminal justice; punishment and correctional substitutes.

LE 112 Administration of Justice
3 cl hr/wk, 3 cr
Review of court systems; procedures from incident to final disposition; principles of constitutional, federal, state and civil laws as they affect law enforcement. Kinds and degrees of evidence, rules governing admissibility of evidence in court.

LE 113 Criminal Law I
3 cl hr/wk, 3 cr
Structure, definition of various crimes; classification of crimes, with descriptions, elements in focus to determine if a crime has been committed and what crime. Union of criminal intent with a criminal act which establishes the corpus delicti is discussed to determine the degree of involvement of the principal or accessory. Capability or incapability of persons to commit a crime either legally or physically because of age, physical conditions, mental condition, intoxication, etc. Exemptions afforded the spouse, attorney, physician, corporations, diplomats, agents, etc., and conditions under which criminal acts are justifiable or excusable. Crimes studied are offenses against persons, home, property, public health, safety and morals, public justice, public peace, federal government, and governments of other nations.

LE 5.204 Defense Tactics I
3 lab hr/wk, 1 cr
Rudiments of self-defense and attack. Boxing, wrestling, hand-to-hand combat.

LE 5.206 Defense Tactics II
3 lab hr/wk, 1 cr
Combat and crowd control for the law enforcement officer. Use of weapons and principles necessary for self-defense and attack in situations requiring use of force in law enforcement.

LE 5.212 First Aid I
2 lab hr/wk, 1 cr
Standard first aid procedures and techniques, designed to meet graduation requirements of all students as well as adults who wish to secure first aid training. Upon successful completion of course, a standard first aid card may be secured.

LE 5.213 First Aid II
2 lab hr/wk, 1 cr
Advanced first aid procedures and techniques to meet the needs of special interest groups who have opportunity to give first aid care frequently in the course of their daily routine. Upon successful completion of course, an advanced first aid card may be secured.

LE 5.214 First Aid III
2 lab hr/wk, 1 cr
Medical self-help training by U.S. Public Health Service, Office of Civil Defense, American Medical Association, to prepare people for survival in national disaster, when services of a physician or health personnel are not available. Also trains First Aid instructors.

LE 5.216 Criminal Investigation I
3 cl hr/wk, 3 cr
Fundamentals of investigation; crime scene search; sketching and recording; collection and preservation of physical evidence; scientific aids, modus operandi; sources of information; interviews and interrogation, follow-up and case preparation.

LE 5.217 Criminal Investigation II
3 cl hr/wk, 3 cr
Collection and preservation of physical evidence; scientific aids: modus operandi; sources of information: interviews and interrogation, follow-up and case preparation.

LE 5.218 Criminal Investigation III
3 cl hr/wk, 3 cr
Familiarizes investigator with technical methods, services available through scientific and other means in identification, chemical and physical examinations, and the many, varied sources of information used in law enforcement.

LE 5.220, 5.221 Patrol and Traffic Procedure
5.210 3 cl hr/wk, 3 cr/trm
Purpose of patrols; perception and observation; protection; prevention; suppression; identification and apprehension; types of patrols; purposes; hazards; assignments; response to emergencies; action to be taken; officer's approach on foot; in an auto, home, building or room; operation of a motor vehicle. Traffic law enforcement, regulation and control, fundamentals of traffic accident investigation. Oregon Motor Vehicle Code.

LE 5.222 Criminal Evidence
3 cl hr/wk, 3 cr
The kinds and degrees of evidence and the rules governing the admissibility of evidence in court.

LE 5.226 Firearms I
2 lab hr/wk, 1 cr
Moral aspects, legal provisions, safety precautions, restrictions covering use of handguns. Familiarization with revolvers and automatic pistols: nomenclature, breakdown, study and practice of the fundamentals of good marksmanship.

LE 5.227 Firearms II
2 lab hr/wk, 1 cr
Law enforcement uses of rifles, shotguns, Thompson sub-machine guns, legal, moral aspects involved. Use of
riffles, shotguns in sports, laws pertaining; combat and silhouette target course.

**LE 5.232 Jail Procedures**
2 cr/hr/wk, 2 cr

Receiving, booking, and searching of prisoners and their care and custody; laws relative to commitments, holding orders, and warrants; duties and responsibilities of the officer as outlined in the law regarding property and belongings of prisoners. Detention of prisoners for outside agencies.

**LE 5.236 Juvenile Procedures**
3 cr/hr/wk, 3 cr

Organization, functions, and jurisdiction of juvenile agencies; the processing and detention of juveniles; juvenile case disposition; juvenile statutes and court procedures.

**LE 5.238 Criminal Law II**
3 cr/hr/wk, 3 cr

Practical application of criminal laws described and studied in 5.208 Criminal Law I. Rights of the citizen; powers and restrictions put upon law enforcement officer by the Constitution, society, departmental rules, courts; immunities from arrest. Course based upon discussion of case studies and court decisions following a topical outline dealing with powers of arrest, search, investigation, the officer's function in civil rights and labor-management situations, and the tort liability of the officer and the agency he represents.

**LE 5.240 Police Report Writing I**
3 cr/hr/wk, 3 cr

Supplies knowledge of the principles of composition and basic forms of writing reports. Why reports are written; types of reports: makeup 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; visual aids in a report.

**LE 5.241, 5.242 Problems of Physical Evidence**
5.243 3 lab/hr/wk, 3 cr/trm

Practical application of photography to problems of investigation, proof, identification and court exhibits; techniques of locating, collecting and identifying physical evidence. Uses and methods of fingerprinting casts and molds; sketching, application of scientific laboratory equipment and techniques to physical evidence.

**LE 5.244 Police Report Writing II**
3 cr/hr/wk, 3 cr

Advanced police report writing course involving investigative reports; presentence investigation reports; prison admissions; oral and written composition for supervisors.

**LE 5.245 Police Community Relations**
3 cr/hr/wk, 3 cr

Gives officer a better understanding of himself and of the people with whom he works. Goal is to improve relationships with the various segments of society, reduce hostilities, grievances between the police and groups in the society.

**LE 5.250 Narcotics and Dangerous Drugs**
2 cr/hr/wk, 2 cr

History of narcotics and drug problems today. Causes of problems; identification of drug addicts and drug abusers; definition and classification of various types of narcotics and dangerous drugs, hallucinogenic drugs and their sources, uses, and symptoms; local, Federal laws and other controls; rehabilitation programs available.

At the discretion of the department, this course, for police officers only, may carry 3 credit hours when it involves an additional 8 hours of legal aspects of narcotics enforcement.

**LE 5.252 Plant and Store Security**
3 cr/hr/wk, 3 cr

Provides an understanding of problems facing retail merchants and private and plant security forces, and outlines modern techniques of handling check cashing, shoplifting, employee thefts, and general security of plants, warehouses and loading docks.

**LE 5.255 Burglary Investigation**
3 cr/hr/wk, 3 cr

Detailed study of burglary investigation. Two principal types of burglary, residential and commercial; many variables of each type, including safe burglary. Limited to detective and law enforcement agency investigation only. Prerequisite: Employment in law enforcement agency detection and investigation.

**LE 5.260 Police Supervision**
3 cr/hr/wk, 3 cr

Supervisory techniques related to law enforcement; planning, reporting, improving, directing and evaluating in a minimal contact situation.

**LE 5.270 Corrections Seminar**
3 cr/hr/wk, 3 cr

A seminar for the law enforcement officer involved in administration, operation of the jail. Examines goals, philosophies and methods in establishment of the jail as a component in the correctional process; security measures; prisoner supervision; jail services; problems of operation. Role of the correctional officer, his relation to the prisoner as a community representative.

**LE 5.271 Jail Management & Post Assessment**
3 cr/hr/wk, 3 cr

A seminar in jail management, using workshop approach to problems of general and specific operational plans for realistic prisoner handling and treatment within the local or country jail setting.

**LE 5.272 Psychology of the Criminal Personality**
3 cr/hr/wk, 3 cr

Basic personality theory and abnormal personality types. Foundation for understanding the criminal, his characteristics, his motivations and his pathology.

**LE 5.173 Scientific Interrogation**
3 cr/hr/wk, 3 cr

Detailed study of proven successful techniques for interrogation. Psychology of interrogation of suspects; fundamentals in questioning of witnesses and victims; taking statements; confessions and declarations; understanding and using instruments for detection of deception.

**LE 5.280 Polygraph Seminar**
2 cr/hr/wk, 2 cr

Historical background and various examination procedures in lie detection. Primarily for law enforcement investi-
pragmatic officers who wish more specific information in polygraphy.

LE 5.282  Fingerprint Identification
3 cl hr/wk, 3 cr

Gives the police officer a basic experience with fingerprints, their uses and values, to enable him to apply this knowledge in a working manner during the course of his duties.

RADIO-TELEVISION BROADCASTING

RT 3.360  Radio-TV Traffic
3 cl hr/wk, 3 cr

Student is introduced to methods of planning and inserting commercials into a programmed schedule for radio and television stations. Emphasis on accuracy, efficiency of operation.

RT 3.362  Radio Station Organization
3 cl hr/wk, 3 cr

Problems of station management. Personnel; development of station image; creation of sales promotions; public relations for stations.

RT 3.364  Writing for Radio-TV
3 cl hr/wk, 3 cr

Radio and television techniques: special concern on the differences between the two. Imagery with words emphasized in radio writing. Coordination of words and visual communications is stressed in television writing. Commercial and regular program format discussed.

RT 3.365  Broadcast Programming
3 cl hr/wk, 3 cr

Fundamentals of radio-television programming: news, sports, community service, documentaries, entertainment.

RT 3.371, 3.372  Broadcasting I & Lab I
3 cl, 9 lab hr/wk, 8 cr/trm

Using control room equipment and operation, the student will study basic practices of radio broadcasting, technical development of the industry, familiarization with FCC rules and regulations. Fundamental station organization, responsibilities; basic radio station technical equipment, operation, maintenance. Introduction to the radio program; various types of programming; development of program format. Lab and lecture must be taken concurrently.

RT 3.373, 3.374  Broadcasting II & Lab II
3 cl, 9 lab hr/wk, 8 cr/trm

Introduction to microphones of various types with advantages and disadvantages of each. Emphasis on speed, accuracy in reading from prepared scripts. Projection of warmth, friendly attitude stressed. Vocabulary improvement with focus on frequently mispronounced words. Pronunciation of foreign languages, classical composers and their compositions. Sponsored programs and advertising. Lab and lecture must be taken concurrently.

Prerequisite: RT 3.371, RT 3.372.

RT 3.375, 3.376  Broadcasting III & Lab III
3 cl, 9 lab hr/wk, 8 cr/trm

Study of technical equipment in a radio station: control room, studio, transmitter. Routine maintenance of all technical equipment; Interpretation of meter readings; procedures for coping with equipment failure. Set-up of studio for live programs. Procedure for entries in engineering, program logs, with emphasis on responsibility required by FCC. Lab and lecture must be taken concurrently.

Prerequisite: RT 3.373, 3.374.

RT 3.390  Media Management
3 cl hr/wk, 3 cr

The student will study television and radio newsroom organization, editorial responsibility, balance in news program content, reporting and editorial standards.

Prerequisite: 2.111 or consent of instructor.

RT 3.392  Studio Organization
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate a knowledge of: function and purpose of equipment in a typical studio; isolating a faulty piece of equipment; methods of circumventing the problem with confidence and a minimum loss of air time.

RT 3.394  Transmitters and Receivers I
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate a knowledge and understanding of the methods of modulation, demodulation, conversion and transmission of amplitude modulated signals. The coordinated lab will emphasize the measurement, tuning and maintenance of the high power circuits.

RT 3.395  Transmitters and Receivers II
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate a knowledge of FM, vestigial sideband and pulse modulation techniques. He will also demonstrate a knowledge of antenna and transmission line theory and measurements.

RT 3.738  Radio-Telephone Operator’s Preparation I
3 cl, 2 lab hr/wk, 4 cr

Fundamentals of electricity and electronic theory in generation, transmission, reception of radio signals. Review of rules, regulations of the FCC for radio operators, radio station licenses. Students will study typical questions and answers used in FCC examinations. Laboratory demonstrations.

Prerequisite: AC/DC electrical theory or consent of instructor.

RT 3.739  Radio-Telephone Operator’s Preparation II
3 cl, 2 lab hr/wk, 4 cr

Advanced electronic theory concerning generation, transmission and reception of radio and television signals. Student will study more advanced questions and answers used in FCC Radio-Telephone Operators First Class License examination. Laboratory demonstrations.

Prerequisite: RT 3.738. Holders of Second Class FCC Radio-Telephone commercial licenses may attend.

JOURNALISM

T J 215  Journalism Laboratory
1 cl hr/wk, 1 cr

Participation in publication of the student newspaper, “The Bridge.” Students gain practical experiences in all
activities necessary in the preparation of materials for the publication of a newspaper.

T J 216 Reporting I
2 cr/hr/wk, 2 cr

Basics of gathering and reporting news, with emphasis on accuracy and clarity of writing. J 215 required concurrently.
Prerequisite: WR 111 or consent of instructor.

T J 217 Reporting II
2 cr/hr/wk, 2 cr

Prerequisite: J 216 or consent of instructor.

T J 218 Copy Editing and Makeup
2 cr/hr/wk, 2 cr

Copy reading, heading writing, proofreading and makeup. (Recommended for advanced positions of “The Bridge.”) J 215 required concurrently.
Prerequisite: J 216 or consent of instructor.

T J 224, 225, 226 Introduction to Journalism
3 cr/hr/wk, 2 cr

Recommended for pre-journalism majors; open to non-majors. Survey and criticism of communication media. Discussion of journalistic techniques. Fall term: News and editorial functions. Winter term: Advertising and public relations. Spring term: Production methods. Terms need not be taken in sequence.

SPEECH and DRAMA

T Sp 111, 112, 113 Fundamentals of Speech
3 cr/hr/wk, 3 cr

Sp 111: Original speeches; analysis and synthesis of material, with emphasis on organizations, outlining and practice to increase student’s poise before an audience.
Sp 112: Greater depth in clear thinking and organization, providing intensive study of persuasive speaking.
Sp 113: Further practice in persuasive speaking and the study of other types of speeches.

For all students regardless of speech objectives. Must be taken in sequence.

T Sp 229 Oral Interpretation
2 cr/hr/wk, 2 cr

Techniques of vocal expression for the coordination of voice and body in the interpretation of modern forms of literature, including the essay, narration, poetry, and drama. Effective communication of meaning to others. For all students who wish to achieve facility in oral expression for special or general purposes.
Prerequisite: Sp 111 or consent of instructor.

T Sp 270 Projects in Public Speaking
2 cr/hr/wk, 1 cr

Instruction and practice for participation in intercollegiate forensic activities: debate, oratory, interpretive reading, extemporaneous speaking, etc. Other speech projects designed for non-competitive students. Course repeatable to 4 credit hours.
Prerequisite: Sp 111 or permission of instructor.

Sp 1610 Public Speaking
3 cr/hr/wk, 3 cr

Principles of oral communication and their application. Stresses analysis and organization of material, evaluation of audience, and speaker’s purpose. Practice through regular assignments related to student’s interest and experience.

T Sp 250 Theatre Workshop
1/3 cr

Provides channels for creativity, self-expression through participation in various aspects of theatre production. Students practice arts and skills of theatre production: acting, directing, stage management, scene design and construction, lighting, properties, costuming, make-up, business and promotion. Participants experience opportunity to work together cooperatively on presentation of theatrical pieces involving students and members of the community.

T Sp 251, 252, 253 Elements of Acting
Lec/lab 5 hr/wk, 3 cr/trm

Each student explores the actor’s resources to develop physical and vocal expressiveness. Experiences lead to an insight into nature, principles of concentration and relaxation, and practical application to stage and other life activities. Practice in process of dramatic characterization, building desired emotional response, establishing belief and truth in a role and its actions.

T Sp 267, 268, 269 Appreciation of Drama
3 cr/hr/wk, 2 cr/trm

Acquaints the student with the theatre as an art form by exploring modern theatre theory and practice. Guided reading of representative plays from important eras in western theatre aids the student to build an understanding of major historical eras of the theatre.

SOCIAL SCIENCE

ANTHROPOLOGY

T Ath 101, 102, 103 General Anthropology
3 cr/hr/wk, 3 cr/trm

Ath 101: Physical characteristics of man as living organism, his biological evolution and present state of development, including nature of race. Ath 102: Archaeological record of fossil man, evolution of culture, survey of world prehistory. Ath 103: Nature of culture, forces at work in organization of a society. Ethnographic data from several cultures illustrate such aspects as language, technology, social organization, government, economics, religion, art.

101, 102 should be taken in sequence; 103 may be taken first or last.

T Ath 207, 208, 209 Cultural Anthropology
3 cr/hr/wk, 3 cr/trm

Meaning of culture for men; its diverse forms, and degrees of elaboration; processes of growth and expansion. Culture is viewed as integrated system of behavior patterns man uses to adapt to his social and natural environment. Ath 207: Divisions of anthropology, nature of culture; significance of language in the transmission of culture; interdependence of heredity, society, environment. Ath 208: Social, political and religious organization. Ath 209: Processes of cultural change; implications for developing nations of technical assistance programs.

Portland Community College
ECONOMICS

T Ec 201, 202, 203  Principles of Economics  3 cr hr/wk, 3 cr/trm

Student is introduced to history, principles of economics including production, exchange, distribution, money and banking, trade regulations, taxation, labor relations, unemployment, business cycles. Terms must be taken in sequence.

T Ec 1.506  Applied Economics  3 cr hr/wk, 3 cr/trm

Special emphasis on current economic issues introduces student to study of economic principles: production, distribution, consumption of goods, services. Topics include business organization, money and credit, price determination, government economic policies, international trade, personal planning.

GEOGRAPHY

T Geog 105, 106, 107  Introductory Geography  3 cr hr/wk, 3 cr/trm

General introduction to geography. Students study: physical geography including landforms, climate, vegetation, soil, surface and underground water; human geography including cultural, economic, urban and population geography; regional geography; techniques and methodology including cartography, aerial photo interpretation and field geography. Terms must be taken in sequence.

HISTORY

T Hist 101, 102, 103  History of Western Civilization  3 cr hr/wk, 3 cr/trm

Students are introduced to human experience from which Western civilization has evolved, emphasizing social, political, economic aspects from ancient times to the present. Hist 101: Pre-history to 1500 A.D. Hist 102: 1500 to about 1850. Hist 103: 1850 to present. Should be taken in sequence; exceptions require instructor approval.

T Hist 201, 202, 203  History of the United States  3 cr hr/wk, 3 cr/trm

Student surveys social, cultural, economic, political history of U.S. from colonial times to present. Hist 201: Period to 1850. Hist 202: 1850 to 1914. Hist 203: 1914 to present. Should be taken in sequence; exceptions require instructor approval.

T Hist 264  History of Black Man in United States  3 cr hr/wk, 3 cr

Survey of Negro’s role in American history, from African, colonial backgrounds to present. Emphasizes social, cultural developments of Reconstruction and their relation to 20th Century problems.

PHILOSOPHY

T Phi 201  Problems of Philosophy  3 cr hr/wk, 3 cr

Student encounters major philosophic problems: nature, scope of knowledge; relationships between individual, society; character of “ultimate reality”, how determined; attempts to demonstrate existence of God; possibility of free will, its relation to responsibility. Rationalism, empiricism, idealism, realism, determinism, fatalism, materialism, and their interrelationships, are considered, with evidence, reasoning leading to specific views, evaluation of merits of arguments advanced.

T Phi 202  Elementary Ethics  3 cr hr/wk, 3 cr

Examination, evaluation of major ethical systems developed by Plato, Aristotle, Epicurus, Hobbes, Kant, and Mill, including consideration of kinds of questions raised, answers proposed, and justification. When possible, these systems are related to contemporary issues.

T Phi 203  Elementary Logic  3 cr hr/wk, 3 cr

Student considers basic features of arguments, proofs, methods of determining truth-value of propositions. Specific linguistic structures are analyzed to show relationships within propositions, between reasons and conclusions, and ways in which fundamental logical principles are used in evaluating logical structures. Modern symbolic techniques are used to show logical relationships, with continuous effort to establish relationships between such techniques and ordinary English usages.

POLITICAL SCIENCE

T Ps 201, 202, 203  American Governments  3 cr hr/wk, 3 cr/trm

Background, structure, functions, processes of American government at national, state, local levels. Ps 201, 202: American national government, stressing constitutional development, distribution of power, institutional structure, processes of American politics. Ps 203: State, local governments, emphasizing federal-state relations, state politics, state-local government relationships, processes of state-local governmental functions. At each stage, Oregon state, local politics studied in detail. Ps 201, 202 must be taken in sequence; Ps 203 should be in sequence, may be taken at any time with instructor approval.

T Ps 205  International Relations  3 cr hr/wk, 3 cr

Nature of relations among states; specific reference to contemporary international issues. Motivating factors such as nationalism, imperialism, economic rivalries, quest for security. Questions of national sovereignty, international cooperation in contemporary situations.

T Ps 206  Comparative European Governments  3 cr hr/wk, 3 cr

Comparative analysis of major European states and political systems including cultural, social foundations, processes of governmental policy-making: Great Britain, France, Germany, USSR.

Prerequisites: Ps 201, 202. Recommended: Hs 101, 102, 103; Hs 201, 202, 203.

Ps 1.600  American Institutions  3 cr hr/wk, 3 cr

For student who wants to increase knowledge, understanding of American social, economic, political institutions.
as they affect the citizen. Contemporary problems focus attention on evolution of U.S. political institutions over the years. Students develop interest in kinds of questions citizens must answer in democratic society.

PS 4.500  Employer-Employee Relations  
3 cl hr/wk, 3 cr


PSYCHOLOGY

T Psy 111  Personality and Development  
3 cl hr/wk, 3 cr

Student learns to identify elements within processes and theories of motivation, learning and development, and personality, demonstrating understanding of concepts and principles by applying knowledge to described situations. Course emphasis is adapted to student interests. For students who do not intend to take Psy 201, 202, 203.

T Psy 201, 202, 203  General Psychology  
3 cl hr/wk, 3 cr/trm

In this study of basic principles, theories of behavior, students study, discuss, brain processes, intelligence, aptitude, psychological measurement and testing, drives and motives, emotions, reactions to stress, perception, learning, personality, response mechanisms, communication processes, attitudes, social processes, frontiers in psychology. Courses must be taken in sequence; sophomore standing recommended.

Psy 1.546  Psychology and Human Relations  
3 cl hr/wk, 3 cr

Specially designed for students majoring in vocational-technical areas. Basic principles of general psychology: heredity, environment, motives, instincts, competition, learning, habits, attitudes, interests; motivation; emotion; personality and character. Concepts studied, discussed, analyzed, applied in light of influence on behavior, and resulting human relations in our society, emphasizing relationships within business and industry.

SOCILOGY

T Soc 204, 205, 206  General Sociology  
3 cl hr/wk, 3 cr/trm

Students are introduced to scientific study of human interaction, especially in groups. Soc 204: Processes of social interaction, nature and meaning of culture, process of socialization, dynamics of population, implications of social stratification. Soc 205: Basic institutions of society - marriage and family, religion, economic and political order, education; social consequences of urbanization and social change. Soc 206: Identifies, describes significant American social problems, analyzes causes, possible solutions: Crime, delinquency, prejudice, alienation, poverty, family instability. Terms should be taken in sequence.

SUPERVISORY DEVELOPMENT

SDP 9.500  Principles of Supervision  
3 cr

Responsibilities of a supervisor in industry: as organization, duties and responsibilities, human relations, grievances, training, rating, promotion, quality-quantity control, management-employee relations, etc.

SDP 9.501  Written Communications for Supervisors  
3 cr


SDP 9.502  Basic Psychology for Supervisors  
3 cr

Assists supervisor in understanding people with whom he works; emphasis on psychological aspects, perceptions, learning processes, emotions, attitudes, and personalities.

SDP 9.503  Oral Communications for Supervisors  
3 cr

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

SDP 9.504  Training Employees  
3 cr


SDP 9.506  Human Relations  
3 cr

Principal application of basic psychology in building better employer-employee relationships through human relations techniques.

SDP 9.508  Labor-Management Relations  
3 cr


SDP 9.512  Work Simplification  
3 cr

Supervisor's responsibility for job methods improvement. Basic principles of work simplification. Administration and problems involved. Motion study fundamentals for supervisors. Time study techniques.

SDP 9.514  Cost Control For Supervisors  
3 cr

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

Portland Community College
The ARTS courses offered at PCC provide a comprehensive and high quality art program for adult education, college lower division, and vocational art education. In our modern society, it is becoming more difficult to separate the fine arts, commercial art and reproduction-printing arts; these areas, in any real situation, will overlap and diffuse and should be interrelated in any instructional program.

For those seeking entry-level employment skills in the general fields of Art, the program provides not only specific courses oriented to major employment opportunities, but also a two-year sequence leading to an Associate of Applied Science degree as a commercial artist. The first year of this program is of a general nature, emphasizing the need for personal exploration in several specialized phases of the commercial art profession. The second year develops commercial art skills in more depth and adds further opportunity for personal growth in artistic appreciations and interests.
# COMMERCIAL ART

This program provides opportunities for the student to develop a high degree of sensitivity to design, color, texture and composition at the same time as he builds skills in the component abilities which are required of a commercial artist.

The emphasis is on practical working techniques which will equip the student with working skills and familiarize him with common commercial art operations, for entry into the profession.

Employment opportunities are found with many commercial firms using illustrations for a variety of purposes, with advertising and media agencies, with daily and weekly newspapers, and with city, county, and federal agencies.

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<tr>
<th>FIRST YEAR</th>
<th>FOURTH TERM</th>
<th>SECOND YEAR</th>
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<td>Drawing</td>
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<td>4.320</td>
<td>Copy Preparation I</td>
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<tr>
<td>Gra</td>
<td>4.314</td>
<td>Camera, Strip and Platemaking I</td>
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<td>Gra</td>
<td>4.300</td>
<td>Introduction to Graphic Reproduction</td>
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<td>Electives</td>
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<td><strong>TOTALS</strong></td>
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| **SECOND TERM** | | | | |
| Art | 196 | Basic Design | 4 | 2 |
| Art | 291 | Drawing | 4 | 2 |
| Gra | 4.320 | Copy Preparation I | 2 | 4 | 6 |
| Bus | 2.303 | Fund. of Advertising Electives | 3 | 3 | 2 |
| **TOTALS** | | | 13 | 4 | 15 |

| **THIRD TERM** | | | | |
| Art | 197 | Basic Design | 4 | 2 |
| Art | 291 | Drawing, Life and Figure Comp. | 6 | 3 |
| Gra | 4.320 | Copy Preparation I | 2 | 4 | 6 |
| Bus | 2.315 | Advertising Layout | 1 | 3 | 2 |
| Drf | 4.127 | Technical Illustration I Electives | 2 | 6 | 5 | 2 |
| **TOTALS** | | | 15 | 13 | 20 |

| **FIFTH TERM** | | | | |
| Drf | 4.130 | Technical Illustration III | 2 | 6 | 5 |
| Art | 290 | Painting, Life and Figure Comp. | 6 | 3 |
| Drf | 4.135 | Airbrush Illustration | 4 | 2 |
| Art | 202 | Survey of Visual Arts | 3 | 3 |
| Art | 2.326 | Applied Graphic Design | 4 | 2 |
| Art | 2.330 | Visual Comp. | 6 | 3 | 3 |
| **TOTALS** | | | 17 | 17 | 18 |

| **SIXTH TERM** | | | | |
| BA | 101 | Introduction to Business | 4 | 4 |
| Drf | 4.131 | Technical Illustration IV | 2 | 6 | 5 |
| Art | 290 | Painting | 4 | 2 |
| Drf | 4.135 | Airbrush Illustration | 4 | 2 |
| Art | 203 | Survey of Visual Arts | 3 | 3 |
| Art | 2.327 | Applied Graphic Design | 4 | 2 |
| **TOTALS** | | | 13 | 14 | 18 |

Portland Community College
GRAPHIC ARTS

The Graphic Arts program at Portland Community College is a one-year sequence emphasizing training in the graphic reproduction field.

The program is divided into two phases:

The first phase, comprising 12 weeks, is a basic course for all students. It gives the students a broad understanding of the graphics industry, with some skill in copy preparation; camera work; stripping; platemaking; offset duplicator operation; collating and binding.

The second phase of the program is for two terms of twelve weeks each. The student selects copy preparation, camera, stripping and platemaking or offset duplication operation for more concentrated study training.

### First Term

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<tr>
<th>Dept.</th>
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<th>Course Title</th>
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### Third Term

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### IMC AIDE

The program for Instructional Materials Aides is currently a one-year program. The IMC Aide is trained in production and use of audiovisual materials and equipment within educational institutions. Job opportunities in this field have been good and are expected to increase significantly.

### First Term

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<th>Dept.</th>
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### Third Term

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Portland Community College
Art Courses

**T Art 110, 111**  
Recreational Use of Arts & Crafts  
4 cl hr/wk, 2 cr/tm

An introductory study of arts and crafts that will involve basic techniques, principles and elements of various art practices based on a series of lecture-demonstrations followed by studio work, covering the maximum possible number of activities.

**T Art 195, 196, 197**  
Basic Design  
4 cl hr/wk, 2 cr/tm

Through this sequence student gains understanding of the basic elements of art inherent in all art forms. **Fall:** Two dimensional exploration of line, shape, scale, value, rhythm, texture and space. **Winter:** Color theory and its relationship to painting and graphic design. **Spring:** Exploration of three dimensional space and the use of the basic elements of art as they relate to architecture and sculpture.

**T Art 201, 202, 203**  
Survey of the Visual Arts  
3 cl hr/wk, 3 cr/tm

Student will investigate the artist’s individual style and way of handling materials in the Visual Arts: painting, drawing, sculpture, architecture, prints, ceramics, etc.

**T Art 204, 205, 206**  
History of Western Art  
3 cl hr/wk, 3 cr/tm

Using the basic history of art as a reflection of man’s interaction with his environment, student will explore, view, evaluate, and react to many art forms. **Fall:** Ancient art, Greek, Roman art. **Winter:** Early Christian, Medieval, Renaissance, Baroque art. **Spring:** 19th, 20th Century art.

**T Art 217**  
Lettering  
3 cl hr/wk, 1 cr

For each alphabet there will be a demonstration and discussion, student practice and a final project. **Fall:** Introduction to Italic letter forms, basic strokes and methods of preparing surfaces for lettering and basic understanding of tools and materials. **Winter:** Introduction to upper and lower case Roman letters, stroke sequence and variations. **Spring:** Introduction to Uncial, Rustic, Blackletter, Bartered, Legend, Humanist Bookhand and Spanish Rondo.

**T Art 255**  
Ceramics  
6 cl hr/wk, 2 cr

Student experiences individual instruction in throwing, molding and hand-building clay forms, in glaze mixing and surface design and participates in stacking and firing the kiln.

**T Art 257**  
Jewelry, Metalsmithing  
1 cl, 5 lab hr/wk, 3 cr

You will design, handwork, form, shape, solder, cast and finish non-ferrous metals, and attach your products to other materials, in this introductory course to acquaint you with the design, processes and materials used in jewelry and metal objects. 3 terms.

**T Art 290**  
Painting  
4 cl, 2 lab hr/wk, 2 cr

Individual instruction in oil or acrylic mediums, appropriate to the background of each student. **Fall:** Still life with emphasis on space organization, color structure and light. **Winter:** Problems in design and figure composition with stress placed on experimentation with other media used in painting. **Spring:** Introduction to problems of landscape painting.

**T Art 290**  
Painting: Life & Figure Composition  
6 cl hr/wk, 3 cr

Students study human form from professional models, to acquire knowledge of human figure as expressed in art. You will experiment with new surface techniques. Stress is on growth, development of your concepts in painting.  
Prerequisite: 6 hrs PAINTING with grade of C or better.

**T Art 291**  
Drawing  
4 cl hr/wk, 2 cr

**Fall:** You will experience basic drawing problems to introduce concept and techniques needed in composing a drawing, using a variety of materials, media. **Winter:** Continues basic concepts with composition from costumed figures; emphasizes expressive use of materials. **Spring:** Stresses problems in freehand perspective, structural investigation of natural forms, exploration with concern for observation, awareness.

**T Art 292**  
Water Color  
4 cl hr/wk, 2 cr

Technique and use of water color; special attention to characteristics as a painting medium. Emphasis on composition in relation to surrounding areas, picture format.  
Prerequisite: 6 hrs DRAWING or PAINTING with grade of C or better.

**T Art 293**  
Sculpture  
6 cl hr/wk, 2 cr

The student explores the basic concepts of welding, modeling, constructing and carving three-dimensional forms in clay, plaster, metal and wood.

**Art 2.312**  
Showcard Lettering  
1 cl, 3 lab hr/wk, 2 cr/tm

Introduction to showcard and poster layout with instruction in brush and pen lettering, using tempera paints and ink.

**Art 2.315**  
Advertising Layout  
1 cl, 3 lab hr/wk, 2 cr/tm

Students will develop ideas and make roughs pertaining to a variety of approaches to advertising such as magazine, newspaper, television, etc.

**Art 2.316**  
Advertising Copywriting  
2 cl, 2 lab hr/wk, 3 cr

Student learns to develop copy that communicates and sells through magazine, newspaper media. Emphasis on practice on planning and writing copy for individual ads and for complete campaigns.

**Art 2.322**  
Color, Line, Design  
1 cl, 3 lab hr/wk, 2 cr

A study of the elements of design: color, line, texture,
shape, scale, rhythm and value. The student will make use of the elements in development of designs for merchandising and display applications.

**Bus 2.303 Fundamentals of Advertising**

3 cl hr/wk, 3 cr

General principles and broad viewpoints, rather than specific techniques, to interest and inform you as an introduction to advertising practices, and to stimulate further study of advertising as a career.

**Graphic Arts**

**Gra 4.300 Introduction to Graphic Reproduction**

2 cl hr/wk, 2 cr

Survey of various printing processes and their uses in industry. Development, production and distribution of graphic materials; kinds of printing industries; job opportunities in graphics reproduction; employer-employee attitudes and responsibilities; personal work habits; safety measures; new developments; ethics of the trade.

**Gra 4.302 Bindery Methods**

1 cl hr/wk, 1 cr

Develops understanding and skill in collating, stitching, padding, bookbinding, diecutting, cutting, trimming, and folding.

**Gra 4.305 Papers and Inks**

2 cl hr/wk, 2 cr

Accquaints students with various papers, inks used in graphics reproduction industry.

**Gra 4.306 Pricing and Estimating**

2 cl hr/wk, 2 cr

Students learn estimating and pricing practices used in the industry, including elements contributing to total cost; the commercial shop; in-plant or captive shop; trade shop; and practical problems in estimating and pricing.

**Gra 4.308 Offset Press Operation I**

2 cl, 4 lab hr/wk, 2 cr

Acquaints the student with operation of an offset duplicator. Principles of lithography; feeder mechanism; feeder set-up and adjustment; delivery system; water and ink system; printing unit; maintenance.

**Gra 4.310 Offset Press Operation II**

6 cl, 6 lab hr/wk, 6 cr

Develops skill and understanding in operation of offset duplicator. Emphasis on settings for various sizes and weights of paper; the use of pressroom tools; press problems and solutions as they pertain to papers and inks; blending; and receiving plate images.

**Gra 4.312 Offset Press Operation III**

6 cl, 6 lab hr/wk, 6 cr

Develops skill and understanding in register and sheet control; printing both sides of sheet; ink mixing; plate and blanket packing and multi-color register. Advanced press problems and solutions.

**Gra 4.314 Camera, Stripping, Platemaking I**

2 cl, 4 lab hr/wk, 2 cr

Principles of photography. Camera operation, processing, proofs, layout requirements, negative position, and plate-making.

**Gra 4.316 Camera, Stripping, Platemaking II**

6 cl, 6 lab hr/wk, 6 cr

Advanced line work, principles of halftones, filters, stripping of multiple forms, and stripping and making of multiple exposure plates.

**Gra 4.318 Camera, Stripping, Platemaking III**

6 cl, 6 lab hr/wk, 6 cr

Special handling and control of halftones, duotones, stripping, halftones and screen tints, register techniques, use of "thins and spreads" and knockouts, techniques in care in making close register plates, adding and deleting work on plate, and general platemaking problems and solutions.

**Gra 4.320 Copy Preparation I**

2 cl, 4 lab hr/wk, 2 cr

Introduction to hot type; type styles; faces and sizes; tools; layout and design; ruled forms; cold type setting, paste-up; proofreading.

**Gra 4.322 Copy Preparation II**

6 cl, 6 lab hr/wk, 6 cr

Development of skills in cold type setting; equipment; layout and design; paste-up procedures.

**Gra 4.324 Copy Preparation III**

6 cl, 6 lab hr/wk, 6 cr

Develops understanding and skill in typing, layout and design, cold type setting, use of hot type proofs, and advanced paste-up procedures.

**Instructional Materials Aide**

**IMC 4.900 Instructional Materials Orientation**

2 cl hr/wk, 2 cr

The student learns role of instructional materials in the learning process. He studies and works with programmed instruction, television, multi-media presentations, single-concept films, slide-tape shows. The student achieves understanding by completing assigned assignments of a creative nature, through observation of films, and latest teaching techniques demonstrated by the instructor.

**IMC 4.902 Audio-Visual Equipment I, II**

4 cl hr/wk, 2 cr

The student learns to operate, make minor repairs and service basic audio-visual equipment: 16mm projectors, filmstrip projectors, tape recorders, record players, slide projectors, opaque projectors, video tape recorders, public address systems. The student demonstrates ability by examinations under observation of the instructor, by making actual equipment set-ups for staff members.

**IMC 4.904, 4.905 Instructional Materials Production**

4.906 1, II, III

3 cl, 12 lab hr/wk, 5 cr

The student learns to prepare overhead transparencies, color slides, displays; construct models, mockups; prepare spirit duplicating masters, mimeograph stencils; make color changes on mimeograph equipment; prepare audiotape recordings. The student demonstrates ability by assignments...
in each area on current topics, with products evaluated as acceptable to an employer.

**IMC 4.911 Survey of School Library Procedures**
2 cl hr/wk, 2 cr
Survey of fundamental principles for operation of a school library. Objectives, budget, housing, personnel, materials and equipment, state and national standards.

**IMC 4.912 School Library Materials**
2 cl hr/wk, 3 cr
Emphasizes selection, evaluation of book and non-book library materials; with attention focused on selection aids needed for appropriate school materials.

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**Photography**

**Pho 9.100 Photography I**
Darkroom operations; fundamentals of visual communications; development of basic photographic skills.

**Pho 9.102 Photography II**
Shooting and processing assignments emphasizing importance of technical skills in journalism, public relations, general commercial photography.

**Pho 9.104 Photography III**
Use of wide-angle lenses; portraits and close-ups; industrial scenes. Strong emphasis on meeting deadlines. Prepare students for commercial newspaper and news magazine, free-lance and commercial photography.
Business Education courses at Portland Community College are organized in broad areas, with each area designed to prepare the student for an occupational field rather than a single job.

Programs have been developed for both full-time and part-time students, with various classes in session from 7 a.m. until 10 p.m. to accommodate both day and evening students.

Instructors have been selected for occupational competency, educational background, and special abilities in working with students seeking high levels of skill for employment and career progress.

Business Education courses offer preparation ranging from entry level skills up to two-year associate degree programs preparing the student for advanced office responsibilities. Many courses also prepare students for civil service examinations.

Available are two levels of Accounting-Bookkeeping preparation; two options in General Office work, Clerk-Typist and General Secretarial; specialized secretarial training as Legal Secretary and Medical Secretary; and additional work in Touch Shorthand, and Cashiering & Checking. A refresher Multi-Clerical training course is also offered, including various business education areas and machines as needed.
A certificate of Training is awarded to those who complete 45 term credits of work in Applied Accounting, and an Associate in Applied Science degree is conferred on those who complete 90 term credits, including those courses in the Certificate program and those included in the Principles of Accounting program.

### Applied Accounting

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Portland Community College . . .

*The "Open Door" Educational Shopping Center*
This program prepares the student for employment as a clerk-typist for work of a general nature in typical office activities, or as a general secretarial worker in the same situation. The courses provided also prepare the student for civil service examinations in various clerical fields. A Certificate of Training is issued upon completion of 45 term credits.

### GENERAL OFFICE

(Orcl-Typist)

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### GENERAL SECRETARIAL

(Orclary)

(To complete in one year a student must take SS 122, SS 2.512, and SS 113 first term; otherwise an additional term is necessary to complete requirements for a secretarial certificate)

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### THIRD TERM

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*Applied Stenography (SS 213) is also offered for those who wish to advance their shorthand skills beyond SS 212 through advanced projects, dictation and transcription.
LEGAL SECRETARY

Specialized courses in the training of legal secretaries are offered leading to an Associate in Applied Science degree.

The program offers a broad background in secretarial training, combined with specialized experiences preparing the student for work requiring knowledge and understanding of legal terminology and practices.

A special feature of the program is the Legal Secretary Work Experience Laboratory and Seminar, which provides a practical working experience in which the student applies methods, techniques, background and knowledge from the course sequence, in a real working situation, yet under supervision and guidance through the seminar experience.

Upon completion of the two-year program, the student is not only skilled in basic secretarial techniques but also experienced in specialized legal situations, and ready for immediate employment in a variety of working situations within the legal profession and allied businesses.

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| **SECOND TERM** | **FIFTH TERM** |
| **Dept.** | **Cr. No.** | **Course Title** | **Class/Lab Hrs/wk** | **Cr. Hrs.** | **Dept.** | **Cr. No.** | **Course Title** | **Class/Lab Hrs/wk** | **Cr. Hrs.** |
| **Wr** | 2.302 | Business English II | 3 | 3 | SS | 2.560 | Office Management | 3 | 3 |
| **SS** | 122 | Typing | 5 | 2 | BA | 226 | Business Law | 3 | 3 |
| **SS** | 112 | Stenography | 5 | 3 | SS | 212 | Applied Steno (Legal) | 6 | 3 |
| **SS** | 2.512 | Office Procedures I | 2 | 2 | SS | 2.606 | Legal, Medical Terminology | 2 | 4 |
| **Sp** | 1.610 | Public Speaking | 3 | 3 | Elective .. | 3 | 3 |
| **Bus** | 2.103 | Applied Accounting II | 3 | 3 | **TOTALS** | | | 12 | 8 |

| **THIRD TERM** | **SIXTH TERM** |
| **Dept.** | **Cr. No.** | **Course Title** | **Class/Lab Hrs/wk** | **Cr. Hrs.** | **Dept.** | **Cr. No.** | **Course Title** | **Class/Lab Hrs/wk** | **Cr. Hrs.** |
| **SS** | 123 | Typing | 5 | 2 | SS | 2.520 | Legal Office Procedure | 2 | 2 |
| **SS** | 113 | Stenography | 5 | 3 | SS | 213 | Applied Steno (Legal) | 6 | 3 |
| **SS** | 2.514 | Office Procedures II | 2 | 2 | SS | 2.519 | Business Relations | 3 | 3 |
| **Psy** | 1.546 | Psychology and Human Relations | 3 | 3 | SS | 2.610 | Work Experience Lab, Seminar (Legal Secretary) | 1 | 15 |
| **SS** | 215 | Business Machines | 5 | 2 | **TOTALS** | | | 6 | 23 |
| **Bus** | 2.105 | Applied Accounting III | 3 | 3 | | | | | |
| **TOTALS** | | | 8 | 17 | | | | | | 16 | 12 | 12 |
MEDICAL SECRETARY

Specialized courses are offered in the training of medical secretaries leading to an Associate in Applied Science degree. The program offers a broad background in secretarial training, combined with specialized experiences preparing the student for work requiring knowledge and understanding of medical terminology and practices.

A special feature of the program is the Medical Secretary internship and Seminar which provides a practical working experience in which the student applies methods, techniques, background and knowledge from the course sequence, in a real working situation, yet is under supervision and guidance through the Seminar experience.

Upon completion of the two-year program, the student is not only skilled in basic secretarial techniques but also experienced in specialized medically-oriented situations, and ready for immediate employment in a variety of working situations within the medical profession and allied businesses.

### FIRST YEAR

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Portland Community College
Accounting — Bookkeeping

T BA 2.110, 211  Principles of Accounting  
3 cr hr/wk, 3 cr/trm

The student will gain an understanding of the accounting cycle; reporting conditions of a business on the balance sheet; measuring of changes in condition on the income statement according to principles of accrual accounting. Recording of financial data for service, merchandising businesses, handling cash; managing accounts receivable, with emphasis on control techniques which protect property, provide data for management decisions.

Prerequisite: 1 yr. high school bookkeeping or Bus 2.101.

T BA 2.112, BA 212  Principles of Accounting  
3 cr hr/wk, 3 cr/trm

You will learn to analyze impact of inventory valuation methods on reported income and on balance sheet: control of expenditures; recording of expenses by responsibility lines. Problems of recording acquisition, use of plant and equipment; effect of depreciation methods on income statement, balance sheet. You will be able to examine critically reporting of owners’ interests in partnership, corporate forms of business organization, and evaluate interests of long-and-short-term creditors.

Prerequisite: BA 211 or BA 2.110.

T BA 2.114, BA 213  Principles of Accounting III  
3 cr hr/wk, 3 cr/trm

The student will learn to relate accounting principles to solution of management accounting problems, analyzing records for management, interpreting significance as basis for planning, control, decision-making.

Prerequisite: BA 212 or BA 2.112.

Bus 2.101  Applied Accounting I  
3 cr hr/wk, 3 cr

Student learns principles of double-entry bookkeeping, general journals and ledgers, business forms, simple financial statements, completion of bookkeeping cycle.

Bus 2.103  Applied Accounting II  
3 cr hr/wk, 3 cr

Student learns principles of special journals, ledgers, business forms, and demonstrates use in typical bookkeeping transactions.

Bus 2.105  Applied Accounting III  
3 cr hr/wk, 3 cr

An advanced course in basic bookkeeping-accounting. You will learn basic elements of analysis and interpretation: functions of entries for promissory notes; adjustments for prepaid, unearned, accrual items; depreciation of assets; voucher system; payroll records; property sales; taxes.

Bus 2.116  Cost Accounting  
3 cr hr/wk, 3 cr

Understanding basic cost accounting methods, procedures to provide data for controlling, analyzing costs, profits, for management planning and decision.

Prerequisite: BA 2.113

Bus 2.405  Analysis of Financial Statements  
3 cr hr/wk, 3 cr

You will learn to use basic principles, methods of analysis, interpretation of financial and operating reports of commercial and industrial businesses as basis for appraisal of operating efficiency, investment value, credit rating of particular firms and operations.

Prerequisite: BA 213

Bus 9.700  Credit Union Accounting  
2 cr hr/wk — 9 wks, 1 cr

You will learn how to participate in the establishment, maintenance of a simple system of financial records for operation of a credit union.

Prerequisite: Activity in, referral by a credit union.

SS 2.111  Essentials of Accounting  
3 cr hr/wk, 3 cr

Applying principles of record keeping or basic bookkeeping to financial operation of a professional or service enterprise.

Clerical — Secretarial

Bus. 2.519  Business Relations  
3 cr hr/wk, 3 cr

Student learns practical application of business etiquette; effective public, employee-employer relations; business customs, ethics; social side of business. Stresses importance of personality impact, relationships with others, self-appraisal and self-improvement.

T SS 2.541, SS 111  Stenography  
5 lab hr/wk, 3 cr/trm

You will learn basic principles of Gregg Diamond Jubilee shorthand, and will develop ability to read shorthand outlines rapidly, and write shorthand from text at 50 words/minute. Rhythm, legibility in forming characters stressed.

T SS 2.543, SS 112  Stenography  
5 lab hr/wk, 3 cr/trm

Intermediate Gregg D/J shorthand. You will develop ability to take unpreviewed dictation for 3 minutes at 60 to 90 words/minute, and transcribe with minimum error.

T SS 2.545, SS 113  Stenography  
5 lab hr/wk, 3 cr/trm

You will develop shorthand skills, abilities to speeds of 70/100 words/minute of unpreviewed dictation for 3 minutes, transcribing with minimum error. You will demonstrate these skills, abilities by recording letters, transcribing them in mailable form.

SS 2.501, SS 121  Typing  
5 lab hr/wk, 2 cr/trm

You will learn to type about 30 words/minute for 3 minutes, using touch system. You will demonstrate proficiency by setting up, typing simple tables, letters, tabulations, manuscripts.

T SS 2.503, SS 122  Typing  
5 lab hr/wk, 2 cr/trm

You will develop your touch speed up to 50 words/minute for 5 minutes. You will be able to produce neat, accurate work in minimum time and type manuscripts, different styles of letters, tabulations, business forms.

Prerequisite: Typing speed 30 wds/min.
T SS 2.505, SS 123 Typing
5 lab hr/wk, 2 cr/trm

You will develop your skills, abilities sufficiently to plan, type correspondence, business forms, reports, manuscripts, tabulations with efficient use of time and materials. You will acquire experience in proofreading, placement to assume responsibility for determining acceptability, mailable-ability of your work.
Prerequisite: Typing speed 50 wds/min., knowledge of materials in SS 121, SS 122.

T SS 124 Typing
5 lab hr/wk, 2 cr

In this course you will gain experience, control, confidence, endurance necessary for accurate typing. You will gain in accurate typing speed to meet the proficiency standards for SS 122, OR, through drills you will gain speed, accuracy to meet or exceed standards for SS 123.

T SS 211 Applied Stenography
6 lab hr/wk, 3 cr

You will build your shorthand skills to 80-110 wds/minute for 3 minutes, transcribing with minimum error, from unpreviewed dictation. You will learn to transcribe letters into mailable copy rapidly, from your shorthand notes, working with business forms, carbons, envelopes.
Prerequisite: SS 133 and SS 123 or equivalents.

T SS 212 Applied Stenography
6 lab hr/wk, 3 cr

You will increase your shorthand speed to 90-120 wds/minute for 3 minutes, from unpreviewed dictation, transcribing with minimum error at 25-45 wds/minute into mailable letter form. Advanced vocabulary, business forms.

T SS 213 Applied Stenography
6 lab hr/wk, 3 cr

Your shorthand speeds will reach 100-140 wds/minute 3 minutes, from unpreviewed dictation, transcribing with minimum error at 35-50 wds/minute into mailable letter form. You will learn expert speed shortcuts.

T SS 2.521, SS 215 Business Machines
5 lab hr/wk, 2 cr/trm

You will learn to perform the 4 fundamental arithmetic processes on five office machines: ten-key adding, full-keyboard adding, printing calculator, rotary calculator, key-drive calculator.
Prerequisite: Math 2.308.

T SS 2.523, SS 216 Business Machines
5 lab hr/wk, 3 cr/trm

Advanced arithmetical calculations: percentage, reciprocals, proration, interest, merchandising, on at least two different calculators. Optional problems using bookkeeping machines.
Prerequisite: SS 215 or SS 2.521.

Multi-Clerical Training

This is a “brush-up” or refresher course, alternating between subjects and machines as desired, for self-improvement. A certificate of achievement can be issued showing what has been studied and the degree of proficiency attained, such as in typing or taking dictation in shorthand or the number of digits per minute on the ten-key adding machine. No credit is given toward a degree. Students are enrolled in this program for a minimum of four weeks with the possibility of extending the training for a longer period, if desired. Tuition is based on clock hours of attendance. Initial payment is made for four weeks in advance. Thereafter for at least two weeks in advance.

Legal — Medical

SS 2.507, SS 2.509 Medical Typing I, II
5 lab hr/wk, 3 cr/trm

Taken concurrently with Medical Terminology I and II, this course will equip you to type, with a high degree of understanding and accuracy, medical case histories, clinical reports, medical insurance forms, and medical correspondence and research materials.
Prerequisite: Accurate typing, 50 wds/min.

SS 2.508 Legal Typing
2 cl, 3 lab hr/wk, 4 cr

You will learn to type accurately, rapidly rough drafts, briefs, forms, transcripts, documents, correspondence related to the legal field.
Prerequisite: Accurate typing, 50 wds/min.

SS 2.512 Office Procedures I
2 cl, 2 lab hr/wk, 3 cr

This course will qualify you for an entry-level clerical position. You will learn to fill out, route common business forms; to type routine correspondence; to handle mail; to file and find quickly a variety of business records. You will learn how to create good will by effective telephone service.
Prerequisite: SS 121 or consent of instructor.

SS 2.514 Office Procedures II
2 cl, 2 lab hr/wk, 3 cr

You will learn to locate, assemble data in a variety of arrangements; compose routine correspondence; arrange for meetings, conferences; and transcribe correspondence from equipment. Orientation to responsibilities, opportunities in specialized secretarial fields such as medical, legal, executive. Skills will qualify you as clerk-typist, or stenographer where machine transcription is sufficient.

SS 2.520 Legal, Office Procedures
2 cl, 2 lab hr/wk, 3 cr

You will learn operations in a law office: handling legal instruments; correspondence; taking dictation, typing, filing; telephone techniques; financial records; meeting the public. You will develop punctuality, neatness, dependability, accuracy, resourcefulness, over-all efficiency.

SS 2.517 Medical Office Procedures
2 cl, 2 lab hr/wk, 3 cr

You will master medical office routines: telephone techniques; receiving patients; filing; handling routine correspondence; keeping financial records; selecting, ordering office supplies; handling the public with tact, understanding, discretion. You will develop punctuality, neatness, dependability, accuracy, resourcefulness, over-all efficiency.
Prerequisite: Medical Typing I; Office Procedures I

SS 2.529, SS 2.530 Medical Terminology I, II
3 cl, 2 lab hr/wk, 4 cr/trm

Building on a base learned in Anatomy and Physiology (taken prior to or concurrently), you will learn to identify,
pronounce, spell medical stems and affixes, and apply spelling, pronunciation, meaning of work components to medical terms referring to the human body in health or disease. You will learn to recognize each medical word as a part-of-speech and use it correctly; you will become familiar with the medical dictionary and learn to divide medical words correctly.

SS 2.531 Medical Transcription
4 lab hr/wk, 2 cr
Through specialized lab experiences you will build your accurate transcription speeds, from machine dictation, to 780 wds/hr, national average for medical secretaries. You will develop absolute respect for confidential information, errorless transcription, efficient handling of assigned work.
Prerequisite: Medical Typing I, II.

SS 2.538 Medical Secretary Internship & Seminar
1 cl, 15 lab hr/wk, 3 cr
This seminar and internship places you in the office of a practicing physician, preparing you through actual experience under guidance and supervision to seek employment in a medical office. You will improve your skills, during 15 lab hours/week in receiving patients, answering the telephone, typing case histories and correspondence from recorded or shorthand dictation, keeping records, preparing the examination room, and assisting the doctor.
Prerequisite: 6th term status in Medical Secretary program.

Touch Shorthand

Machine Shorthand SS 2.550, 2.551, 2.552

A three-term sequence in Touch Shorthand is being offered consisting of two class hours per day five days per week. There are many opportunities for employment as court reporters, executive secretaries, technical-scientific secretaries, and legal secretaries. See the course descriptions under the Clerical section for an explanation of this program. This may be considered an area of specialization following the acquiring of basic clerical skills.

SS 2.550 Touch Shorthand I (Stenograph)
& Scripthand
5 cl, 5 lab hr/wk, 6 cr
Working with the Stenograph, you will learn to produce words on the keyboard from their sound. You will study practice letter combinations, abbreviations, theory of the phonetic system of Touch Shorthand. Your experiences will produce the ability to take dictation at 40-80 wds/minute and to read your printed tapes rapidly. You will establish correct foundations for transcribing.

SS 2.551 Touch Shorthand II (Stenograph)
& Scripthand
5 cl, 5 lab hr/wk, 6 cr
Your skills will increase to 60-120 wds/minute dictation and transcription at 60% of your typing rate, with 98% accuracy. You will learn to use both time and materials effectively, and display satisfactory office techniques.

SS 2.552 Touch Shorthand III (Stenograph)
5 cl, 5 lab hr/wk, 6 cr
You will build towards higher levels of speed and accuracy, reaching 80-140 wds/minute for dictation and transcription at 80% of your typing rate, with 98% accuracy. In addition, you will develop desirable office characteristics of punctuality, dependability, accuracy, thoroughness, efficiency, cheerfulness, and pride in your work. SS 211 offers more advanced dictation.

SS 2.560 Office Management
3 cl, 2 lab hr/wk, 4 cr
You will learn the role of administrative office management, organizing and planning for office operations, controlling office costs, responsibilities for leadership, techniques of desirable human relations, and the application and impact of business information systems.

SS 2.570 Transcription
1 cl, 3 lab hr/wk, 3 cr
You will learn to transcribe letters of varying difficulty and length with emphasis on punctuation, spelling, grammar on personalized “learn-at-your-own-rate” basis.

SS 2.575 Office Operations
6 lab hr/wk, 3 cr
You will learn office operations by actually performing clerical or secretarial tasks in a model office supportive to the accounting, purchasing, sales, production and records departments.

SS 2.601 Legal Terminology
3 cl, 2 lab hr/wk, 4 cr
Specialized learning experiences teach you to identify, pronounce, spell commonly used legal terms and apply your knowledge to usual legal situations and transactions.

SS 2.606 Medical Terminology for the Legal Secretary
3 cl, 2 lab hr/wk, 4 cr
You learn to identify, pronounce, spell the more usual and advanced legal terms and the more commonly used medical terms applied in law practice.

SS 2.610 Legal Office Work Experience, Seminar
1 cl, 15 lab hr/wk, 3 cr
This seminar and internship places you in the office of a practicing attorney, preparing you through actual experience under guidance and supervision to seek employment in a law office. You will put into practice office skills, techniques and knowledge learned in your legal secretarial courses, and you will experience other situations specific to the office where you intern, during 15 lab hours/week.
Prerequisite: 6th term status in Legal Secretary program.

Portland Community College
Business Management courses at Portland Community College include not only work leading to an Associate of Applied Science degree in Business Management, but also a variety of programs in Merchandising, Real Estate and Property Appraisal, and Transportation Management.

Programs have been development for both full-time and part-time students, with various classes in session from 7 a.m. until 10 p.m. to accommodate both day and evening students.

Instructors have been selected for their special working experiences and occupational competencies as well as for their educational training and their ability to work with mature students as well as with younger ones.

Courses offer preparation for broad areas, with each area designed to prepare the student for an occupational field rather than a single job.

Employment opportunities are constantly growing for the trained person in business, industry, real estate, transportation and other areas. Background, skills and knowledges gained in study of these areas is a strong basis for development of your own business enterprise.
This program is designed to provide students interested in business management the basic knowledge and skill required for successful entry into business as junior executives or supervisory trainees. An Associate in Applied Science degree is conferred upon completion of 90 term credits.

<table>
<thead>
<tr>
<th>FIRST TERM</th>
<th>FIRST YEAR</th>
<th>FOURTH TERM</th>
<th>SECOND TERM</th>
<th>FIFTH TERM</th>
<th>SIXTH TERM</th>
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<td>Psy</td>
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A supplementary seminar class is offered at various times in Practical Management for Small Business (Bus 9.200). It meets for 3 hours per week and carries 3 credits.
This curriculum is designed to equip the individual with the fundamental knowledge and techniques of merchandising. This knowledge may be applied to a number of merchandising pursuits in retail, service and specialty selling. An Associate in Applied Science degree may be earned by completion of 90 term credits.

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<th>FIRST YEAR</th>
<th>SECTION</th>
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| SECOND TERM|         |              | Wr 2.302      | 3          | 3                |        |
|            |         |              | Mth 2.308     | 3          | 3                |        |
|            |         |              | Bus 2.305     | 3          | 3                |        |
|            |         |              | Bus 2.303     | 3          | 3                |        |
|            |         |              | Sp 1.610      | 3          | 3                |        |
|            | TOTALS  |              |               | 15         | 15               |        |

| THIRD TERM |         |              | Bus 2.304     | 3          | 3                |        |
|            |         |              | Bus 2.315     | 1          | 3                | 3      |
|            |         |              | Psy 1.546     | 3          | 3                |        |
|            |         |              | Ec 1.506      | 3          | 3                |        |
|            |         |              | Bus 2.341     | 1          | 15               | 3      |
|            | TOTALS  |              |               | 11         | 18               | 15     |

| FOURTH TERM|         |              | Bus 2.400     | 3          | 3                |        |
|            |         |              | Bus 2.101     | 3          | 3                |        |
|            |         |              | BA 2.110 or   | 3          | 3                |        |
|            |         |              | Bus 226       | 3          | 3                |        |
|            |         |              | Bus 2.215     | 3          | 3                |        |
|            |         |              | Bus 2.203     | 3          | 3                |        |
|            |         |              | BA 2.404      | 5          | 5                |        |
|            |         |              | SS 2.521 or   | 5          | 5                |        |
|            | TOTALS  |              |               | 13         | 20               | 17     |

| FIFTH TERM |         |              | BA 2.402 or   | 3          | 3                |        |
|            |         |              | Bus 226       | 3          | 3                |        |
|            |         |              | Bus 2.215     | 3          | 3                |        |
|            |         |              | Bus 2.203     | 3          | 3                |        |
|            |         |              | BA 2.404      | 5          | 5                |        |
|            |         |              | SS 2.521 or   | 5          | 5                |        |
|            | TOTALS  |              |               | 14         | 5                | 16     |

| SIXTH TERM |         |              | EDP 2.100     | 4          | 1                | 4      |
|            |         |              | Bus 2.317     | 2          | 2                | 3      |
|            |         |              | SS 2.501 or   | 2          | 2                | 3      |
|            |         |              | Bus 2.314     | 3          | 3                |        |
|            |         |              | SS 2.16       | 3          | 3                |        |
|            |         |              | Bus 2.343     | 1          | 15               | 3      |
|            | TOTALS  |              |               | 10         | 26               | 16     |
## MERCHANDISING

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<td>BA 2.145</td>
<td>Introduction to Business</td>
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<td>Bus 2.305</td>
<td>Principles of Retailing</td>
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<td>Bus 2.303</td>
<td>Fundamentals of Advertising</td>
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<tr>
<td>Bus 2.304</td>
<td>Fundamentals of Marketing</td>
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<tr>
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## CLERICAL

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<tr>
<td>Bus 2.101, 2.103</td>
<td>Bookkeeping</td>
<td>3 3</td>
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<tr>
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## BUSINESS MANAGEMENT

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<tr>
<td>BA 2.145</td>
<td>Introduction to Business</td>
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<tr>
<td>Bus 2.303</td>
<td>Fundamentals of Advertising</td>
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## EDP

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#### Portland Community College
This curriculum is designed to prepare individuals for employment as real property appraisers. They will find employment opportunities with tax agencies, assessors' offices, real estate brokers, and independent appraisers. An Associate in Applied Science degree will be conferred upon completion of the prescribed curriculum.

### REAL ESTATE

**FIRST YEAR**

<table>
<thead>
<tr>
<th>Dept.</th>
<th>Crs. No.</th>
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<tr>
<td>Wr</td>
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<td>Mth</td>
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<td>Mathematics I</td>
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<tr>
<td>BA</td>
<td>101</td>
<td>Introduction to Business</td>
<td>4</td>
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<tr>
<td>Ec</td>
<td>201</td>
<td>Principles of Economics</td>
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**TOTALS**

18  17

### SECOND YEAR

**FOURTH TERM**

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<td>Bus</td>
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<td>Real Estate Trends and Developments</td>
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**TOTALS**

18  18

**FIFTH TERM**

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<td>Drf</td>
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<td>Drafting I</td>
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<td>Bus</td>
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<td>Bus</td>
<td>2.226</td>
<td>Real Estate Appraisal II (Urban Properties)</td>
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<td>Salesmanship</td>
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**TOTALS**

13  17

### THIRD TERM

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<td>Ec</td>
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<td>6.126</td>
<td>Report Writing</td>
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<td>Real Estate Practices</td>
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**TOTALS**

12  10  15

### SIXTH TERM

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<td>Appraisal Work Experience and Seminar</td>
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**TOTALS**

9  17  11

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**Portland Community College**

*The "Open Door" Educational Shopping Center*
TRANSPORTATION

This two-year course of study equips the student for entry positions in transportation management and builds knowledge and background for a career in direction and supervision of trucking operations. Upon completion of the required courses, an Associate in Applied Science degree is conferred.

<table>
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<td>Psy 1.546</td>
<td>Psychology and Human Relations</td>
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<td>Bus 2.250</td>
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<td>Business Mathematics</td>
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<td>Bus 2.255</td>
<td>Terminal Operations</td>
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<td>Bus 2.257</td>
<td>State &amp; Federal Regulation of Transportation</td>
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<td>Classifications and Rate Structure</td>
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RECOMMENDED ELECTIVES

Students are expected to find employment in the trucking industry during the summer, and attend an evening seminar in connection with employment:

<table>
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<td>Bus 2.203</td>
<td>Credit Procedures</td>
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Portland Community College
Management

BA 2.145, BA 101 Introduction to Business
4 cr/hr/wk, 4 cr/trm

Enables you to make an effective choice of a field of specialization in business; to see place of business activity in our economic system, and its legal and regulatory environment. You will learn how business management functions to achieve maximum production, sales, net income, to make maximum contribution to owners, employees and society within government regulation.

BA 221 Production
3 cr/hr/wk, 3 cr

You will learn fundamental processes in production decisions; plant location and layout; materials handling; research and development; procurement; production, inventory, and statistical quality control; time and motion study; operations research.

BA 222 Finance
3 cr/hr/wk, 3 cr

Effective handling of financial problems in establishment and operation of typical business organizations. You will become familiar with types of ownership and organization; acquisition of capital; management of income; functions of financial institutions for business financing; and necessary financial adjustments for changing business conditions.

BA 2.402, BA 226 Business Law
3 cr/hr/wk, 3 cr/trm

Experiences in evaluation of facts, circumstances involving business law; in precise use of language; and in forming judgments on matters governing and affecting people. Enables you to demonstrate, apply basic principles of business law (including Uniform Commercial Code) as governing business activities of our society.

Bus 2.330 Principles of Insurance
3 cr/hr/wk, 3 cr

You will survey field of general insurance and learn various aspects of contracts in fire, marine, casualty, disability insurance.

BA 2.404 Introduction to Business Statistics
5 cr/hr/wk, 5 cr

For the student of business data processing, other business-related programs: experiences will teach you statistical concepts such as index numbers; frequency distributions; measures of variability; normal curve of distribution; sampling-error theory (including test of Null Hypothesis); time series and their graphical representations; analysis of seasonal variation; secular trends and business statistics. Prerequisite: One yr. high school algebra, Mth 4.202, or department consent.

Bus 2.400 Business Management
3 cr/hr/wk, 3 cr

Enables you to apply basic principles for organization, marketing, financing, personnel, control, product development, facilities planning, budgeting, forecasting, and business relations aspects of general management in a business. Prerequisites: BA 101, 211, or Bus 2.101.

Bus 9.200 Practical Management for Small Business (Seminar)
3 cr/hr/wk, 3 cr

Offered in cooperation with Small Business Administration as seminar for managers of small businesses. You will become familiar with current management information and techniques by discussing practical problems encountered in operation of a small business.

Merchandising

Bus 2.304 Fundamentals of Marketing
3 cr/hr/wk, 3 cr

Student becomes aware of marketing of goods and services: channels of distribution involving producer, wholesaler, retailer and consumer. Learns marketing functions such as warehousing, standardization, grading, pricing, government regulation.

Bus 2.307, BA 238 Salesmanship
3 cr/hr/wk, 3 cr/trm

Familiarizes you with organization of selling, and with major kinds, with requirements, opportunities in each. You learn relationship of sales activities to other parts of marketing process such as advertising, sales promotion; experience handling customer buying problems; meet customer needs effectively, and present products/services persuasively.

Bus 2.203 Credit Procedures
3 cr/hr/wk, 3 cr

You learn principles, methods of credit administration, evaluation of credit risks, credit controls, action for collection or legal remedies, how to assist in determining credit policy, securing credit information.

Bus 2.215 Buying
3 cr/hr/wk, 3 cr

You become aware of major buying decisions—source, quality, timing, terms. You learn use of purchasing guides, including budgets or buying plans, catalogs, buying offices; and selection criteria. You will know how to develop limited buying plan and recognize steps to follow in your plan and how to evaluate results. Prerequisite: Principles of Retailing.

Bus 2.305 Principles of Retailing
3 cr/hr/wk, 3 cr

You study functions of retail store operation such as merchandising (buying and selling) sales promotion, store operation, finance and control, and personnel.

Bus 2.309 Problems in Retailing
3 cr/hr/wk, 3 cr

You learn to analyze and diagnose representative case studies involving actual retail problems including all major retailing functions. Prerequisite: Principles of Retailing or consent of instructor.

Bus 2.314 Small Business Operation
3 cr/hr/wk, 3 cr

Through case studies, lectures and discussions you will learn general functions and procedures inherent in a small business.
Cashiering and Checking

This is a short-term program of 80 hours of instruction designed to familiarize the students with the techniques of cashiering, problems encountered in check-out operation, and related records and procedures. Training is given in the skills needed in cashiering, use of the cash register and scales, checking procedures, marking and stocking of merchandise, handling of telephone sales, handling money, and maintaining good customer relations.

Bus. 2.325 Cashiering and Checking

4 wks, 20 lab hr/wk, 4 cr

You will learn to operate a cash register and handle problems which arise in money-handling, change-making, check cashing, refunds or payouts. You will practice and perfect your abilities to weigh, package, and identify merchandise, to recognize can and package sizes, advertised articles, and items requiring special action.

Your experiences will aid you to converse readily and present yourself effectively to customers. You will acquire the ability to keep adequate cash records, will become acquainted with welfare stamps, trade coupons, sales tax or other clerical matters commonly presented.

Bus. 2.340, 2.341 Work Experience—Lab & Seminar

2, 3, 4 hr/wk, 3 cr/trm

Requires an approved merchandise or related position which may lead to mid-managerial responsibility. From this position, you will assess the business and social and self-adjustment steps required to fill your position well, for reasonable advancement.

You will write a job description, produce an organization chart, and report on rules and regulations governing your job. You will interpret your organization, its inter-personal relationships, and especially its products and services, to others in the seminar.

You will be expected to show progress in work performance and social traits on rating from your supervisor.

Real Estate

Bus. 2.220 Real Estate Principles I

3 cl hr/wk, 3 cr

You become oriented to real estate field, real property appraisal, learn basic elements of property rights, nature, characteristics of property ownership.

Bus. 2.221 Real Estate Principles II

3 cl hr/wk, 3 cr

You continue study of real estate principles, financing of transactions, functions of brokerage, elements in property evaluation, and trends in real estate development.

Bus. 2.222 Real Estate Practices, Field Activity

3 cl, 10 lab hr/wk, 6 cr

You will spend 10 hr/wk with worker in real estate, observing and reporting during 3 cl/hr/wk on field practices, thus building understanding of elements involved in marketing real estate: brokerage, mortgages, property management and insurance, zoning, real estate advertising, leasing, other legal aspects.

Bus. 2.223 Real Estate Finance and Law

4 cl hr/wk, 4 cr

Various methods for financing, laws governing acquisition, holding and transfer of real property.

Bus. 2.224 Real Estate Developments and Trends

3 cl hr/wk, 3 cr

Students analyze, overview, summarize, discuss, report on economic, social, governmental trends affecting real estate development in Oregon.

Bus. 2.225 Real Estate Appraisal I

4 cl hr/wk, 4 cr

You analyze, discuss, study and learn basic principles, methods, techniques in determining value of real estate, in connection with transfer of ownership, financing and credit, just compensation in condemnation, as base for taxes.

Bus. 2.226 Real Estate Appraisal II

3 cl hr/wk, 3 cr

You study in greater depth subjects in APPRAISAL I, with emphasis on income approach, market data approach in establishing real property value.

Bus. 2.227 Real Estate Appraisal III

3 cl hr/wk, 3 cr

You learn elements of neighborhood, site analysis and evaluation, and study building construction and utilities, commercial and industrial functional utility, building materials, depreciation. Cost approach to real property value, detailed consideration of income and market data approaches.

Bus. 2.230 Elements of Design, Construction

4 cl hr/wk, 4 cr

Students learn to read, use blueprints as tool for study and analysis of various elements of building construction and design as related to determination of property value.

Bus. 2.232 Real Estate Taxation

2 cl hr/wk, 2 cr

You learn basic elements of property tax law in Oregon, building understanding of the economics of property, taxation, fiscal importance of property tax, administration of this tax, classification of property for taxation.

Bus. 2.240 Mapping, Photogrammetry

2 cl, 2 lab hr/wk, 3 cr

Student applies elements of cadastral mapping, rectangular survey systems to evaluation of property.

Bus. 2.242 Appraisal Work Experience, Seminar

1 cl, 15 lab hr/wk, 3 cr

Students are assigned to work situations in real estate appraisal 15 hr/wk. In 1 hr/wk seminar you consider situations, problems relative to your experiences.
Bus. 2.240 Real Estate Fundamentals
3 cl hr/wk, 3 cr
You build working knowledge of purchasing, transfer, lease, finance of land and property, site selection, home building and lot evaluation.

Bus. 2.241 Real Estate Practices
3 cl hr/wk, 3 cr
You acquire specific knowledge of current practices in real estate sales, brokerage, mortgage banking, capital gains transactions.

Bus. 2.242 Real Estate Appraising
3 cl hr/wk, 3 cr
You learn specific factors affecting value of land, buildings; effect of zone and city planning; various techniques in appraising; preparing appraisal reports.

Transportation
Bus. 2.250 Principles of Motor Truck Transportation
3 cl hr/wk, 3 cr
Importance, advantages of motor truck transportation; types, organization and administration of carriers. Student learns basic elements of financing carriers; terminal operations; carrier loss and damage claims; economics of motor transportation; freight classifications, carrier rates and regulations.

Bus. 2.251 Marketing Transportation Services
3 cl hr/wk, 3 cr
You build knowledge of salesmanship for motor transport, develop skills in client analysis, persuasive communication, advertising for a service industry.

Bus. 2.252 Office Procedures in Transportation
2 cl, 2 lab hr/wk, 3 cr
You learn functions in a transportation office: handling sales, claims, billings, financial, personnel, payroll records. You acquire experience with office mailing, duplicating equipment, telephone, teletype, automation in the office, human relations.

Bus. 2.253 Transportation Communications
3 cl hr/wk, 3 cr
You acquire skills, understanding in communication's new role in business. You study, experience, analyze role in communications played by manager, supervisor: principles, techniques, media of communication; uses of communication to achieve participation, in administering change; You learn to use media of interoffice communication.

Bus. 2.255 Terminal Operations
3 cl hr/wk, 3 cr
Students study, discuss, analyze various aspects of terminal operations: unloading, delivering, receiving; pickup and loading; freight protection; checking, marking; dispatching, scheduling; handling over, short, damaged, refused, undelivered, salvage freight; vehicle safety; terminal housekeeping, employee safety, storage, warehousing.

Bus. 2.256 Purchasing Techniques
2 cl hr/wk, 2 cr
You learn effective handling of managerial problems in purchase, control of materials, supplies, equipment in motor transport industry. You make a value analysis, study centralized vs. decentralized purchasing, negotiation, buyer-seller relations, reciprocal buying, legal aspects of purchasing.

Bus. 2.257 State, Federal Regulations
3 cl hr/wk, 3 cr
You learn basic fundamentals, practical application of Constitution, Common Law pertaining to motor transport; state vs. federal powers, Interstate Commerce Act, Part II, Related Acts, Leading Cases; Oregon regulations, statutes for licensing, fees, reporting.

Bus. 2.258 Classifications, Rate Structures
2 cl hr/wk, 2 cr
You become acquainted with classification rules; Division of Revenue, tariff circular requirements; rates; tariff and rate formulation; routing; special services in motor carrier activities.

Bus. 2.259 Motor Carrier Finance
3 cl hr/wk, 3 cr
You develop understanding of methods of financing long and short-term needs for motor carriers; cost of capital; rate of return; effective retained-earnings policies; dividends; capital structure (equity, debt); management of capital expenditures, equipment obligations.

Bus. 2.260 Personnel Management in Transportation
4 cl hr/wk, 4 cr
Students discuss, analyze, study local problems, solutions affecting personnel within framework of current labor contracts, to learn principles of personnel management requisite for mid-management.
The “Open Door” Educational Shopping Center
PCC's Division of Community Education provides many educational opportunities for adults throughout the College district.

Programs and courses are developed wherever a special need is defined and a minimum number of enrollees can be brought together.

Adult education programs throughout the district have been merged and are coordinated through the College. Many adult education courses are offered in school and community facilities in the metropolitan region, in Shattuck Hall and the Failing Building in downtown Portland, and in other locations as needed.

High school completion courses offered make it possible to earn a high school diploma at PCC.

The division also offers many high school courses which are open to adults as enrichment work; many additional courses are offered for those who seek self-improvement, recreation, or information and skills for hobbies. New courses in this area are sponsored whenever possible on request.

Citizenship preparation courses are provided for those who wish to develop communication skills and to learn the basic attitudes and concepts fundamental to American democracy, prior to examination for citizenship.

Basic education for adults is provided in a program to teach basic learning skills and to teach remedial and refresher work such as developmental reading, English, and arithmetic.

Business education and commercial training subjects, such as bookkeeping, typing, shorthand, business machines, and business mathematics can be taken by persons seeking either enrichment or high school credit.

A program of adult family life education is also carried on, offering assistance in the improvement of family life and the development of homemaking skills.

Tutoring for individual development of higher literacy skills is provided.

The division also coordinates a number of separate-contact educational programs funded under state and federal projects.

Full information and schedules of offerings and locations are available from the Division of Community Education offices in the Failing Building, 049 S.W. Porter St., Portland, Oregon. Telephone 224-3040.
COMMUNITY EDUCATION

Business-Occupations

Career Horizons for Women 10, 3 hr sessions
Vocational planning workshop for women considering employment. Opportunity to examine experience, abilities and interests in relation to existing or potential job openings. Self-assessment: specific occupations; problems of the working wife; short and long-range career plans; team research of the job market; employment tips and techniques. Testing and individual counseling available.

Briefhand 10, 2 hr sessions
Introductory Briefhand acquaints secretary with fast easy method of taking dictation. In ten weeks students can use briefhand effectively on the job.

Business Machines 10, 2 hr sessions
Reviews and develops skills on adding machines, calculators, duplicating equipment, and transcribing machines. Students will work in areas of their own need.

Drafting 10, 2 hr sessions
Designed to meet the individual needs of adults interested in various phases of drafting. Basic drafting and architectural drafting offered.

Introduction to Data Processing 10, 2 hr sessions
Beginners build a basic understanding of data processing by automatic systems.

Typing, Review 10, 2 hr sessions
For those who know fundamentals, wish to improve speed, accuracy and familiarize themselves with business forms.

Typing, Progressive 10, 2 hr sessions
For both beginners and those wishing to “brush up”; some practice on electric machines.

Conversational Foreign Language

Conversational French 10, 2 hr sessions
For those who have had some previous instruction in French. Emphasis on conversation for practical occasions.

Conversational German 10, 2 hr sessions
For those who have had some previous instruction in German. Emphasis on conversation for practical occasions.

Conversational Spanish 10, 2 hr sessions
For those who have had some previous instruction in Spanish. Emphasis on conversation for practical occasions.

Family Life

FL 75 Talking It Over 5, 2 hr sessions
For parents and their seventh and/or eighth-grade students to promote understanding, improve communications between adolescents and parents. Available upon request of the elementary P.T.A.

Parenthood In A Free Nation 10, 3 hr sessions
Helps parents acquire knowledge of how children grow and develop, gain increased understanding of children’s needs at various ages, and develop greater insight into changing parental roles as their children grow from infancy to adulthood.

HM 72 Short Cuts in Home Management 8, 2 hr sessions
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.

HM 73 Family Money Management 10, 3 hr sessions
A short course dealing with planning and using a budget, saving and investing money, using credit and buying wisely.

HM 82 Interior Decoration 10, 3 hr sessions
Study of the use of color and line in interior design; treatment of windows, walls and floors; selection and arrangement of furnishings.

HM 83 Advanced Interior Decoration 10, 3 hr sessions
Workshop-oriented experience for students who have completed the Interior Decorating course. Application of decorating principles with emphasis on color and all its implications.

HM 84 Remodeling, Decorating the Older Home 10, 3 hr sessions
How to approach remodeling from the practical, financial, and artistic standpoint. How much to spend, financing, changing exterior design, whether to do it yourself or have a builder.

HM 97 Home Furnishings Lab 10, 3 hr sessions
For men or women who wish to recover and renovate upholstered chairs.

Home Maintenance & Repair 7, 2 hr sessions
Practical instruction in making minor repairs around the home, for men and women. Common tools and their proper use; electricity; plumbing; carpentry.

Sewing and Tailoring

CL 1 Clothing Selection 10, 3 hr sessions
Study of creative selection with emphasis on color, line, design and figure type; practical application to each person.

CL 5 Personal Improvement 10, 3 hr sessions
Improving posture, grooming, wardrobe selection, make-up; walking, sitting and standing, to help the student feel more at ease in all situations.

Portland Community College
CL 6    Personality Development  
10, 3 hr sessions

Emphasis on mental health, diet, personality, voice, etiquette. 
Prerequisite: CL 5.

CL 10    Beginning Sewing  
10, 3 hr sessions

A variety of attractive useful articles, simple garments constructed, to develop skill, confidence in use of the sewing machine, selection and handling of cotton fabrics, and use of a pattern.

CL 15    Basic Dressmaking  
10, 3 hr sessions

Fundamental construction techniques are taught through construction of an apron, blouse, skirt and simple dress, using cotton fabrics. Preparation of fabric: simple alterations; zipper application; finishing techniques for those with little or no knowledge of sewing. 
Prerequisite: CL 10.

CL 20    Advanced Dressmaking  
10, 3 hr sessions

Gives the home-sewer confidence in proceeding independently achieving professional look, through the construction of two or three garments with more advanced dressmaking techniques: pattern alterations; inter-facings; underlinings; matching plaids; bound buttonholes; gussets. 
Prerequisite: CL 15.

CL 23    Making Your Basic Pattern  
10, 3 hr sessions

Construction of a basic pattern altered to meet individual fitting needs to eliminate problem of fitting oneself, time-consuming alterations.

CL 24    Pattern Adaption  
10, 3 hr sessions

Instruction practice in using pattern in altering commercial patterns and simple designing. 
Prerequisite: CL 15, CL 20, CL 23.

CL 25    General Sewing  
10, 3 hr sessions

Construction of a wide variety of garments for the individual or family members, to help give the student confidence in applying various dressmaking techniques.

CL 26    Sewing With Knits  
10, 3 hr sessions

Demonstration of construction techniques using knit and stretch fabrics, including poor boy, shell, skirt, sweaters, pants, swim suit. Creativity in selection of fabric, trim and design is stressed.

CL 27    Fitting  
10, 3 hr sessions

Fitting problems of different figure types are analyzed, with each individual making a basic pattern to be used in checking and altering commercial patterns.

CL 28    Pattern Drafting  
10, 3 hr sessions

How to adapt an individual's sloper to different designs by changing basic construction lines and drafting various types of collars, sleeves, etc. 
Prerequisite: CL 27.

CL 30    Basic Tailoring  
10, 3 hr sessions

Fundamentals of tailoring techniques, handling and pressing of wool, making a simple lined coat or suit. 
Prerequisite: CL 20.

CL 35    Advanced Tailoring  
10, 3 hr sessions

Increased skill in tailoring with advanced techniques in handling wool fabrics, design detail, custom finishes. 
Prerequisite: CL 30 or equivalent.

CL 38    Tailoring Men's Sports Coats  
10, 3 hr sessions

Advanced tailoring techniques involved in making men's and boys' coats. Knowledge of basic tailoring methods recommended.

CL 40    Making Shirts and Slacks  
10, 3 hr sessions

Making men's sports shirts construction of slacks, capri pants, shorts and shirts for women and children. 
Prerequisite: CL 15, equivalent.

CL 45    Remodeling, Restyling Garments  
10, 3 hr sessions

Salvaging good fabric from out-dated or ill-fitting garments through analysis of restyling possibilities, use of remodeling techniques.

CL 50    Children's Clothing  
10, 3 hr sessions

Construction techniques in sewing for children, including self-help details, growth features, suitable fabrics and styles, closures, trimming. Knowledge of basic dressmaking techniques necessary.

CL 75    Knitting  
10, 2 hr sessions

Basic knitting fundamentals: binding off; casting on, increasing, decreasing, reading directions; measuring and gauging; sizing; assembling; other skills required for completion of knitted garments.

CL 80    Creative Stitchery  
10, 3 hr sessions

Demonstration and practice of decorative stitches for wall hangings, draperies, pillow covers, sweaters; creating or enlarging designs; hints on color coordination; use of materials and textures.

### Occupational Sewing

- **3.995**   Clothing Alteration Specialist  
  10, 5 days/wk, 6 hr/day

Prepares experienced seamstresses for employment in dress shops, department stores, dry cleaners or private business. Practice in basic repairs, fitting, altering and restyling; power machine operating; altering, repairing men's clothing; care and handling of fabrics.

- **3.990**   Power Sewing  
  4, 5 days/wk, 6 hr/day

Prepares persons for profitable employment as power sewing machine operators in the garment industry. Continuous throughout year.

### Hobby and General

- **Acrylic Techniques**  10, 3 hr sessions

Instruction in the use of acrylics as an art medium. Covers water, oil, and collage. Can be done on canvas, paper, wood, other materials.
Ballet & Gymnastics 10, 2 hr sessions
Basic steps for beginners.

Art of Bonzai 6, 3 hr sessions
Oriental art of dwarfing trees for beginners. Techniques for selecting, potting, pruning, and caring for bonzai.

Beginner's Bridge 10, 2½ hr sessions
For beginners in contract bridge. Emphasis on learning how to bid, using Goren point-count system, basic fundamentals of play, defense and etiquette.

Cake Decorating 10, 3 hr sessions
Basic skills in decorating cakes for all occasions and seasons. A hobby class for both men and women.

Calligraphy 10, 3 hr sessions
A study of italic lettering: beautiful script for formal uses which, when mastered, results in an elegant handwriting that is fast, easy, and fun to do.

Candy Making 10, 3 hr sessions
Learn professional candy-making techniques from a specialist. How to make hard candies, divinity, rocky road, chocolate and fruit creams, turtles and others.

Ceramics 10, 3 hr sessions
Development of individual needs and ideas in the creation of objet d'art using clays, glazes, and individual decorating methods.

Decoupage 10, 3 hr sessions
Step-by-step method for using papers, prints, and other materials to decorate furniture, boxes, trays, other surfaces. Includes techniques on wood, glass, metal.

Drawing, Painting 10, 3 hr sessions
For beginners and those who like to experiment. Personal interpretation emphasized. Visual exploration of the world around us using: charcoal, pen and ink, pencil, water color, tempera, other mediums, on a variety of surfaces.

Father-Son Shop 10, 3 hr sessions
Open to father-son teams only. Organized for work on small projects of mutual interest while spending an evening together. No age limit. Cost of materials extra.

First Aid 6, 2 hr sessions
An American Red Cross course in first aid. May be taken to secure the standard certificate.

Creative Food Preparation 5, 3 hr sessions
Learn new ways to prepare delicious, attractive, yet inexpensive meals for family and guests.

Graphoanalysis 8, 2 hr sessions
Handwriting analysis for fun and profit. Graphoanalysis is used by parents, psychologists, counselors, and personnel managers to understand the character and personality of the writer. Easy to learn.

Beginning Folk Guitar 10, 3 hr sessions
Group instruction to learn principal chords in a variety of keys; how to read, play simple melodies. Folk singing as time allows. Nylon strings are recommended for ease of playing.

Holiday Decorating 5, 3 hr sessions
How to prepare decorations for walls, table surfaces, or gifts. Using commercial and natural materials, and other materials from around the home.

Creating Home Accessories 10, 2 hr sessions
Students learn to make flowers, wood plaques, wall hangings, decorative pillows, window shades, papier-mache items, and placemats. Other topics covered are flower arrangements, purchasing of furniture, framing and placement of pictures, and housekeeping hints.

Income Tax Procedures 8, 2½ hr sessions
How to prepare your own income tax return and understand the laws behind it.

Jewelry Making 10, 3 hr sessions
Three-dimensional design, tools, and techniques of jewelry making introduced through individual student problems with semi-precious materials and non-ferrous metals; soldering; metal enameling; etching; forming; stone setting; wax casting.

Landscaping 10, 2 hr sessions
For homeowners who want to develop their own landscaping plans and learn more about the selection and care of plant materials.

Macrame 10, 2 hr sessions
Techniques in knotting threads or cord in patterns to design hangings, curtains, etc.

Numismatics 10, 2 hr sessions
History of coinage, art of collecting for pleasure and profit. For the amateur collector.

Oil Painting 10, 3 hr sessions
Basic exercises to acquaint or reacquaint the student with the use of oil paint, students encouraged to work with subjects which interest them individually.

Photography 10, 3 hr sessions
For those who wish to know more about basic photographic processes. How to see and record images, impressions of the beauty in everyday subjects through photography. Participants furnish camera, film, and other supplies. No darkroom procedures.

First term: Basic Camera. Second term: Composition and Color Slides.

Pottery 10, 3 hr sessions
For beginners or people who want to learn more about pottery. Wheel-thrown and hand-built pottery; no mold work.

History of Race & Minority Relations 10, 2 hr sessions
A study of racial, cultural and religious minorities and their relationship to the dominant society. Major emphasis on current inter-group relations and problems; more and less-effective techniques used to resolve relation problems, particularly in the U.S. today.

Recorder Playing 10, 1½ hr sessions
Introduces you to the fun of recorder playing; easy to learn, minimal in cost. For music lovers, with or without a musical background.

Rocks, Minerals, & Fossils 10, 2 hr sessions
Identification of basic minerals in rocks of interest to class members. Combines work in classroom and field trips to nearby areas of geological interest. Purchase of kit required.

Securities & Investments 8, 2½ hr sessions
Covers investment objectives. Methods of investing;
reading financial news; a study of the New York Stock Exchanges; and the functions of a broker.

Tole Painting for Beginners
10, 3 hr sessions
Beginners learn fundamentals of an interesting, worthwhile hobby. Preparation of wood and metal articles; design application; painting technique; antiquing.

Tole Painting, Advanced
10, 3 hr sessions
Advanced techniques of stroke control and shading. Patterns include fruits or flowers.

Understanding Your Car for Women
5, 2 hr sessions
Operation, simple maintenance, and care of the automobile. Demonstrations, films, and discussions. For women only.

Water Colors
10, 3 hr sessions
New, relaxed approach, geared for enjoyment. Each session will have a demonstration: painting, color mixing, and sketching.

Winemaking
10, 2 hr sessions
Learn to make your own wines at home. An exciting and new hobby taught by professionals from the Portland area.

Woodworking (Beg.)
10, 3 hr sessions
Use of hand tools basic in wood construction; introduction to power tools. For both men and women.

Leadership
FL 50 Lively Leadership
(Group Development)
3, 2 hr sessions
Fundamentals of group development; organizing and planning meetings and discussion groups, program planning and program presentation.

FL 51 Advanced Leadership
10, 2 hr sessions
Training and experience in group leadership; emphasis on child growth and development and parent-child relations. Prerequisite: Lively Leadership.

FL Leadership Seminar
10, 2 hr sessions
Advanced leadership techniques for those interested in further experience in group development and leadership.

FL 60 Leadership (Parliamentary Procedure)
10, 2 hr sessions
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. Form, nature of constitution and by-laws, meeting procedures; writing minutes, kinds of motions, how to preside. Practice in these processes. Completion qualifies for membership in the National Association of Parliamentarians or the American Institute of Parliamentarians.
DATA PROCESSING

The Department of Data Processing at Portland Community College offers four separate programs to satisfy the educational needs of the students. These programs are designed to perform specific functions as stated in the objectives of each program. The objectives and course outline of each program follow.

Introduction

This program consists of one course for those who seek a general knowledge of electronic data processing. Each student will obtain a basic knowledge of the field of electronic data processing. The course will cover definitions, history, machines, systems, applications, job opportunities, and the future of the field. The course is particularly suited for those students in other programs who need knowledge of data processing.

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<td>EDP 2.100</td>
<td>Survey of Electronic Data Processing</td>
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Key Punch

This is a training program which will give the student the necessary skills to obtain a job as a key punch operator. Candidates for this training must be able to type 40 words per minute with a minimum of errors and must pass the operator's aptitude test. The program consists of one course lasting eight weeks.

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<td>EDP 2.107</td>
<td>Key Punch Operation</td>
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</table>

Portland Community College
## COMPUTER PROGRAMMING

This program provides the student with the skills necessary to obtain a position as a junior programmer and also furnishes two years of programming practice. The two years of work furnishes a broad theoretical and practical training for planning, programming and analysis of data-processing problems.

Candidates must have above-average skills in mathematics and reasoning, and demonstrate a capacity for detail and organization; each must complete an interview with the program coordinator prior to acceptance for training.

An Associate in Applied Science degree is conferred upon completion of the program requirements.

Students carrying a heavy workload should consider taking a longer period than two years to complete program requirements; those not having skill levels necessary for entrance should consider taking one term of prior course work.

### FIRST YEAR

<table>
<thead>
<tr>
<th>Term</th>
<th>Dept. Crs. No.</th>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
<th>Cr. Hr.</th>
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<tbody>
<tr>
<td><strong>FIRST TERM</strong></td>
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<tr>
<td>EDP 2.110</td>
<td>Introduction to Programming</td>
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<td>Wr 2.301</td>
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<td>Mth 95</td>
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<td>Computer Operations</td>
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<td>EDP 2.109</td>
<td>Programming II</td>
<td>3 4 4</td>
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<td>EDP 2.106</td>
<td>Systems and Design</td>
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<td>Mth 2.128</td>
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### SECOND YEAR

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<td>EDP 2.117</td>
<td>Compiler Language I (FORTRAN)</td>
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<td>EDP 2.120</td>
<td>Compiler Language II (COBOL)</td>
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<td>EDP 2.131</td>
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### SIXTH TERM

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<th>Class/Lab Hrs/wk</th>
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<tbody>
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<td>EDP 2.132</td>
<td>Advanced Programming</td>
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<td>EDP 2.141</td>
<td>Field Project</td>
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<td>Electives</td>
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<td><strong>TOTALS</strong></td>
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### SUPPLEMENTARY COURSES

<table>
<thead>
<tr>
<th>Dept. Crs. No.</th>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
<th>Cr. Hr.</th>
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<tbody>
<tr>
<td>EDP 2.123</td>
<td>System/360 Programming I</td>
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<tr>
<td>EDP 2.125</td>
<td>System/360 Programming II</td>
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<td>BA 2.114</td>
<td>Principles of Accounting</td>
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<td>BA 2.402</td>
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<td>EDP 2.139</td>
<td>Communication Systems</td>
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<td>EDP 2.150</td>
<td>Data Processing Management</td>
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<tr>
<td>EDP 2.103</td>
<td>Key Tape Operation</td>
<td>5 10 2</td>
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### Course Equivalencies

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<th>Course Equivalencies</th>
<th>* Skill-Building Preparatory Courses</th>
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<tbody>
<tr>
<td>Psy 201 for Psy 1.546</td>
<td>EDP 2.100 Survey of Data Process.</td>
</tr>
<tr>
<td>Wr 111 for Wr 2.301</td>
<td>Mth 4.200 Basic Math</td>
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<tr>
<td>Wr 112 for Wr 6.126</td>
<td>Mth 4.202, 4.204 Math, I, II</td>
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<tr>
<td>Wr 113 for Wr 6.126</td>
<td>Wr 11, 12 Critical Reading and Writing</td>
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<tr>
<td>BA 211 for BA 2.110</td>
<td>Eng 49, 50 Reading</td>
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<tr>
<td>BA 212 for BA 2.112</td>
<td>Bus 2.101, 2.103 Applied Acctg.</td>
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</table>
COMPUTER OPERATION

This program provides the student with the skills required for employment as a computer operator, and also furnishes one year of operating practice. Candidates must have average abilities in mathematics and reasoning. The program is designed to be completed in one year; students carrying a heavy workload, or who need to upgrade skills, should consider a longer period of study.

FIRST TERM

<table>
<thead>
<tr>
<th>Dept. Cr.</th>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
<th>Cr. Hr.</th>
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<tbody>
<tr>
<td>EDP 2.100</td>
<td>Survey of Electronic Data Processing</td>
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<tr>
<td>EDP 2.102</td>
<td>Fundamentals of Machine Operation</td>
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<td>Wr 2.301</td>
<td>Business English</td>
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<tr>
<td>Bus 2.101</td>
<td>Applied Accounting</td>
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SECOND TERM

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<th>Class/Lab Hrs/wk</th>
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<tbody>
<tr>
<td>EDP 2.105</td>
<td>Basic Operating Systems</td>
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<tr>
<td>EDP 2.111</td>
<td>Computer Operations I</td>
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</tr>
<tr>
<td>Wr 6.126</td>
<td>Report Writing</td>
<td>3 3 4</td>
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<tr>
<td>Bus 2.103</td>
<td>Applied Accounting</td>
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THIRD TERM

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<tr>
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<tr>
<td>EDP 2.112</td>
<td>Computer Operations II</td>
<td>3 3 4</td>
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<tr>
<td>EDP 2.108</td>
<td>Programming I</td>
<td>4 2 4</td>
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<tr>
<td>Psy 1.546</td>
<td>Psychology and Human Relations</td>
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<td>TOTALS</td>
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<td>13 5 14</td>
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</table>

EDP 2.100 Survey of Electronic Data Processing
4 cl, 1 lab hr/wk, 4 cr

Acquaints student with function of electronic data processing; need for processing data; history and development of data processing machines; overview of equipment, operating principles, possibilities, limitations; most effective uses. Particularly suited as basic understanding of data processing for students in any program.

EDP 2.102 Fundamentals of Machine Operations
3 cl, 3 lab hr/wk, 4 cr

Student builds basic understanding and skills in operation of key punch, sorter, reproducer, interpreter, collator, other accounting machines. Lab sessions include practical problems, exercises.
**EDP 2.117**  Compiler Language I—Fortran  
4 cr, 2 lab hr/wk, 4 cr  
Formulas Translation language and its use for technical and business operations. Students write programs solving variety of problems. For technical programmers; previous programming experience required.

**EDP 2.118**  Computer Operations  
2 cr, 1 lab hr/wk, 2 cr  
Familiarizes student with physical aspects of digital computer systems, supplies experience in working in a computer installation. Equipment includes central processors, reader-punchers, printers, tape drives, disc and communications devices. Student learns operation, use, care of each device; run procedures; system operation; error procedures. Intended for computer programming students.

**EDP 2.120**  Compiler Language II—Cobol  
4 cr, 2 lab hr/wk, 4 cr  
Common Business Oriented Language and its use for business problems. Students build detailed knowledge of language through solving business problems. Previous programming experience required.

**EDP 2.123**  Basic Assembly Language I  
4 cr, 2 lab hr/wk, 4 cr  
Students learn basic instructions for this language as used on IBM 360, Univac, RCA computers. Problems solved using appropriate strategies.  
Prerequisite: Accomplished programming skills or consent of instructor.

**EDP 2.125**  Basic Assembly Language II  
4 cr, 2 lab hr/wk, 4 cr  
Continues BAL I, using more advanced instructions to solve more difficult problems.  
Prerequisite: BAL I or consent of instructor.

**EDP 2.130**  Tape/Disk Programming  
4 cr, 2 lab hr/wk, 4 cr  
Students solve problems related to tape disc programming. Extensive work involving file structures, program logic. Case examples, file update, table lookup. Programming in basic assembly language.

**EDP 2.131**  Operating Systems  
3 cr, 2 lab hr/wk, 3 cr  
Students learn to use their programs with monitors, explore construction of monitors and role in operating system, how to link together and with sort routines.

**EDP 2.132**  Advanced Programming  
4 cr, 2 lab hr/wk, 4 cr  
Student uses skills to solve advanced programming problems, involving use of advanced instructions and techniques.

**EDP 2.139**  Communication Systems  
4 cr, 2 lab hr/wk, 4 cr  
Basic concepts in designing communication systems. Student solves case examples using principles learned, writes programs in assembly language using communications monitor.

**EDP 2.141**  Field Project  
1 cr, 12 lab hr/wk, 6 cr  
Individually selected projects of practical value are assigned. Student plans project, carries out all phases of system design, machine programming, design of forms, testing of representative data, writing of operational procedures. Demands practical application of skills and techniques acquired in previous courses.

**EDP 2.150**  Data Processing Management  
3 cr hr/wk, 3 cr  
Students explore problems in computer facility management. Topics include personnel policies, equipment acquisition, supplies, scheduling of work and in-service training.  
Prerequisite: Employment in data processing field.
Electronics has been termed the technology which has created our modern world of communication, control and great change. Radio, television, electronic data processing and computers, aircraft flight control and navigation, the space program, modern medicine, and even police and taxi services and the fire department, all depend on this modern miracle. Today’s world would come to a standstill without electronics.

Electronics technology and instrumentation technology offer broad career opportunities, ranging from the basic service activities required by all electronic mechanisms to the complex design and engineering of circuitry and the production of specialized electronics systems in the fields of communication, power, control, processing and manufacturing.

At Portland Community College, students in this field can pursue a two-year sequence leading to an Associate in Applied Science degree.

A one-year program prepares a student for entry-level employment in the radio-television service industry.
ELECTRONICS TECHNOLOGY

This is a two-year program in which students specialize in electronic engineering technology.

The technician in this field applies scientific and engineering principles and knowledge in support of engineering or scientific activities.

Career opportunities in electronics are great and carried for the qualified technician in the fields of communication, power, control, processing, and manufacturing. Employment in entry-level positions can often lead to experiences not only in maintenance and repair but in circuit design, development, and construction, and in all the phases of production, installation and operation. Many corporations and companies also look to the technologically-experienced person for consideration as supervisor and for potential promotion to other responsible administration positions where technical understanding and personal expertise are important components for effectiveness in the position.

An Associate in Applied Science degree is conferred upon completion of the program.

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<th>Course Title</th>
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| 94 ELECTRONICS TECHNOLOGY

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<tr>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
<th>Cr. Hrs</th>
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| 94 ELECTRONICS TECHNOLOGY

Portland Community College

The “Open Door” Educational Shopping Center

Portland Community College
RADIO-TV SERVICING

This one-year program prepares students for entry into the electronic equipment maintenance and service field. Graduates of the program will be well-prepared technicians qualified to test, build, repair and maintain a variety of electrical-electronic equipment. The course pattern for the program includes:

Dept. Cr. Course Title Class/Lab Cr. Hrs/wk Hr.
FIRST TERM
El 6.410 Radio-Television Servicing 3 cl, 6 lab hr/wk, 4 cr
SECOND TERM
El 6.420 Radio-Television Servicing 3 cl, 6 lab hr/wk, 4 cr
THIRD TERM
El 6.430 Radio-Television Servicing 3 cl, 6 lab hr/wk, 4 cr

(See Course Descriptions for full details of work required)

Electronics Technology

El. 6.204 Electrical Circuits
3 cl, 4 lab hr/wk, 4 cr

The student will demonstrate his knowledge of the theory and his ability to apply the basic methods of frequency selection and rejection. He will also exhibit an understanding of basic complex wave form theory and be provided with practical applications and design experience through a coordinated lab.

Prerequisite: El 6.303 or approval of department.

El. 6.210 Intro to Tubes and Transistors
3 cl, 3 lab hr/wk, 4 cr

The student will be provided with a unified treatment of the basic DC characteristics of active devices with emphasis on graphical techniques, practical in-circuit measurements, and simplified analysis of basic amplifiers. He will demonstrate his ability in proper maintenance and measurement techniques in the coordinated lab.

Prerequisite: El 6.301 or approval of department.

El. 6.211 Tube and Transistor Analysis
4 cl, 6 lab hr/wk, 6 cr

The student will demonstrate an advanced knowledge of the analysis of basic circuits. Emphasis on algebraic solutions involving impedance, gain, frequency response, power dissipation and thermal stability. He will explore cause, effect, and methods of measurements of factors such as noise and distortion in the coordinated lab.

Prerequisite: El 6.210 and 6.204 which may be taken concurrently.

El. 6.212 Advance Circuits
3 cl, 3 lab hr/wk, 4 cr

The student will acquire a knowledge of the theory and application of the special or newer types of electronic devices. The coordinated lab provides work with SCR, unijunction, FET, and integrated circuits. Prerequisite: El 6.214.

El. 6.214 Amplifiers Circuits
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate confidence in design and analysis of the advance amplifier circuits involving special techniques and methods such as: feedback, peaking, long-tailing, etc. The coordinated lab provides opportunity to become familiar with hi-fi, gain controlled, wide band or video, tuned, distributed, operational, DC, and parametric amplifier measurements and operation.

Prerequisite: El 6.211 and Electrical Math 6.115 which may be taken concurrently.

El. 6.228 Television I
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate his skill in the analysis and systematic trouble-shooting procedures of TV receiver circuits. He will be introduced to the basic system requirements and later to the deflection and synchronizing circuits in the coordinated lecture and lab.

Prerequisites: El 6.214 and 6.311 both of which may be taken concurrently.

El. 6.229 Project Laboratory
6 lab hr/wk, 2 cr

The student will construct a proto-type circuit under simulated industrial conditions. He will be provided with the preliminary circuit and specifications and will then breadboard, test, modify and layout the circuit. He will then draw, print and etch the circuit board, mount the components and test the completed circuit for instructor approval.

Prerequisite: 6th term standing.

El. 6.234 Pulse and Digital Circuits
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate an ability to design, build, and analyze various pulse, digital and switching circuits. He will successfully solve selected design and application problems in both analog and digital circuits in the coordinated lab.

Prerequisite: El 6.240 may be taken concurrently.

El. 6.235 Television II
3 cl, 6 lab hr/wk, 5 cr

The student will demonstrate ability in system analysis and systematic “trouble-shooting” of color television circuits and antenna systems. He will perform major repair and alignment operations designed to give him on-the-job experience in maintenance procedures and demonstrate his ability to use specialized instrumentation for color television, during the coordinated lab.

Prerequisite: El 6.228 and 6.311 which may be taken concurrently.

El. 6.240 Digital Control and Logic
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate his knowledge of the principles of electronic digital computers and switching circuits. He will display competence in the application of Boolean algebra to the logical design of the switching and logic circuits and construct various arithmetic and control sections of specialized computers in the coordinated lab.

Prerequisite: El 6.211 or department approval.

El. 6.242 Microwaves
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate a knowledge and understanding of transmission line theory and various methods of measurement. He will also demonstrate a knowledge of the theory, application and measurement of microwave frequen-
cies by using various types of microwave equipment and "plumbing" including klystrons, directional couplers, time-domain Reflectometers slide screw tuners, slotted-lines, etc. in the coordinated lab.

Prerequisite: EI 6.211 or approval of department.

**EI 6.301**
D. C. Fundamentals
3 cl, 6 lab hr/wk, 5 cr

The student will be provided with the basic concepts of unidirectional current flow and demonstrate his ability to use network analysis and "Blackbox Theory" in the coordinated lab.

Prerequisite: EI 6.135 taken concurrently or approval of a department head.

**EI 6.303**
A. C. Fundamentals
3 cl, 6 lab hr/wk, 5 cr

The student will demonstrate his ability to analyze and design low frequency alternating currents. He will successfully solve problems involving various combinations of resistance, inductance, and capacitance in the coordinated lab.

Prerequisite: EI 6.301, 6.136 concurrently or approval of department.

**EI 6.311**
Transmitters and Receivers I
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate his knowledge of the fundamental theory, circuits and methods of measurements associated with the communications field. The coordinated lab places the emphasis on amplitude modulation techniques, tuning and alignment, high-power R.F. amplifiers, maintenance techniques and FCC licensed preparation.

Prerequisite: EI 6.214 which may be taken concurrently.

**EI 6.313**
Transmitters and Receivers II
3 cl, 3 lab hr/wk, 4 cr

The student will continue his studies of EI 6.311 and demonstrate his ability in FM, phase and single sideband modulation techniques and circuits. He will also demonstrate competence in the basic antenna and transmission line theory necessary for the 1st Class FCC License during the coordinated lecture and lab.

Prerequisite: EI 6.311.

Radio-TV Servicing

**EI 6.410**
Radio Television Servicing
10 cl, 20 lab hr/wk

The student builds an understanding of basic electronic theory and circuits. Through coordinated lecture and lab he will demonstrate an understanding of the basic electronic systems and an ability to analyze DC and AC circuits. He will also demonstrate his knowledge of maintenance procedures in troubleshooting power supply circuits on color television chassis.

Prerequisite: 1 year of high school Algebra or equivalent.

**EI 6.420**
Radio Television Servicing
10 cl, 20 lab hr/wk

The student will demonstrate his understanding of the basic audio and video amplifiers circuits. In the coordinated lab, he will also demonstrate proper techniques of measurement and fault analysis.

Prerequisite: EI 6.410 or approval of department.
Engineering is known as the profession which makes practical application of science, creating the modern technology which has had such great impact on our world.

It is the engineer who, working with his associates, is able to translate discoveries and developments in a broad range of research areas into the hardware, the processes, the structures and the products which become the tangible cutting edge of modern progress.

At Portland Community College, the student interested in this world of Engineering has a choice of many doors leading to employment in any one or a number of intriguing careers. Major technical areas include Civil Engineering Technology; Architectural or Mechanical Drafting and Technical Illustration; Electronics; and Mechanical Engineering.


Programs are available in one-year and two-year curricula, leading to certificates of proficiency and to the degree of Associate in Applied Science.

Students completing work at PCC are well prepared for entry-level employment in their chosen field and also for further study leading to graduation from a four-year institution specializing in an Engineering area.

APPRENTICESHIP AND JOURNEYMAN TRAINING PROGRAMS

Apprenticeship

Portland Community College provides related instruction classes in accordance with the Oregon Apprenticeship Law. These classes cover instruction in related technical areas of the trades and are intended to complement the skills learned on the job. Information on how to become an apprentice may be obtained from the Oregon State Apprenticeship Council, 1400 S.W. Fifth Avenue, Portland, Oregon, or the Apprenticeship Information Center, 1030 N.E. Couch Street, Portland, Oregon.

Trade Extension (Journeyman Training)

The programs for journeymen provide training in both skill and knowledge needed to deal with changes in materials and techniques of the trades. The classes are open to journeymen, foremen, and supervisors whose occupations demand the skills and knowledge to be learned.

Special training programs may be set up by contacting the chairman of the Department of Apprenticeship and Trade Extension, Portland Community College.
The Civil Engineering student receives training in developing plans, estimating costs, and coordinating work on construction projects. In the second year students may specialize in either highway engineering or structural engineering technology. Highway engineering work prepares the student for employment with construction projects for highways and emphasizes the study and practice of surveying, mapping, and soil mechanics. Students in structural engineering are prepared for work as technicians associated with the design of large buildings, bridges, and dams.

An Associate in Applied Science degree is conferred upon completion of the two-year program.

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ARCHITECTURAL DRAFTING

This program builds basic drafting skills in the first year and provides additional depth of training in the second year, for those who are planning to enter employment with architectural, industrial or commercial construction firms who need skilled technicians to interpret engineering data and directions, develop sketches and plans to guide construction and building activities, and produce detailed working drawings.

Opportunities for employment in this field are available with architectural, engineering and design firms, with construction and building companies, and with industrial and production organizations as well as in a variety of work with local, state and national agencies.

An Associate in Applied Science degree is conferred upon completion of the two-year sequence.

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Portland Community College
MECHANICAL DRAFTING

This program builds basic drafting skills in the first year and provides additional depth of training in the second year, for those who are planning to enter employment with industrial or business firms who need skilled technicians to interpret engineering data and directions, develop sketches and plans to guide production of machine and mechanical products, and produce detailed working drawings.

Opportunities for employment in this field are available with manufacturing firms, engineering and designing firms, and industrial and production companies.

An Associate in Applied Science degree is conferred upon completion of the two-year sequence.

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Community College
TECHNICAL ILLUSTRATION

This program builds basic drafting skills in the first year and provides additional depth of training in the second year, for those who are planning to enter employment with industrial or business firms who need skilled technicians to interpret engineering data and directions, produce sketches and designs illustrating and detailing the engineering approach, and provide clarifying technical illustration to facilitate completion and operation of the projects involved.

Employment opportunities are found with many industrial and business firms, and with city, state, and federal agencies. An Associate in Applied Science degree is conferred upon completion of the two-year sequence.

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Portland Community College
CIVIL ENGINEERING

CE 6.101 Plane Surveying I
1 cl, 6 lab hr/wk, 4 cr

Leads the students to understanding of concepts in plane surveying: the tangent plane to a sphere; differential leveling; horizontal distances by chaining; horizontal angles; open and closed transiting.
Lab periods indoctrinate students in use of standard surveying equipment: chain, level, and transit. Emphasis on slope staking, stake marking, stationing, and note taking.

CE 6.103 Plane Surveying II
1 cl, 6 lab hr/wk, 4 cr

Utilizes background gained in 6.101 and 6.500; it is essentially a lab course. Class works in groups of four to five; each group lays out a five-sided polygon, then does all activities required to compute enclosed area. Area is then parcelled, each side of every parcel computed for length and location, then placed in the field. One side is specified as a road centerline, requiring the group to slope stake. The bearing to one line is computed from star observations taken in the field.

CE 6.107 Strength of Materials I
3 cl, 3 lab hr/wk, 4 cr

A study of the stresses and strains that occur in bodies when subjected to tensile, comprehensive 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, forisional members and beams. Practice problems emphasize the materials studied.

CE 6.108 Materials of Construction
3 cl, 2 lab hr/wk, 4 cr

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.

CE 6.109 Applied Mechanics
3 cl, 3 lab hr/wk, 4 cr

A study of energy at rest (equilibrium); includes resolution of forces, equilibrants of forces in one plane, simple machines, and equilibrants of non-concurrent forces. Demonstrations, experiments clarify principles and procedures.

CE 6.112 Hydraulics I
2 cl, 2 lab hr/wk, 3 cr

Fundamental properties of fluids; relationship of hydrostatic pressure and center of gravity; effect of hydrostatic pressure exerted against plane surfaces.

CE 6.114 Hydraulics II
2 cl, 2 lab hr/wk, 3 cr

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.

CE 6.118 Contracts and Specifications
3 cl hr/wk, 3 cr

Acquaints student with common usage and practice in preparation of contracts and attendant specifications. Existing contracts covering current jobs used with practical problems designed to teach the application of theory learned.
Prerequisite: Second-year standing or approval of instructor. Technical report writing or equivalent recommended.

CE 6.124 Soil Mechanics I
2 cl, 3 lab hr/wk, 3 cr

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.

CE 6.126 Soil Mechanics II
2 cl, 3 lab hr/wk, 3 cr

The student will study gravitational water, flow nets and seepage forces. He will learn to calculate pressure on retaining walls and bearing capacities. He will learn to analyze stabilities of slopes and solve pile and pile-driving formulas.

CE 6.128 Strength of Materials II
3 cl, 3 lab hr/wk, 4 cr

Advanced theory in materials characteristics. Field trips enable the student to observe use of different materials in actual installations.

CE 6.135 Engineering Problems I
3 cl, 1 lab hr/wk, 3 cr

The student will study the slide rule and learn to shift and locate decimal points by inspection; basic laws of exponents and equations; to shift decimal points and locate decimal points by scientific notation, utilizing basic laws of exponents and equations; the ability to read and use these slide scales: C and D, A, B, K, C inverted, D inverted, and the trigonometric scales. The student will be introduced to right angle trigonometry, the resolution of forces into X and Y components, and vectors.

CE 6.136 Engineering Problems II
3 cl, 1 lab hr/wk, 3 cr

Continues E.P.I. with use of common logarithmic slide rules scales and natural logarithmic scales. Covers theory of common logarithms, theory of e and its use as a logarithmic base as background for effective use of slide rule, in approximately half the term. Other half covers analyzing problems by units, acquainting students with the free-body diagram, and studies of the basic units of engineering as work, horsepower, force, and moment.

CE 6.137 Engineering Problems III
3 cl, 1 lab hr/wk, 3 cr

The student will continue the use of the slide rule in solving advanced engineering problems involving forces and moments.

CE 6.300 Project Engineering
18 lab hr/wk, 6 cr

Gives each student an insight into problems encountered in the field and office during the design phase of a project.
that could be built. An earth-filled dam project is currently used to provide opportunities to bring into play all abilities learned in each course; any type of engineering project may be selected. Each student is involved in: critical path diagramming; contour mapping from stadia survey, volume computations by planimeter; open channel flow design for the emergency spillway and trickle tube; analysis and classification of soil in the foundation and fill; design of fill using soil information from the analysis; hydrology of the watershed area; design of the valving system utilizing a commercial valve; design of an energy dissipator; design of a structural tower over the valve; design of a road ramp from dam to tower; generating of plans and specifications suitable for presentation to the office of the State Engineer and suitable for bed purposes; and finally staking of the project in the field and referencing it into township-range system and State Plane Coordinate System.

CE 6.305  Sanitary Engineering
2 cl, 3 lab hr/wk, 3 cr

The student will study water use and sewage volume, water distribution, water treatment and sewage treatment. He will learn to perform tests for physical and chemical properties of drinking water, water quality and sewage and air pollution.

CE 6.310  Construction Inspection
3 cl hr/wk, 3 cr

The student will study building codes as they relate to Civil Engineering.

CE 6.500  Survey Computations
1 cl, 6 lab hr/wk, 4 cr

Students learn activities required for closed transiting: Bearings; adjustment of measured angles; adjustment of measured distances by Compass Rule or Crandall Method; and computation of areas by planimeter. Volume calculations, Simpson’s Rule, and determination of North by star computation are also covered. Lab sessions for problem solving.

CE 6.508  Route Surveying
1 cl, 6 lab hr/wk, 4 cr

Students learn the basics of highway curve design and placement, using simple curves, spirals, and vertical curves. The labs are used to place, in the field, located centerline from a “P” line, laying in student-designed curves and spirals. Note taking, staking, and stationing are emphasized. Mass diagrams are also covered.

CE 6.540  Photogrammetry
1 cl, 3 lab hr/wk, 2 cr

The student will learn to prepare maps and charts from aerial photographs by ground surveying and steroscopic methods, using computational forms.

Drafting and Technical Illustration

DRF 4.100  Introduction to Fabrication Practices
2 cl, 2 lab hr/wk, 3 cr

A basic course in manufacturing methods, structures and welding process. Emphasis on Machine Shop practices, the building trades, the welding process, and how they relate to mechanical and architectural drafting.

DRF 4.101  Drafting I
2 cl, 6 lab hr/wk, 5 cr

The student will learn the basic elements of drafting through the application of drafting instruments, lettering, geometric construction, orthographic projection, sections and conventions and isometric drawing. He will demonstrate his knowledge by preparing pencil drawings.

DRF 4.103  Electronic Drafting
4 lab hr/wk, 2 cr

Gives the student a basic understanding of drawing techniques. Emphasis on application of drafting instruments, templates, lettering, isometric and oblique, orthographic projection and geometric constructions. Techniques applied to drawing of chassis and schematics.

DRF 4.104  Industrial Lettering
2 lab hr/wk, 1 cr

The student will learn serif and san-serif lettering as applied to architectural and engineering drawings. He will demonstrate his knowledge by preparing lettering plates. Individual criticism and demonstrations stressing letter form and layout rendered in pencil and pen.

DRF 4.105  Drafting II (Arch)
1 cl, 6 lab hr/wk, 5 cr

Advances the student in fundamental of understanding drafting techniques. Emphasis placed on linework, lettering, dimensioning, symbols, conventions used in architectural drawing.

DRF 4.105  Drafting II (Mech)
2 cl, 6 lab hr/wk, 5 cr

The student acquires skills needed for dimensioning, tolerances, screw threads, and fasteners as used on working drawings. He will demonstrate his understanding by preparing drawings with suitable linework to be reproduced on a ozalid machine. Prerequisite: Drf 4.101.

DRF 4.107  Drafting III (Arch)
2 cl, 6 lab hr/wk, 5 cr

Completes the basic knowledge and skills a student will need to choose a major field of drafting. Emphasis on drawings of construction details and plot plans involving contour lines and site locations.

DRF 4.107  Drafting III (Mech)
2 cl, 6 lab hr/wk, 5 cr

The student will demonstrate a comprehension of machine assembly and sub-assembly, welded parts, piping, structural members, maps and topography, and charts and graphs. His comprehension will be shown by preparing working drawings. Completes basic knowledge, skills needs to choose a major field of drafting. Prerequisite: Dfr 4.105.

DRF 4.109  Architectural Drafting
2 cl, 6 lab hr/wk, 5 cr

The student will learn methods, procedures for architectural drawings. He will apply his knowledge for letter, layout and design to both construction and display drawings. He will be taught basic rendering for display drawings.
The student will learn the periods of architecture and philosophy and conditions which influenced each; theories of design and construction.

**DRF 4.111 Industrial Construction Drawing**  
2 ch, 6 lab hr/wk, 5 cr

The student will demonstrate an understanding of the steps of construction for commercial and industrial buildings. He will apply this knowledge to working drawings. Discussion of modern construction techniques, materials drawing requirements, inter-relationship of Architectural, Civil, Mechanical and Electrical as used in industrial construction.

**DRF 4.113 Structural Drafting**  
2 ch, 6 lab hr/wk, 5 cr

The student will demonstrate a comprehension of civil and structural drafting procedures by completing function and design of general plans; stress diagrams; shop drawings; foundation or masonry plans, erection diagrams; falsework plans; sheet metal layouts; bills of materials; rivet lists; draw indexes; design considerations and strength of joints.

**DRF 4.119 Project Drafting I**  
8 lab hr/wk, 4 cr

The student will learn operational procedures common to industrial drafting departments and will complete drawings requiring all of the skills previously learned. Methods for detail layout, reading specifications, materials of fabrication, checking and back-checking drawings and material take-offs.

**DRF 4.121 Project Drafting II**  
8 lab hr/wk, 4 cr

The student will gain additional knowledge and experience in industrial drafting practices. Drafting room standards of local industries will be discussed. Projects and drawings will be graded for speed and accuracy.

**DRF 4.123 Project Drafting III**  
8 lab hr/wk, 4 cr

The student will demonstrate a comprehension of actual working conditions and drawing requirements acquired in Engineering Department including — speed dimensioning, drafting room administration, coordination of specifications and design.

**DRF 4.125 Advanced Machine Drafting I**  
2 ch, 6 lab hr/wk, 5 cr

The student will learn basic elements of machine design. He will demonstrate understanding of kinematics; motion analysis, including velocity and acceleration; and the study of cams, by means of reports and drawings.

**DRF 4.126 Advanced Machine Drafting II**  
2 ch, 6 lab hr/wk, 5 cr

The student will gain knowledge and experience in the advanced elements of machine design. He will demonstrate this knowledge by preparing reports and drawings pertaining to dimensional analysis, casting and weldments, fasteners spring, power screws, couplings, clutches and brakes.

**DRF 4.127 Technical Illustration I**  
2 ch, 6 lab hr/wk, 5 cr

The student will learn the basic elements of isometric pictorial drawing and will demonstrate his understanding by preparing pictorial assembly and exploded drawings as used within the industrial drafting room. He will learn the use of isometric protractor; isometric eclipse and isometric hex templates; inking pens.

**DRF 4.128 Technical Illustration II**  
2 ch, 6 lab hr/wk, 5 cr

The student will acquire skills needed for diametric and trimetric pictorial drawing through the use of protractor, angle eclipse, hex angle and spring templates. He will demonstrate his knowledge by preparing working drawings as used in the drafting room.  
Prerequisite: Tech. Illus. 4.127.

**DRF 4.129 Advanced Machine Drafting III**  
2 ch, 6 lab hr/wk, 5 cr

The student will acquire skills needed to strengthen his knowledge of design fundamentals by solving practical problems dealing with drive mechanisms, gears and gear trains, bearings and lubrication and vibration analysis. He will learn the principles of geometric and positional dimensioning and tolerancing techniques and interpretation.

**DRF 4.130 Technical Illustration III**  
2 ch, 6 lab hr/wk, 5 cr

The student will demonstrate a comprehension of trimetric and perspective drawings as used in industry for catalogues, sales, repair and training manuals. He will learn the use of inking and shading techniques.  
Prerequisite: Technical Illustration 4.128 or equivalent.

**DRF 4.131 Technical Illustration IV**  
2 ch, 6 lab hr/wk, 5 cr

The student will gain knowledge and experience needed to prepare pictorials and layouts for reproduction by multilith and other commercial printing methods. He will demonstrate this knowledge by completing a portfolio containing samples of completed illustrations needed for job application.  
Prerequisite: Technical Illustration 4.130 or equivalent.

**DRF 4.135 Air Brush Illustration I**  
4 lab hr/wk, 2 cr

Function, manipulation, care of the air brush. Training techniques, procedures in photo retouching and continuous tone rendering with air brush.

**DRF 4.855 Geometric and Positional Dimensioning and Tolerancing**  
2 ch, 4 lab hr/wk, 4 cr

Further develops skills, understandings in definition and use of a technical language which enables an Engineer, Designer, or Draftsman to define completely and accurately the functional parameters of any set of related mechanical parts.

**DRF 4.857 Introduction to Geometric and Positional Dimensioning and Tolerancing**  
2 ch, 2 lab hr/wk, 3 cr

Acquaints the student with the definitions and basic applications of a technical language. Students learn to iden-
sify, interpret, and specify the total functions of mechanically related parts.

DRF 6.110  Construction Estimating
2 lab hr/wk, 2 cr

The student will develop skills in estimating the amount and cost of materials required, and labor cost involved in various types of construction. He will demonstrate these skills by making estimates of material and labor quantities and costs for representative types of construction.

DRF 6.122  Construction Codes
2 lab hr/wk, 2 cr

The student will learn the practices required in local, state and federal construction codes.

DRF 6.127  Practical Descriptive Geometry
4 lab hr/wk, 2 cr

The student will demonstrate his understanding of the theory of auxiliary view true length shape, angle and point of intersection developed from point-line-plane through the use of revolution. An introduction to graphical solution of simple vector problems will be taught.

Prerequisite: DRF III - 4.107 or Math II - 4.204
MECHANICAL ENGINEERING

The mechanical engineering technician will be prepared to carry out many varied engineering assignments involving design, drafting, calculation, development, testing, analysis and coordination with manufacturing departments.

Career opportunities are available in many engineering firms; with manufacturers of machinery and mechanical equipment; in mechanical and tooling departments of electronics industries; on the staff of research and development facilities; and as a civil service employee in city, county, state and federal agencies.

The backbone of the first-year program is the Engineering Concepts course, which develops the student’s problem-solving abilities early in the program through an integrated curriculum including Mathematics, engineering Problems, Mechanics, Statistics, Physics, English, Motion and Time Measurement, Dimensional Metrology and other related disciplines. All these subjects are woven together into a practical approach to the technological task: defining and solving complex technical problems.

An Associate in Applied Science degree is conferred upon completion of the program.

<table>
<thead>
<tr>
<th>FIRST TERM</th>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
<th>Cr. No.</th>
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<td>ME 6.128</td>
<td>Strength of Materials I</td>
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<td>Drf 4.114</td>
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<td>ME 6.102</td>
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<td>Drf 4.116</td>
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<td>Technical Report Writing</td>
<td>3 3</td>
<td>TOTALS</td>
<td>12 22 23</td>
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</tbody>
</table>
MECHANICAL ENGINEERING

Mch 4.240 Machine, Weld Shop
2 cl, 6 lab hr/wk, 4 cr
A two-part one term course in which the student will become familiar with welding and machine shop equipment, practices and techniques by spending actual time in the shops.

ME 6.100 Engineering Concepts I
10 cl, 6 lab hr/wk, 13 cr
The student will learn elementary algebra, trigonometry, the slide rule, logarithms, exponents, and graphical solution of functions, and demonstrate his understanding by using proper forms and methods in solving basic engineering problems involving applied mechanics (statics), vectors, force systems, and friction. The student will demonstrate his ability to write standard English sentences, read effectively, and spell correctly.

ME 6.105 Seminar
8 lab hr/wk, 4 cr
The student will demonstrate his ability to apply his mathematical skills by solving basic engineering problems. Taken concurrently with ME 6.101.

ME 6.108 Fluid Power I
3 cl hr/wk, 3 cr
The student will solve basic problems in pressure, horse-power, fluid characteristics, fluid flow and friction losses, and pump performance. The student will select basic fluid power system components.

ME 6.109 Fluid Power II
3 cl hr/wk, 3 cr
The student will solve problems involving fluid power principles for hydraulic and pneumatic system analysis and design.

ME 6.110 Fluid Power III
3 cl hr/wk, 3 cr
The student will solve problems involving fluid power principles for hydraulic and pneumatic system analysis and design.

ME 6.114 Applied Heat and Power I
3 cl, 2 lab hr/wk, 4 cr
The student will learn and demonstrate his understanding by solving problems involving heat and power equations, perfect gas and energy equations, energy measurements, energy sources, heat transfer, and basic internal combustion engine cycles.

ME 6.116 Applied Heat and Power II
3 cl, 2 lab hr/wk, 4 cr
The student will learn and demonstrate his understanding by solving problems involving energy transfer, vapor power cycles, steam processes, boilers, refrigeration, and system design.

ME 6.118 Machine Design I
3 cl, 2 lab hr/wk, 4 cr
The student will learn the skills to design basic machine elements such as shafts, beams, keys, pulleys, etc., and demonstrate his understanding by making calculations to evaluate the functional requirements of various machine elements.

ME 6.120 Machine Design III
3 cl, 2 lab hr/wk, 4 cr
The student will demonstrate the skills to perform basic design and selection of machines and machine elements, methods of manufacture and choice of materials, by executing a complete design project.

ME 6.128 Strength of Materials I
3 cl, 2 lab hr/wk, 4 cr
The student will learn and demonstrate his understanding by solving problems involving stress and strain, riveted and welded joints, torsion, centroids and moments of inertia, and shear and moments in beams.

ME 6.129 Strength of Materials II
3 cl, 2 lab hr/wk, 4 cr
The student will learn and demonstrate his understanding by solving problems involving stresses and deflections of beams, design of beams, fitting analysis, statically indeterminate beams, combined stresses, columns, strain energy and dynamic loading.

Portland Community College
ME 6.131 Instrumentation
3 cl hr/wk, 3 cr
The student will learn the basic techniques and instruments used in measurement of weight, pressure, vacuum, liquid level, fluid flow, temperature, humidity, electricity, position, and motion. The student will demonstrate his understanding by solving problems of systems analysis and hardware selection.
Prerequisite: ME 6.100.

ME 6.133 Product Research
2 cl hr/wk, 2 cr
The student will apply his engineering communication skills in learning where and how to obtain, organize, file, and effectively utilize catalogs, trade magazines, journals, specifications, proposals, reports, and other technical literature found in the engineering office.

ME 6.135 Project Design
4 cl, 12 lab hr/wk, 10 cr
The student will demonstrate knowledge and skills by executing a design project of his own concept, including studies of feasibility, marketing, economy; layout, proposal, design; all calculations; drawings ready for production; and a complete project report.
Prerequisite: Sixth Term standing.
AIRFRAME and POWERPLANT

Airframe Program

Students enrolled in the Airframe Program, after completing 960 hours of classroom and laboratory work, will be expected to perform at the various levels of competency as prescribed by the FAA in the following:

- Weight and Balance
- Sheet Metal Work
- Dope and Fabric
- Hydraulic and Pneumatic Power Systems
- Cabin Atmosphere Systems
- Communication and Navigation Systems
- Ice and Rain Control Systems
- Aircraft Federal Air Regulations
- Assembly and Rigging
- Aircraft Woodwork
- Welding
- Aircraft Electrical Systems
- Aircraft Instrument Systems
- Position and Warning Systems
- Fire Protection Systems

Powerplant Program

Students enrolled in the Powerplant Program, after completing 960 hours of classroom and laboratory work, will be expected to perform at the various levels of competency as prescribed by the FAA in the following:

- Carburation and Fuel Induction
- Lubricating Systems
- Engine Maintenance and Overhaul
- Fire Protection Systems
- Engine Instrument Systems
- Ignition and Electrical Propellers
- Engine Electrical
- Turbine Engines
- Engine Federal Air Regulations

AIRFRAME AND POWERPLANT MECHANICS

The Airframe and Powerplant Mechanics Program is approved by the State Division of Vocational Education, by the Veterans Administration, and by the Federal Aviation Administration. Portland Community College has been issued Air Agency Certificate No. 410-I.

The Airframe and Powerplant Program is approved for conferring of an Associate in Applied Science degree upon completion of the minimum FAA requirements of 1920 hours and completion of 18 term hours of general education.

Students may take EITHER the Airframe OR the Powerplant program, OR THE TWO MAY BE COMBINED to lead the student to the associate degree.
MACHINE TECHNOLOGY

(One-Year Certificate; Two-Year Associate Degree)

The Machine Technology program at Portland Community College offers training for entry level employment in the machine trades industry.

Instruction is given in varied machining processes, including the operation of engine lathes, milling machines, sensitive drill press, surface grinders, tracer lathes, the radial drill press, and tool and cutter grinding. In addition to shop theory and practice involving learning manipulative hand and machine skills, the student studies such related subjects as basic metallurgy, blueprint reading, shop mathematics and other related aspects of this craft.

Students enrolled in Machine Technology will spend 25 hours per week in the machine shop and related machine theory classes.

Upon satisfactory completion of the first-year sequence, students receive a Certificate of Achievement. An Associate in Applied Science degree in Machine Technology is conferred upon completion of two years (six quarters/25 hours per week) of Machine Shop, plus 18 credit hours of specified general education courses.
AUTOMOTIVE TECHNOLOGY
(One-Year Certificate; Two-Year Associate Degree)

This program offers training for entry level employment in the automotive industry. A broad variety of aspects of the trade are taught, with emphasis on engine repair, tune-up, automatic transmission, and other demanding areas. In addition to shop practices, students study in detail the theory and application involved in wheel alignment, braking systems, automotive electrical systems, carburetion and fuel systems, and other components of the complete automotive unit.

Students enrolled in this program spend 25 hours per week in shop and related automotive theory classes. A Certificate of Achievement is awarded for completion of the first year sequence.

An Associate in Applied Science degree is conferred upon completion of two years (6 quarters, 25 hours per week) of Automotive Shop, plus 18 credit hours of specified general education courses.
WELDING TECHNOLOGY

(One-Year Certificate; Two-Year Associate Degree)

The Welding Technology program at PCC offers training for entry level employment in a broad variety of welding fields.

Training covers most every type of welding and includes Acetylene, Stick Arc, and Inert Gas. Related subjects are also taught in close connection with welding, and include blueprint reading, welding layout, fabrication practice, basic metallurgy, and heat treatment.

Students enrolled in the Welding Technology program will spend 25 hours a week in shop and related welding theory classes.

Completion of the first-year sequence prepares students for the Oregon State and City of Portland welding certification in the various fields of welding. Students will also receive from PCC a Certificate of Achievement.

An Associate in Applied Science degree in Welding Technology is conferred upon completion of two years (six quarters/25 hours per week) of welding studies, plus 18 credit hours of specified general education courses.
The demand for persons trained in Home Economics is a continuing one—to improve methods of homemaking—to adapt to constantly changing conditions and methods in the home—to develop the homemaking ability of others—the transmit information to homemakers—and to provide the basis for a happy and rewarding life and a successful marriage.

At Portland Community College you may choose among a number of different programs in Home Economics, including:

- A one-year Certificate program in Early Childhood Education;
- Two-year programs leading to an Associate of Applied Science degree in Early Childhood Education; in Home Economics-Business; or in Home Economics-Art;
- Short-term courses in Power Sewing and for Clothing Alteration Specialists are also offered. (See Community Education)
- Employment opportunities are found in utility home-service depart-

HOME ECONOMICS

ments, testing laboratories, merchandising and retailing, fashions, ready-to-wear and custom apparel and clothing for Home Economics-Business graduates. For those who want to assist in the teaching of the young child in a day care center, a privately-owned nursery or related work, the Early Childhood Education program offers opportunity to prepare for challenging positions. Home Economics-Art graduates can look forward to work in home furnishings and decoration, in retailing and marketing, and allied areas.

PCC courses also provide a full two-year college transfer program leading to continuing study at four-year colleges or universities.
HOMEMAKING — ART

This program was developed for the student who desires a broad background in all aspects of Home Living and in Art. Upon completion of the program, an Associate in Applied Science degree is conferred.

FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Dept.</th>
<th>Cr. No.</th>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
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<tr>
<td>HE</td>
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<td>Survey of Home Economics</td>
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<tr>
<td>CT</td>
<td>211</td>
<td>Clothing Selection</td>
<td>3</td>
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<tr>
<td>HE</td>
<td>7.500</td>
<td>Personal Development</td>
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<tr>
<td>CT</td>
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<td>Textiles</td>
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<td>Art</td>
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<td>Discovering Art</td>
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<td>AA</td>
<td>201, 202, 203</td>
<td>Survey of Visual Arts</td>
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<td>Communication Skills I &amp; II, and Speech III</td>
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TOTALS 16 16 16

SOPHOMORE YEAR

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<tr>
<td>CT</td>
<td>210</td>
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<td>HAd</td>
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TOTALS 16-17 16-17 16-17

HOMEMAKING — BUSINESS

This program provides a sequence for men and women who wish a background in areas of Home Living at the same time they develop a saleable skill leading to employment in the business field.

The program was developed in cooperation with the Business Education department and provides three options within the field of Business.

Upon completion of the program, an Associate in Applied Science degree is conferred.

FRESHMAN YEAR

<table>
<thead>
<tr>
<th>Dept.</th>
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TOTALS

SOPHOMORE YEAR

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<td>Food Preparation</td>
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TOTALS

The "Open Door" Educational Shopping Center

Portland Community College
EARLY CHILDHOOD EDUCATION

Open to both men and women, this program prepares students to work as teacher aides, teacher assistants, or in related positions in a day care center, pre-school or other child care setting.

Completion of the one-year sequence leads to a Certificate; an Associate in Applied Science degree is conferred upon completion of the two-year sequence.

In both the one-year and two-year sequence, students actively participate with young children in preschool settings each term.

Individual courses are offered in the evening program to present an opportunity for persons in the field to further their skills in working with young children.

(This program is being evaluated and some changes will be forthcoming.)

**ONE-YEAR PROGRAM**

<table>
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<tr>
<td>Dept.</td>
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<tr>
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**THIRD TERM**

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<td>Psychology and Human Relations</td>
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<td>Sp</td>
<td>1.610</td>
<td>Public Speaking, or Fundamentals of Speech</td>
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**TWO-YEAR PROGRAM**

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### General Courses

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<tr>
<td>Wr 111</td>
<td>English Composition, or Wr 1.101 Communication Skills</td>
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<td>AA 180, or 190</td>
<td>Art</td>
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<td>PE 180, or 190</td>
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**TOTAL REQUIRED**: 10-12

### Electives

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<tr>
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<tr>
<td>Science (Bio. or Phy. Sc.)</td>
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<tr>
<td>Social Science</td>
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<td>Nutrition</td>
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<tr>
<td>Personal Development</td>
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<tr>
<td>Marriage</td>
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**TOTAL REQUIRED**: 11-13

### HOME ECONOMICS

**T H.Ec**

**Introduction to Home Economics**

- 2 cl hr/wk, 1 cr

A preview of the home economics field including opportunities for employment and the purpose of the program for the homemaker. Emphasis on both personal values and areas of specialization.

**T CT 210**

**Clothing Construction**

- 2 cl, 4 lab hr/wk, 3 cr

Basic clothing construction principles, fitting.

**T CT 211**

**Clothing Selection**

- 3 cl hr/wk, 3 cr

Principles of selecting clothing considering economic, psychological and aesthetic factors.

**T CT 250**

**Textiles**

- 2 cl, 2 lab hr/wk, 3 cr

Study of the identification, selection, use and care of textile fibers and fabrics.

**T FL 222**

**Marriage Preparation**

- 2 cl hr/wk, 2 cr

The social, legal, psychological aspects of marriage. Open to men and women.

**T FL 223**

**Family Living**

- 2 cl hr/wk, 2 cr

Principles, concepts, and alternatives in family behavior during the first years of marriage and the child bearing period.

### T Fl 225

**Child Development**

- 3 cl, 1 lab hr/wk, 3 cr

Basic principles in the development of the infant and pre-school child.

### T FN 225

**Nutrition**

- 3 cl hr/wk, 3 cr

Fundamentals of nutrition; optimal diet for health; present day problems.

### T HAd 240

**Management in Family Living**

- 2 cl hr/wk, 2 cr

Developing a workable philosophy of homemaking; selection, use and care of modern home equipment; budgeting of time, energy, and family income.

### HE 7.250

**Family Living**

- 3 cl hr/wk, 3 cr

Patterns of family living in modern society including the varying roles and interaction of family members; factors affecting family life including urban-suburban living, sociocultural, racial, and economics. Relationship of the family to such community resources as represented by health, welfare, educational, and counseling organizations.

### HE 7.280

**Parent-Community Relationships**

- 2 cl hr/wk, 2 cr

Establishing and maintaining school and community programs for parent education. Conferences, meetings, and community resources as tools for fostering parent-child relationships.
<table>
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<tr>
<th>Course Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>HE 7.300</td>
<td>Nutrition</td>
<td>2 cr</td>
<td>To acquaint the student with the standards of adequate nutrition, how they can be achieved in daily food selections, and how they can be modified to apply to dental health, family nutrition, and community welfare. Required for dental assistants.</td>
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<tr>
<td>HE 7.340</td>
<td>Child Nutrition and Health</td>
<td>3 cr</td>
<td>Nutritional needs and food habits of the young child with practical application to the day care setting. Childhood diseases, first aid procedures, good health habits, including observations and demonstration with center dietitian and nurse.</td>
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<tr>
<td>HE 7.350</td>
<td>Food Preparation</td>
<td>3 cr</td>
<td>An introductory course to acquaint the student with the selection and use of food for optimum nutrition and satisfaction of the family. The basic principles of food preparation, food values, and standards of quality are included.</td>
</tr>
<tr>
<td>HE 7.402</td>
<td>Principles of Early Childhood Education (Facilities and Resources)</td>
<td>3 cr</td>
<td>History and objectives of early childhood education; developing curriculum and implementing it; examination of facilities and resources in the community.</td>
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<tr>
<td>HE 7.404</td>
<td>Infant and Child Care</td>
<td>3 cr</td>
<td>General principles of development and care of the infant and very young child with emphasis in practical application.</td>
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<tr>
<td>HE 7.410, 7.411</td>
<td>Observing, Guiding Behavior of Young Child I, II</td>
<td>5 cr</td>
<td>Individual patterns of growth and behavior with techniques of recording and reporting; the role of adults in working with young children and techniques of guidance.</td>
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<tr>
<td>HE 7.420</td>
<td>Early Childhood Education Curriculum I</td>
<td>4 cr</td>
<td>Children's literature, story telling, creative dramatics; art media, crafts, other constructive materials including blocks and carpentry. Stages and functions of play.</td>
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<tr>
<td>HE 7.421</td>
<td>Early Childhood Education Curriculum II</td>
<td>4 cr</td>
<td>Music, rhythms, games, materials for physical and motor development; science and nature experiences; planning field trips; cognitive experiences.</td>
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<tr>
<td>HE 7.430</td>
<td>Disadvantaged Child in Preschool</td>
<td>3 cr</td>
<td>Effects of cultural-economic deprivation on the development of personality and intelligence of the young child; analysis of current planning efforts and curriculum development; promoting parent involvement.</td>
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<td>HE 7.440, 7.441</td>
<td>Directed Participation With Young Children I, II</td>
<td>6 cr</td>
<td>Supervised teaching of young children in a preschool, day-care center, or kindergarten.</td>
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<tr>
<td>HE 7.450</td>
<td>Creative Activities</td>
<td>3 cr</td>
<td>Examination of and experimentation with play activities that promote creative growth in the young child.</td>
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<tr>
<td>HE 7.480</td>
<td>Administration of Child-Care Centers</td>
<td>3 cr</td>
<td>Operation of cooperative preschools, nursery schools, Head Start and day-care centers, and private kindergartens. Program planning, organizational structure, budgeting, personnel, interviewing, operational codes, and licensing.</td>
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<tr>
<td>HE 7.500</td>
<td>Personal Development</td>
<td>2 cr</td>
<td>To help the individual feel more at ease in all situations through improving posture, grooming, wardrobe selection, make-up and habits of walking, sitting, and standing. Required for dental assistants.</td>
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<tr>
<td>HE 7.600</td>
<td>Textiles I</td>
<td>3 cr</td>
<td>Basic study of fibers used in textiles, including natural and man-made; consideration of their individual properties, and the satisfactions relating to use by the consumer. Handling and testing of common fabrics, becoming acquainted with the advantages and disadvantages in usage.</td>
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<tr>
<td>HE 7.601</td>
<td>Textiles II</td>
<td>3 cr</td>
<td>Further study of textiles, going into yarn and cloth construction. Suggested for students wishing more complete information and further experience in the handling of fabrics. Examination of construction of yarns and fabrics, tests for fiber content, and study of fabric finishes.</td>
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<tr>
<td>HE 7.650</td>
<td>Beginning Clothing</td>
<td>3 cr</td>
<td>Fundamental techniques in clothing construction; designed for the beginning seamstress.</td>
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<tr>
<td>HE 7.700</td>
<td>Home Furnishings</td>
<td>3 cr</td>
<td>Application of color and design principles to the home and its furnishings in relation to family housing needs; selection of furniture, floor coverings, draperies and accessories from the artistic and practical standpoint.</td>
</tr>
<tr>
<td>HE 7.750</td>
<td>Home and Family Management</td>
<td>3 cr</td>
<td>Principles of time, energy, and money management with emphasis on the problems of combining the role of homemaker and wage earner.</td>
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</table>
The "Open Door" Educational Shopping Center
Opportunity may be waiting for you in PCC's Hospitality Services programs. You can study Quantity Food Preparation, a one-year program, or prepare yourself in a two-year sequence leading to an Associate in Applied Science degree.

Skill in the commercial cooking field can lead to profitable employment in food sales, restaurants, franchise houses, institutional and hotel-motel food services and management, or as a self-employed owner.

At PCC, courses emphasize the actual preparation of good in the commercial kitchen. Students have knowledgeable experiences in breakfast preparation; meat, fish, poultry and sauce cookery; salad-making; sandwich services, dessert and pastry-making, and other areas of food preparation.

Menu planning, cost control, kitchen vocabulary, use and care of kitchen hand tools, and cleanliness and sanitation are all taught in close relation to actual experiences, facilitating development of speed and confidence by students.

In the two-year sequence, problems in management and operation of institutional, hotel and motel services are thoroughly explored, and the student is prepared for a responsible job assignment.
FOOD SERVICES

This program prepares both men and women for a variety of positions within the food services industry. Three options are available: Institution Management, Food Services, and Hotel-Motel Management. A summer work experience in the field is required between the first and second years.

Upon completion of the required courses, and Associate in Applied Science degree is conferred.

<table>
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<th>FIRST YEAR</th>
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- *Institution Management
- **Food Service
- ***Hotel-Motel Management
- *Institution Management
- **Food Service
- ***Hotel-Motel Management

Portland Community College
QUANTITY FOOD PREPARATION

This three-term program prepares the student for employment in a hotel, restaurant or institution as cook, cook's helper or one of many other positions connected with the food service industry.

Developed in close cooperation with labor and industry representatives in the food service industry, the learning experiences represent a careful balance between classroom presentations and actual work experience. Students take an active part in preparing and serving meals for varying sizes of groups, from a broad selection of menus, and for various occasions.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Total Hours</th>
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<td>Safety and Sanitation in the Kitchen</td>
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<tr>
<td>Care and Use of Hand Tools</td>
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<td>Vocabulary of the Kitchen</td>
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<td>Station Duties</td>
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SECOND TERM

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<td>Cost Control</td>
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THIRD TERM

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<td>Pantry</td>
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<td>Menu Planning</td>
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<td>Conservation of Leftovers</td>
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<td>Catering</td>
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Institutional, Food Services,

HR 3.110 Orientation to Food Service
1 cl, 1 lab hr/wk, 1 cr

Overview of many types of food service in today's society. Differences in types; problems peculiar to each. Philosophies of different types of food service.

HR 3.112 Food Preparation I
2 cl, 6 lab hr/wk, 4 cr


HR 3.113 Food Preparation II
2 cl, 6 lab hr/wk, 4 cr

Menu planning; importance of understanding persons to be served; nutritionally adequate meals for captive clientele. Emphasis on estimates of raw materials needed; percent of loss (both economic and nutritive) through various preparation, cooking methods.

HR 3.114 Food Preparation III
2 cl, 6 lab hr/wk, 4 cr

Menus and problems in preparation, service of buffets, gourmet, ethnic foods.

HR 3.115 Food Science I
2 cl, 2 lab hr/wk, 4 cr

Topics common to basic courses in science as related to foods. Use of metric system; use of units; use of different scales of temperature; temperature control, bacterial growth.

HR 3.116 Food Science II
2 cl, 2 lab hr/wk, 3 cr

Scientific principles underlying modern food theory and practice. Relation of food preparation to physical, chemical properties of proteins, starches, sugars, leavening agents and pigments; properties of true solutions and principles of crystallization; colloidal systems: sols, gels, foams, emulsions.

HR 3.117 Food Science III
2 cl, 2 lab hr/wk, 3 cr

Objective tests in food research. Sensory judging of products and relationship to quantity feeding.

HR 3.200, 3.201 Institutional Food
3.202 Preparation I, II, III
2 cl, 6 lab hr/wk, 4 cr ea

Application of basic cookery principles to large-quantity production; effect on nutritive value, aesthetic appeal of foods; standardization of food quality, menu planning and production costs.

HR 3.245 Equipment Layout and Design
3 cr hr/wk, 3 cr

Determination of large and small equipment requirements for food service units; factors governing quality, capacity, care, operation, maintenance of institutional equipment; arrangement of working units for maximum efficiency. Work methods, work simplification procedures, flow of work.

HR 3.250 Equipment Layout and Design
3 cl hr/wk, 3 cr

Determination of large and small equipment requirements for food service units; factors governing quality, capacity, care, operation, maintenance of institutional equipment; arrangement of working units for maximum efficiency. Work methods, work simplification procedures, flow of work.

HR 3.250 Purchase and Cost Control I
3 cl hr/wk, 3 cr

Methods, procedures for purchasing food, supplies for hotels, restaurants, institutions; markets; federal and trade grades; governmental regulations; packaging; comparative versus price buying; yields and quality controls.
HR 3.251 Purchase and Cost Control II  
3 cl hr/wk, 3 cr  
Pre-cost, re-control methods relative to the menu; production control; purchasing, receiving, inventory control; profit of food service systems and supplies.

HR 3.260 Dining Room Services  
1 cl, 4 lab hr/wk, 3 cr  
Proper procedures in set-up, operation of different types of dining rooms. Duties, responsibilities of dining room personnel: Maitre de hotel, hostess, head waiter, waiter, waitress, busboy.

HR 3.300, 3.301 Hotel-Restaurant Organization & Management I, II  
3 cl, 3 lab hr/wk, 3 cr/ea  
Nature, scope of departmental functions in the hospitality industry; emphasis on operating practices and problems.

HR 3.305 Sales Promotion  
3 cl hr/wk, 3 cr  
Development, discussion, study of tools available in sales and promotion of food-service employee attitude; menus, signs; special food; special day promotions; radio, newspaper application.

HR 3.306 Property Management  
3 cl hr/wk, 3 cr  
Principles involved in acquisition of property by purchase and lease. Problems involved in maintenance, repair, refurbishing and renovation of hotels and motels.

HR 3.307 Hotel-Motel Law  
3 cl hr/wk, 3 cr  
Presents highly technical subject in non-technical language. Purposes: to illustrate consequences of lack of foresight by management; to help student to understand attitudes of the courts in litigation involving an innkeeper; to create awareness of responsibilities law imposes upon the innkeeper. Provides safe and sound rules to assist those who make, or interpret, managerial decisions avoid lawsuits and legal pitfalls.

HR 3.308, 3.309 Personnel Management I, II  
3 cl hr/wk, 3 cr/ea  
Responsibilities of a supervisor in the hospitality industry: organization; duties, responsibilities; human relations; grievances; training; rating, promotion; quality-control management-employee relations.

HR 3.310 Sanitation & Safety  
3 cl hr/wk, 3 cr  
Emphasizes the importance for safety in all aspects of food service, safeguards developed. Stress on three leading hazards: cuts, burns and falls; and how to avoid them. Importance of protection of the public health in proper handling of foods. Personal appearance, cleanliness of food service personnel stressed.

Quantity Food Preparation

HE 7.305 Nutrition I  
3 cl hr/wk, 3 cr  
Introductory study of food nutrients, their importance in promoting health, preventing disease. Nutritional requirements through the life cycle, with attention to various food cultures and the application of nutritional requirements to basic food groups.

HE 7.306 Nutrition II  
2 cl, 2 lab hr/wk, 3 cr  
Study of various nutrients and interrelations. Review of need for individualization of diets for cultural, emotional, economic factors; emphasis on various age groups, with specific nutritional needs; fad diets, food fads in general.

HE 7.307 Therapeutic Nutrition  
2 cl, 2 lab hr/wk, 3 cr  
Application of dietetic principles to health maintenance; dietary modifications necessary in pathological conditions. Characteristics of most commonly used modified diets; nutritional adequacy analyzed, effects of prolonged use reviewed.

Care and Use of Hand Tools

The student will learn the use and care of hand tools initially in the classroom. This instruction will be followed by the student's learning, by actually using in the kitchen, the proper use and care of the French knife, boning knife, butcher knife, paring knife, slicer (knife) spatula and whip.

Catering

The catering business is becoming a large part of the food service industry. The student will learn, by actual experience, the problems involved in the use of proper containers and the transporting of food from preparation to serving area.

Conservation of Leftovers

In this class the student will learn to plan a continuing menu to utilize leftover foods. This area of instruction must, of necessity, be tied very closely to cost control.

Cooking

During the first term the student will learn both in the classroom and the laboratory the basics of kitchen work. After learning the fundamentals of cooking, the student will move into fry work and "heavy" cooking under the close supervision of the chef instructor. Third term, students will learn responsibility for the preparation of daily entrees to be served in the college cafeteria as well as assuming responsibility for the supervision of different areas in food preparation, food service and kitchen maintenance.

Cost Control

The student learns that every cost in relation to the operation of a food service must come from the sale of the individual plates of food. Every minute item is covered in this cost breakdown. The advanced student learns labor cost control, purchasing and storeroom procedures.

Menu Planning

The student will learn the proper planning of menus as concerns: the proper vegetable and potato with the many different entrees to be served, color combinations on the plate, coordination of purchasing, planning and pricing, availability of product, weather, time of year, "special" days, etc.

Pantry

The student will learn in an almost exclusively laboratory situation the making of dressings, salads, and cold sandwiches. This is an area in which, as the student progresses, he is given an opportunity to develop his own creativity.

Safety and Sanitation

The student will learn the importance of and the safeguards developed for safety in all aspects of food service.
Stress will be placed on the three leading hazards: cuts, burns and falls, and how to avoid them.

The student must learn also the importance of protecting the public's health as regards to the proper handling of foods. Classroom and laboratory areas will develop this concept. Personal appearance and cleanliness of the food service personnel fall within this area.

Station Duties

The student will learn, during the first term, the work expected of him (her) in the following stations in the kitchen: range, pantry, fry, storeroom, vegetables, cold storage, pastries and desserts. During subsequent terms the student will assume increasing responsibilities in the performance of these duties with the more capable students experiencing considerable supervision in the various stations.

Vocabulary

The student will learn the vocabulary necessary to communicate with other employees in the kitchen. This skill will be learned primarily in the classroom with constant practice in the kitchen in the day to day operation of the cafeteria.
The “Open Door” Educational Shopping Center
LANGUAGE ARTS programs at PCC are designed to provide the student with broad opportunities for learning skills of communication and appreciation of both modern literature and the classics of other periods.

Each writing course is designed to help the student reach one or more of his personal goals: to hold a job or get a better one; to complete his chosen college program; to learn to deal with college-level reading and writing; to increase his command of language; to improve his understanding of what he reads and hears.

Special effort is exerted to assist students in finding effective placement and in developing individual abilities and interests.

A full list of courses provides requirements and options for those planning to transfer to four-year colleges or universities, in a number of fields.

FOREIGN LANGUAGE programs at PCC are designed to develop the student's ability to communicate in a second language: French, German, or Spanish.

The courses provide a basis for further study, for personal enrichment in a foreign culture, for travel, and for specific jobs involving use of a foreign language.

The courses are so planned that at the end of one year the student should be able to understand and manipulate basic structures and vocabulary, to read short selections, to write the language, and to understand what he has covered, with oral responses.

Upon completion of the second year's work, the student should be able to understand and speak with ease in a variety of situations, to read some literary and periodical selections, to express himself in writing, and to sense cultural differences and similarities inherent in the language.
Language Arts

Eng. 50, 51, 52 Effective Reading
3 cl hr/wk, 3 cr/trm

To increase reading comprehension as well as improve other study skills, regardless of the student’s beginning level of achievement. Individual instruction and directed self-instruction help each student progress at his own rate, making use of tachistoscopes, pacers, films, and a variety of special techniques.

T Eng. 101, 102, 103 Survey of English Literature
3 cl hr/wk, 3 cr/trm

Survey of English Literature will deepen the student’s understanding of the language and literature that have had the most direct bearing on the American cultural heritage. Eng. 101: Anglo-Saxon beginnings to Shakespeare. Eng. 102: Milton to Wordsworth. Eng. 103: Byron to present. Must be taken in sequence.

T Eng. 104, 105, 106 Introduction to Literature
3 cl hr/wk, 3 cr/trm

The student learns to read various types of literature with increased awareness of meaning. He will study a number of works to learn what kinds of questions he might ask in evaluating any kind of literature. Eng. 104: Fiction. Eng. 105: Drama. Eng. 106: Poetry. Need not be taken in sequence.

T Eng. 107, 108, 109 World Literature
3 cl hr/wk, 3 cr/trm

The student becomes acquainted with works of Ancient, Medieval, Renaissance, and modern literature that have had notable influence and wide appeal outside their own country. (English and American literature usually excluded; Oriental and/or ethnic literature may be included. Consult instructor.) Should be taken in sequence.

T Eng. 199 Contemporary Minority Literature
3 cl hr/wk, 3 cr

Introduces student to important writings of Black, American Indian, Jewish, and other writers representing minority points of view. He will discover a variety of literary styles and life-patterns and become aware of certain problems of belonging to a sub-culture.

T Eng. 201, 202, 203 Shakespeare
3 cl hr/wk, 3 cr/trm

The student will read, discuss, and investigate five or more of Shakespeare’s plays, and certain sonnets, each term. The course will increase the student’s enjoyment of poetry and drama, develop his appreciation of the power of language, and expand his awareness of the human condition. Should be taken in sequence.

T Eng. 253, 254, 255 Survey of American Literature
3 cl hr/wk, 3 cr/trm

The life of the American mind as manifested in the work of writers of the past three hundred years. Besides acquainting himself with much noteworthy literature, the student will acquire, against this background, a clearer perception of current artistic, social, and political trends. Eng. 253: Colonial Times to Melville. Eng. 254: Poe to James. Eng. 255: To current periods. Should be taken in sequence.

T Eng. 275 The Bible as Literature
3 cl hr/wk, 3 cr

Study of the literary qualities of the English Bible, with some reference to its influence on English and American Literature.

Eng. 2.104, 2.105 Appreciation of Literature
3 cl hr/wk, 3 cr/trm

For the student who wishes to study literature for personal enrichment or to complete a requirement for the A. A. degree. Reading and discussion of poetry and short stories. Non-transfer.

T Sp 160 Introduction to Film
4 cl hr/wk, 3 cr/trm

The student will view a number of representative films. Through discussion and guest lectures he will learn about the history of this medium and various techniques of the art of film-making. He will learn to see film as related to other arts such as drama and literature, but distinct as a contemporary form of art and communication.

Wr. 11, 12, 13 Preparatory Reading and Writing
3 cl hr/wk, 3 cr/trm

Preparatory courses for students who need help in spelling, the structure of sentences and paragraphs, and in reading for understanding. Preparatory Reading and Writing is strongly recommended for most Portland Community College students before entering college transfer courses, Communication Skills, or Business Communications. The student can expect to increase his working vocabulary, to broaden his understanding of the English language, and to improve his ability to communicate. Placement in a specific section will be made on the basis of a departmental recommendation.

Wr. 11 is intended for the student who needs to improve his ability to write standard English sentences and to deal with problems of usage, spelling and punctuation.

Wr. 12 continues the work begun in Wr. 11 and stresses various paragraph constructions. A student should expect to increase his working vocabulary, to review sentence elements, and to continue perfecting his writing skills. Wr. 11 is a prerequisite.

Wr. 13 stresses reading for understanding. It may be taken in sequence or in conjunction with other writing courses. The student who enrolls in Wr. 13 can expect to increase his ability to read analytically, to discern the author’s ideas more accurately, and to write short papers expressing his own thinking.

Wr. 30, 31, 32 English as a Foreign Language
1 cl hr vary; cr varies

Provides practice in speaking, reading, and writing standard English for students whose native language is not English. Foreign students who have encountered language difficulties in their other college classes or in meeting requirements for a vocation will benefit from this practice and from gaining an understanding of the structure and idiom of American English.

Wr. 1.107, 1.108 Spelling
3 cl hr/wk, 3 cr/trm

Through a combined oral-aural-visual-kinetic approach, the student will learn specific words and roots, as well as phonics and special rules. He should achieve measurable
improvement in spelling skills. Individual diagnosis and programs, as well as group study.

**T Wr. 111, 112, 113 English Composition**
3 cr hr/wk, 3 cr/trm

Currently most of the institutions of the State System of Higher Education will accept Writing 111, 112, 113 as fulfilling the nine-hour writing requirement for graduation. If in doubt whether the school of his choice will accept any term of Freshman Composition, the student should check with the registrar's office of that college. At present, English departments do not plan to require transfer students to enroll in a third-year term of Composition at the Junior level, but this situation may change.

Only two terms of English Composition are required for an Associate Degree in Arts or in Science at Portland Community College.

Frequent conferences with the instructor are an important factor in every term of every English Course. The student is urged to avail himself of his instructor's aid at any stage in the writing of a paper or with any other course-related problem.

Wr. 111: The student may expect considerable writing, reading and discussion. By the end of the term he should be writing well-organized, logical papers of about 500 words, making use of some elementary research techniques.

Wr. 112: Wr. 111 with a grade of C or better is a prerequisite. The student will continue developing skills emphasized in Wr. 111, with stress on principles of logical argument. He will investigate techniques of writing a term paper, and will write a well-documented, logically developed term paper.

Wr. 113: Offers the student who has completed Wr. 111 and 112 additional time to strengthen writing skills, to overcome weaknesses, to develop a style, to further the development of his reading and thinking processes. Recommended for non-transfer students who wish to improve writing skills, for mature students returning to college after long absence, and for transfer students whose critical faculties will be increasingly called upon as they advance to upper division work.

**T Wr. 121, 122 English Composition**
3 cr hr/wk, 3 cr/trm

The principles and forms of composition, including the library research paper. The student will write impromptu and prepared essays on topics of some significance, with special attention to organization and logical development.

**T Wr. 214 Business Correspondence**
3 cr hr/wk, 3 cr/trm

A study of modern practices in business correspondence and business report writing. A student enrolled in Business Correspondence will be expected to analyze and to write the principal types of business correspondence.

Prerequisite: Wr. 111 and 112 or consent of instructor.

**T Wr. 241, 242, 243 Creative Writing**
3 cr hr/wk, 3 cr/trm

Offers the student an opportunity to explore and to experiment with the writing of short stories, verse, and other literary forms as agreed upon between student and instructor. While all work submitted by the student will receive careful reading and commentary, each student will be able to present at least some original selections for group discussion in a workshop setting.

**Wr. 1.101, 1.102 Communication Skills**
3 cr hr/wk, 3 cr/trm

Communication Skills is a two-term sequence course designed for students enrolled in one-year and two-year vocational technical programs; it is not transferable within the Oregon State System of Higher Education. The course is intended to enable the student to use object language to communicate exact and useful information in both writing and speaking. Must be taken in sequence.

Wr. 1.101: The student's efforts will be directed to the process of recording the results of his work. Particular attention will be paid to the purpose for writing, the audience being addressed, paragraph unity and development, and validity of evidence offered.

Wr. 1.102: The student will develop the ability to write brief informative compositions and to communicate orally about pertinent subjects.

**Wr. 1.105 Oral Communication and English**
3 cr hr/wk, 3 cr/trm

Wr. 1.105 is exclusively for students enrolled in one-year programs. Both speech and writing will be treated. Includes a review and intensive practice with the basic elements of effective speech and writing. Stresses problems confronting those working at the job for which the student is preparing.

**Wr. 2.301, 2.302 Business Communications**
3 cr hr/wk, 3 cr/trm

Business Communications is for the student preparing himself for business life. It is a two-term sequence course and must be taken in sequence. A student whose language skills are weak should complete Preparatory Reading and Writing before attempting Business Communications.

**Wr. 2.301: Thorough review of basic writing skills. Through reading and discussion of selected topics relating to business, the student will develop an awareness of, and an interest in, and the ability to produce the succinct written expression appropriate to modern business communication.**

**Wr. 2.302: The student will gain experience with various types of business communication. He will learn to appreciate the uniqueness of each problem in business communication as well as to apply principles of effective human relations.**

**Wr. 6.126 Report Writing**
3 cr hr/wk, 3 cr/trm

Report Writing is for the vocational-technical student whose work will require him to prepare and deliver oral and written professional reports. Students become acquainted with the procedures of fact gathering, planning and compiling informative reports. Each will work on reports which are the results of his own investigation.

**Foreign Languages**

**T RL 50 First-Year French**
4/5 cr hr/wk, 4 cr

For the student with no previous experience in French, emphasizes listening and speaking. Introduction of verb system of regular and irregular verbs in the present tense. Work with simple declarative, negative and interrogative
structures, greetings, numbers. Introduction of the adjective system. Language lab practice required. Foreign students must have instructor’s consent.

**T RL 51** First-Year French
4/5 cl hr/wk, 4 cr

Emphasizes listening and speaking. Some reading introduced. Exercises in elementary grammar and composition. Work with more complex verb structures in past, future and conditional tenses. Language lab practice required. Prerequisite: RL 50 or equiv.

**T RL 52** First-Year French
4/5 cl hr/wk, 4 cr

Emphasizes speaking and reading with composition introduced. An additional reader *may* be added this term. Work in the perfect tenses and the subjunctive. Language lab practice required. Prerequisite: RL 51 or equiv.

**T RL 101** Second-Year French
4/5 cl hr/wk, 4 cr

Begins with thorough review of verbs in all tenses. Class discussions deal largely with readings and are conducted largely in French. Thorough review of the grammatical structures presented in RL 50, 51, 52. Language lab practice required. Prerequisite: RL 52 or equiv. For proper placement, see instructor.

**T RL 102** Second-Year French
4/5 cl hr/wk, 4 cr

Continuing review of grammar. Readings of increased difficulty discussed in French. Composition requiring increasing mastery of language. Language lab required. Prerequisite: RL 101 or equiv.

**T RL 103** Second-Year French
4/5 cl hr/wk, 4 cr


**T RL 114, 115, 116** French Conversation
2 cl hr/wk, 2 cr/trm

Taken concurrently with or independently of RL 101, 102, 103. A minimum of writing, reading, a maximum of oral work to develop conversational ability. Language lab practice required. Prerequisite: RL 50, 51, 52 or equivalent.

**T GL 50** First-Year German
4/5 cl hr/wk, 4 cr

For the student beginning study of German: emphasizes listening, speaking and rudimentary writing skills. Detailed analysis of the VERB in the present and future tenses and the NOUN as subject and object, or the case system, is provided through classroom and laboratory practice. Writing introduced through dictation. Brief reading selections.

**T GL 51** First-Year German
4/5 cl hr/wk, 4 cr

Basic structures introduced in the first term are reviewed. Analysis and practice on the past tenses, plural forms, adjective endings, pronouns, conjunctions and word order are given. Discussion of reading to extend vocabulary is included along with short writing assignments. Practice in the language laboratory may be required. Prerequisite: Successful completion of GL 50 or the equivalent with instructor’s consent.

**T GL 52** First-Year German
4/5 cl hr/wk, 4 cr

Emphasis on increasing conversational ability and reading skill. Hypothetical situations requiring use of subjunctive forms receive major attention. The alternate subjunctive as it occurs in the written language and in colloquial speech is discussed. Command forms, passive voice, a complete review of idioms are included. Written assignments based on short, contemporary reading selections after thorough discussion in German in class. Laboratory practice in dictation may also be required.

**T GL 101, 102, 103** Second-Year German
4/5 cl hr/wk, 4 cr/trm

These courses provide an intensive review of grammar in approximately the same sequence as presented in the first year courses. Major emphasis on programmed reading selections, class discussions based on these readings, and original writing. Exercise in and analysis of grammar are included in writing assignments which range in difficulty from brief revisions of stories to original composition based on equivalent discussions. Prerequisite: Successful completion of GL 52 or the equivalent with instructor’s consent.

**T GL 111, 112, 113** German Conversation
2 cl hr/wk, 4 cr/trm

To be taken concurrently with or independent of GL 101, 102, 103. This is an advanced second year course in which very brief assignments dealing with many phases of German life are the basis of each class discussion. Notes on each student’s comments are provided at the end of each hour. No writing is required. Grades based on attendance, improvement in conversational ability.

**T RL 60** First-Year Spanish
4/5 cl hr/wk, 4 cr

The beginning student will learn the sound system of Spanish—vowels, consonants, pronunciation and stress and intonation patterns. He will learn to manipulate the basic structures of noun-adjective agreement, the present tense and pronoun usage. Listening and speaking practice with short programmed readings and writing exercises. Additional practice with tapes is required.

**T RL 61** First-Year Spanish
4/5 cl hr/wk, 4 cr

The student will increase his basic vocabulary and will learn to manipulate additional basic structures—especially the past tense. He will do directed listening, speaking, reading and writing activities suggested in a supplementary reader. Practice with tapes is required.

**T RL 62** First-Year Spanish
4/5 cl hr/wk, 4 cr

The student will intensify his knowledge of basic structures and vocabulary. More extensive reading, writing and oral activities. Structural emphasis is on the future and conditional tenses, more complex sentences and the command forms derived from the present subjunctive. Student will become more aware of deep and formal Spanish culture. Required tape exercises provided by native models. Prerequisite: Successful completion of RL 61 or the equivalent with the instructor’s consent.
T RL 107  Second-Year Spanish
4/5 cl hr/wk, 4 cr

Student will review basic vocabulary and structures of First-Year Spanish and do exercises and activities that will enable him to express himself understandably in a variety of situations. Prerequisite: Successful completion of RL 62 or the equivalent with instructor’s permission.

T RL 108  Second-Year Spanish
4/5 cl hr/wk, 4 cr

Student will develop more extensive ability to understand by listening to a series of taped presentations by native models. He will read, discuss and write about contemporary Spanish-American short stories and become aware of their deep and formal cultural content. He will learn to form and use the subjunctive in relation to previously learned structures.

T RL 109  Second-Year Spanish
4/5 cl hr/wk, 4 cr

Student will develop proficiency through discussions, readings and compositions so that he may initiate a conversation and cope with basic conversational needs independent of lab or textual aids. He will develop a sense of linguistic and cultural differences and similarities inherent in Spanish.

T RL 117, 118, 119  Spanish Conversation
2 cl hr/wk, 2 cr/trm

Provides an opportunity for the student who has attained a level of proficiency to intensify his practice primarily of understanding and speaking. Conducted in Spanish. May be taken independently or concurrently with RL 107, 108, 109 with instructor’s permission.
The "Open Door" Educational Shopping Center
To help meet the growing demand for personnel in the health professions, Portland Community College provides programs which prepare students as Associate Degree Nurse, Licensed Practical Nurse, Medical Laboratory Assistant, Radiologic Technician, Medical Record Technician, Dental Assistant, Dental Technician, and Dental Hygienist.

Course work in the life sciences is also offered not only for students in Health Professions programs but also for those who may wish to build backgrounds and knowledge in other areas or for transfer preparation.

Programs in Physical Education and Recreation are also offered, with a new two-year program in recreation just installed.

Entrance requirements for some programs include aptitude tests, personal interviews, and physical examination. Students should check with counselors for these requirements and to make arrangements for interviews.
DENTAL TECHNICIAN

This program prepares students to be immediately employable and productive as dental technicians. Graduates may be employed by individual dentists, commercial dental laboratories, federal or state agencies, or as representatives for companies manufacturing and distributing dental supplies.

Upon completion of the program, an Associate in Applied Science degree is conferred.

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The “Open Door” Educational Shopping Center

Portland Community College
DENTAL ASSISTANT

This three-term program prepares students for the National Certifying Examination in dental assisting work, and for the Oregon State examination in roentgenology. Upon completion of the program, a Certificate in Dental Assisting is awarded.

### FIRST TERM

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### Dental Assistant

DA 5.505  Oral Anatomy  
2 cr, 2 lab hr/wk, 2 cr  
Growth and development of oral structures; tooth form and function. Laboratory emphasizes development of physiologic occlusion and morphology in wax.  
DA 5.506, 5.507, 5.508  Clinical Lab I, II, III  
9/12/12 lab hr/wk, 3/4/1 cr  
Mixing and handling of dental materials; instruments and equipment, leading gradually to more complex features of Roentgenology, tray-setups, and chairside assisting.  
DA 5.510  Histology, Pathology  
2 cr, 2 lab hr/wk  
Structural elements of normal tissue and organs and their responses to disease and injury.  
DA 5.512  Oral Histology, Pathology, Microbiology  
1 cr, 1 lab hr/wk, 1 cr  
Emphasis given to common oral diseases, their characteristics and manifestations, microbiology of oral flora.  
DA 5.515  Dental Pharmacology  
1 cr, 1 lab hr/wk, 1 cr  
A brief study of drugs used in the dental office.  
DA 5.520, 5.522  Roentgenology I, II, III  
5.524 1 cr, 1 lab hr/wk, 1 cr  
The student learns how to make intra-oral roentgenograms and how to process, mount and file them; learns of radiation hazards and precautions for roentgenographic certification by Oregon State Board of Dental Examiners.  
DA 5.530, 5.532  Dental Materials I, II  
1 cr, 1 lab hr/wk, 1 cr  
The student learns identification, characteristics, and manipulation requirements of dental materials commonly employed in the dental office. Lectures and lab exercises.  
DA 5.535  Pre-Clinical Orientation  
1 cr, 1 lab hr/wk, 1 cr  
Introduction to profession; responsibilities, objectives, opportunities and scope of service; code of clinical ethics; patient management.  
DA 5.538, 5.539  Clinical Practice I, II  
2 cr, 2 lab hr/wk, 3 cr  
General chairside assisting; supplies, maintenance of equipment. Practical applications of dental procedures; health objectives; preventive dentistry, first aid in patient care.  
DA 5.540  Dental Specialties  
1 cr, 1 lab hr/wk, 1 cr  
Specialists in oral surgery, orthodontics and other dental areas acquaint the student with all types of specialization.  
DA 5.550  Dental Office Records  
2 cr, 2 lab hr/wk, 2 cr  
Acquaints the student with variety of office record keeping: The appointment book; patient records; daily ledger; financial arrangements; recall systems.  
DA 5.551  Dental Office Seminar  
2 lab hr/wk, 1 cr  
Office situations in on-the-job training in the dental office. A general over-all review of the dental assistant program.  
DA 5.552  Office Practice  
20 lab hr/wk, 5 cr  
The student works one-half day in a dental office, alternating between morning and afternoon hours, to become acquainted with the office procedures of a practicing dentist. Third term, arranged.
ASSOCIATE DEGREE NURSE

This program prepares practitioners to render quality nursing care to all kinds of people in a broad variety of conditions and circumstances. The student becomes prepared to assume responsibility for personal growth within the profession of nursing. Upon completion of the program, the student is eligible for examination by the Oregon State Board of Nursing and licensure as a Registered Nurse.

The program includes both general education courses and professional nursing courses; learning experiences are provided in hospitals, nursing homes and community agencies. The nursing courses are sequential; the student must achieve satisfactorily (a grade of C or better) in each course to proceed to the next in sequence.

*Alternate course choices are shown in italic type.

**Students taking Nu 5.702 will take Growth and Development.

*Students taking Nu 5.701 will take Writing 112.

**Students taking Nu 5.702 will take Growth and Development.

*Students taking Nu 5.701 will take Writing 112.

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****May be taken summer quarter
PRACTICAL NURSE

The program for practical nurses at PCC is designed to prepare students to give nursing care to patients under the direction and supervision of physicians or professional nurses. Graduates of the program are eligible to take the National Practical Nurse Licensing examination given by the Oregon State Board of Nursing for licensing. All graduates receive a certificate and are granted the privilege of wearing the school cap and pin.

The program runs through four terms and correlates nursing theory and practice. It is developed to move the student from simple to more complex nursing situations. New classes start fall and spring quarters; tuition is the same as for other full time students.

FIRST TERM

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SECOND TERM

CARE ADULT PATIENT I

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THIRD TERM

MATERNAL-CHILD HEALTH

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FOURTH TERM

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LICENCED PRACTICAL NURSE

Fundamentals of Practical Nursing

11 wks, 16 cr

An introductory course to practical nursing, health problems, health facilities, and needs of all people. The student will gain an understanding of self and others, the normal function and structure of the body, the patient's environment, planning and meeting the needs of the dependent practice. Beginning skills in observations and recording signs and symptoms of disease will be developed. Normal nutrition is included.

Students wishing to take Fundamentals of Practical Nursing must satisfactorily meet the requirement for entrance into the practical nurse program.

Care Adult I

11 wks, 16 cr

Introduces the student practical nurse to variations from the normal body function, to the nursing principles related to therapeutic methods and diagnostic procedures, to the fundamental needs of the medical-surgical-orthopedic patient. Selected learning experiences with patients with less complex nursing needs are planned. Dietary therapy and drug therapy as they relate to these patients are included.

Students wishing to take Practical Nursing I must satisfactorily complete Fundamentals of Practical Nursing.

Maternal-Child Health

11 wks, 16 cr

Provides the student with an understanding of the normal obstetrical patient, the new born, and the child in relation to patterns of normal growth and development. Elements of anatomy, physiology, and nutrition are applied toward an understanding of this group. Introduces the student to common illness of the child, and the student has selected learning experience with the maternal and the child patients progressing from those with simple to more complex nursing needs. Altered body function, disease process, and the nursing needs of these patients will be discussed with concurrent learning experience.

The student practical nurses will be divided into sections during the third and fourth quarter with some having maternal-child care experiences while others will have learning experiences with the medical-surgical-orthopedic patients. At mid-quarter, the sections will be reversed so that all students will have similar nursing care problems to solve. Prerequisite: Have successfully completed Practical Nursing Fundamentals and Care Adult I.

Care Adult II

11 wks, 16 cr

Content is built on prior knowledge and continues to develop understanding of variations from normal body function, aspects of psychosomatic illness and disaster nursing with care to selected patients with more complex nursing needs. An understanding of nursing trends is developed to prepare the practical nurse for employment and the legal aspects of nursing. An explanation is given of the licensing procedure. Prerequisite: Have successfully completed Fundamentals of Practical Nursing, and Practical Nursing I, and Practical Nursing II.

Portland Community College
MEDICAL LABORATORY TECHNICIAN

This two-year program trains students in performance of routine clinical laboratory tests under the supervision of a pathologist, medical technologist, or physician. The course combines campus instruction in fundamental principles and clinical experiences gained through rotation in clinical laboratories.

Under completion of the curriculum, the student receives an Associate in Applied Science degree and is eligible to take the national examination for certification given by the Board of Registry of Medical Technologists of the American Society of Clinical Pathologists, recognized by the American Medical Association.

(Courses in italics may be elected depending upon student’s goal; check with your advisor.)

FIRST YEAR

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Note: In addition to the Clinical Lab Practice time designated in the above weekly curriculum plan, students can expect to be assigned additional time on Saturdays, Sundays, Holidays, and school vacation periods.

* English – The sequence to be taken is determined by the English Placement Examination given by the Language Arts Department.

** Math – The level of placement is determined by the Math Department.

*** Elective may be any Arts and Letters or Social Science studies.

FOURTH TERM

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Portland Community College
MEDICAL RECORD TECHNICIAN

This is a four-term program in medical record-keeping theory and practice. It includes the organization and functions of the medical record department; the duties and responsibilities of the medical record personnel; the contents and uses of medical records together with acceptable methods of numbering, filing, and classifying these records.

The program also includes methods of record analysis; completion of hospital statistics, and medicolegal and ethical principles involved in record maintenance and usage.

Upon completion of the program, the student is eligible to take the accreditation examination as given by the American Association of Medical Record Librarians.

FIRST TERM

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MRT 5.470 Medical Record Science I
5 cl hr/wk, 5 cr
An introductory course in medical records science. History of medicine and hospitals; content and uses of medical records; methods of filing and preserving records; medicolegal aspects of medical records.

MRT 5.471 Medical Record Science II
5 cl hr/wk, 5 cr
Medical and vital statistics, nomenclature and classification systems, codes, and indexes.

MRT 5.472 Medical Record Science III
3 cl hr/wk, 3 cr
Medical staff organization; health science library; accrediting, approving and licensing agencies; Medicare administrative rules; organization of a medical record department.

MRT 5.473 Medical Record Seminar
4 lab hr/wk, 2 cr

MRT 5.482 Directed Practice III Seminar discussions: Supervision, organization and management; forms preparation and control; the professional organization (national and state); problems encountered in Directed Practice.

MRT 5.475, 5.476 Medical Record Lab I, II, III
5.477 4/4/2 lab hr/wk, 2/2/1 cr
Accompanies Medical Record Science I, II, III. In these labs, the student practices and demonstrates proficiency in use of techniques and procedures of medical record science.

MRT 5.480, 5.481 Directed Practice I, II, III
5.482 12/20/36 lab hr/wk, 3/5/5 cr
Supervised learning experiences in well-organized and well-staffed medical record departments under the supervision of experienced medical record librarians. Students are assigned for specified periods of practice in medical record departments of hospitals accredited by the Joint Commission of Accreditation of Hospitals and other medical care facilities.
RADIOLOGY

This program consists of two academic years plus six months internship in one of the participating hospitals. Upon completion of the 30-month program, PCC confers an Associate in Applied Science degree and the student is eligible for the national registry examination leading to certification. The Radiologic Technology program prepares the student to render skilled professional service to the patient. Courses are designed to qualify technologists who will be in step with the latest developments in radiology.

### First Year

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*Radiographic Clinic:

This is a continuous course extending over the entire thirty months of the program. A total of approximately 3000 clock hours is spent in the Radiology Department of one of the six participating hospitals. The time is divided as follows: 16 hours per week during the first academic year, 40 hours per week during the first summer term, 24 hours per week during the second academic year, and 40 hours per week from the beginning of the second summer and continuing until the end of the thirty-month period. A total of thirty (30) credit hours are earned by the student for this clinic experience, but these credits are granted only after the completion of the entire program.

Portland Community College
Radiology

XT 5.614, 5.615, Radiographic Clinic I, II, III, 16 hr/wk
XT 5.616, 5.617, 16 hr/wk
XT 5.618, 5.619, IV, 40 hr/wk
XT 5.620, 5.621, V, VI, VII, 24 hr/wk
XT 5.622, 5.623, VIII, IX, X, 40 hr/wk, 30 cr

Practical work experience in hospital radiologic departments under supervision of radiologists, technologists, instructors. Students instructed in operation of equipment, handling of patients. Practice under close supervision, then general supervision, finally unaided. Student does no radiographic examinations until qualified for safety to patient and personnel. Continuous through thirty months of program; provides approximately 3000 hours in radiology at one of the participating hospitals. Thirty credits are granted upon completion of the entire program.

Prerequisite: For each term, satisfactory completion of previous term.

XT 5.626 Survey of Disease
2 cl hr/wk, 2 cr

Acquaints the student with changes in disease, injury, their application to radiology. Understands enable technologist to handle seriously ill or injured patients more intelligently; to produce more informative radiographs; to obtain greater satisfaction from work.

XT 5.600 Orientation and Ethics
1 cl hr/wk, 1 cr

An overall view of radiologic technology; part radiology plays in medicine; relation to complete medical services structure. Acquaints student with general structures of applied medicine, ethical principles. Outlines responsibilities in becoming a member of a paramedical profession. Relationship of radiologic technologists to other technologists, the patient, radiologists attending physicians, other members of the hospital staff.

XT 5.625 Nursing Procedures
2 cl hr/wk, 3 cr

Principles of nursing care as related to radiography. Specific applications to techniques used by well-trained technologists.

XT 5.603 Radiographic Technique I
2 cl, 1 lab hr/wk, 2 cr

Develops knowledge, skills for thorough, efficient darkroom procedures. History, development of X-ray film and darkroom accessories; functions of chemicals; darkroom and processing apparatus; manual, automatic processing techniques. Radiographic positioning: intensifying screens, function, care, tube, part, film alignment for quality radiographs.

XT 5.604 Radiographic Technique II
3 cl, 1 lab hr/wk, 3 cr

Theory of radiographic technique correlated with practical application as basis for all radiologic examinations. Students develop ability to devise technique based on sound principles and practice. Film critique to gain knowledge, familiarize student with visual aspects of radiographs, enable student to interpret accurately requests for radiological examinations; properly positioning the part or area to be radiographed; recognizing structures and organs visualized.

Prerequisite: Radiographic Technique I

XT 5.605 Radiographic Technique III
3 cl, 2 lab hr/wk, 4 cr

Principles of radiographic exposure, radiographic positioning, film critique continued; acquaints the student with common procedures in radiography involving the use of contrast media. Equipment and media used, reactions and contra-indications to these media.

Prerequisite: Radiographic Technique I, II.

XT 5.606 Radiographic Technique IV
8 cl, 4 lab hr/wk, 10 cr

Principles of radiographic exposure, radiographic positioning, film critique continued; special radiographic procedures; image recording; rapid film changers; other recording media.

Prerequisite: Radiographic Technique I, II, III.

XT 5.607 Radiographic Technique V
6 cl, 2 lab hr/wk, 7 cr

Principles of radiographic exposure, radiographic positioning, film critique, special radiographic procedures continued; intraoral radiography: dental, oral radiography, radiation therapy.

Prerequisite: Radiographic Technique I, II, III, IV.

XT 5.608 Radiographic Technique VI
8 cl, 4 lab hr/wk, 10 cr

Principles of radiographic exposure, radiographic positioning, film critique continued; departmental function, organization, supervision, intra-and inter-departmental relationships; attitudes and policies in personnel management.
ANATOMY AND PHYSIOLOGY

Sci 5.930, 5.931   Anatomy and Physiology
3 cl hr/wk, 3 cr

Fundamental principles of anatomy, physiology with emphasis on function. Provides a comprehensive understanding of man as a functionally integrated organism. All systems of the body including developmental anatomy and physiology are discussed.

BIOLOGY

T GS 101, 102, 103   General Biology
3 cl, 2 lab hr/wk, 4 cr

Survey for liberal arts majors covering fundamental principles of life in plants and animals. Emphasis is on function to a greater extent than structure; special reference to ecological problems. Terms must be taken in sequence.

DA 5.500   Human Biology
3 cl hr/wk, 3 cr

Combines anatomy, physiology of human body as it relates to health. Student studies systems of the body in relation to each other.

Associate Degree Nurse

Sci 5.400   Orientation to Health Services
1 cr

Sensitizes the student to many areas of health services, the public and private agencies involved. The student learns to define health and major health problems; identify major health care facilities in the community; recognize need for preparation of health care personnel; identify health team members; and appreciate need for education and learning as a life-long process.

Sci 5.515   Microbiology
2 cl, 2 lab hr/wk, 3 cr

Surveys major areas in microbiology. Groups of microorganisms characterized to reveal their nature. Principles of biology using bacteria, molds, yeast, viruses, rickettsia, protozoa and algae. Relationship of micro-organisms to disease; grouping of etiological agents according to method of transmission and portal of entry is closely related to the student’s background and experience.

Nu 5.700   Fundamentals of Nursing
2-3 lec, 9-12 lab hr/wk, 6 cr

Foundation for subsequent nursing courses. The student learns to perform nursing care that assists people to meet their basic needs; recognize need for meaningful communication in the life process; understand how to problem-solve. Learning experiences occur in hospitals, nursing homes and community agencies.

Nu 5.701   Fundamentals of Nursing
Nu 5.702   Fundamentals of Nursing with Obstetrics
2-3 lec, 9-12 lab hr/wk, 6 cr

Continues development of knowledge and skills focusing on selected nursing problems in long-term disability, illness, and the maternity cycle. The student will plan, give and evaluate care of individuals to meet basic needs. A variety of community agencies and hospitals are used during these two terms.

Nu 5.711, 5.712   Physical and Mental Nursing with Pediatrics
3-4 lec, 12-15 lab hr/wk, 8 cr

Builds on prior courses to enable the student to meet nursing needs of individuals in increasingly complex nursing situations. The student will develop a method of nursing care that considers the physical, social and emotional needs of the individual; plan, perform, evaluate care for selected individuals with major health problems. Learning experiences are provided in general and psychiatric hospitals and in related community agencies.

Nu 5.713   Advanced Nursing
3-4 lec, 12-15 lab hr/wk, 8 cr

Develops depth of understanding, ability to coordinate knowledge, skill and judgment necessary for registered nurse. Planning, implementing and evaluating nursing action based on synthesis of knowledge gained from social and natural sciences and previous nursing courses. Prerequisite: Learning experience.

Nu 5.714   Seminar in Nursing Trends
2 cl hr/wk, 2 cr

Offered concurrently with Advanced Nursing to explore issues and trends in nursing. The student learns to identify legal and personal responsibilities of the registered nurse; identify effects of social change on nursing; identify current changes in nursing service and nursing education; and recognize relationships of members of the health team.

Dental Technician

DT 5.506, 5.507   Oral Anatomy
2 cl hr/wk, 2 cr/trm

Student learns basic knowledge of the oral cavity as foundation for dental prosthetics. Histology, physiology of structure of the head and neck.

DT 5.630   Dental Technology
2 cl hr/wk, 2 cr

Familiarizes student with use and care of dental laboratory equipment and small hand tools.

DT 5.650, 5.652   Dental Materials I, II
2 cl hr/wk, 2 cr/trm

Properties and manipulation of materials used in the dental laboratory.

DT 5.660, 5.662   Denture Techniques I, II
2 cl hr/wk, 2 cr/trm

Complete denture techniques, including waxing of dentures, balanced occlusion, curing, finishing and polishing, custom trays, bite blocks, repairs, immediate dentures, rebase, reclines, and esthetics.

DT 5.680   Professional Ethics
2 cl hr/wk, 2 cr

Acquaints student with history of dental profession, auxiliary organizations. Principles of ethics and jurisprudence as they apply to dental laboratory technicians. Role on the dental health team.

DT 5.700   Inlay Casting
2 cl hr/wk, 2 cr

Making of dies, waxing, casting of inlays. Problems and techniques in the construction of inlays.

Portland Community College
Dental Materials Used in a Dental Technician Laboratory:

- DT 5.705 Crown and Bridge
  - 3 cl hr/wk, 3 cr
  - Techniques in construction of crowns and fixed bridge, utilizing different types and facings. Waxing, casting, soldering. Construction of acrylic bridges.

- DT 5.710 Partial, Clasp, Bar
  - 4 cl hr/wk, 4 cr
  - Design, construction of partials, clasp and bar. Waxing, investing, processing, benching, polishing and finishing.

- DT 5.720 Ceramics
  - 3 cl hr/wk, 3 cr
  - Composition, physical properties, fundamentals of dental porcelain. Dies, matrix adaptation, firing, grinding, glazing related to baked porcelain.

- DT 5.800 Dental Laboratory Technology I
  - 20 lab hr/wk, 5 cr
  - Nomenclature, terminology used in dental profession. Dental materials used in a dental technician laboratory: acids; waxes; gypsum products; abrasives and polishing agents; artificial teeth; separating materials; acrylic resins; impression materials; laboratory gases; investments and fluxes.

- DT 5.802, 5.804 Dental Laboratory Technology II, III
  - 20 lab hr/wk, 5 cr/trm
  - Pouring impression trays; base plates; occlusal rims; methods of cast mounting. Arrangement teeth; denture wax up; denture flashing; balancing occlusion; elimination of wax from mold; post dam; palatal relief, mixing resins; trial packing; finishing and polishing. Immediate denture construction; spot grinding and milling. Repairing prosthetic appliances: methods of repair, types of repair, removing porcelain teeth from castings; relining, partial-denture relining, full-denture relining the flask method; cold cure method.

- DT 5.806, 5.808 Dental Laboratory Technology IV, V
  - 20 lab hr/wk, 5 cr/trm
  - Cast inlay and crowns, methods of fabrications, dies, working models, wax patterns, spruing, investing, elimination of the wax, casting picking, finishing and polishing, fixed bridgework, working models types of bridgework, waxing, selection of pontics and facings, investing and soldering.

- DT 5.810 Dental Laboratory Technology VI
  - 20 lab hr/wk, 5 cr
  - Wrought wire and cast partials, including contouring, investing, soldering, finishing and polishing, impression, master cast, types of claspers, surveying, duplicating master mold, wax up, burnout, melting and casting, finishing and polishing. Characteristics of porcelain, porcelain glaze, porcelain stain, matrix method of fabrication.

- DT 5.850 Dental Seminar
  - 2 cl hr/wk, 2 cr
  - Review of all lab procedures and discussion of techniques used in the dental laboratory.

Medical Laboratory Technician:

- MLT 5.421, 5.422 Clinical Chemistry I, II, III
  - 2 cl, 2 lab hr/wk, 2 cr/trm
  - MLT 5.421 includes general concepts of instrumentation; quality control; standard, normal and recovery solution; and calibration curves. MLT 5.422 includes routine testing procedures incorporating materials and methods, principles, techniques, normal and abnormal values. MLT 5.423 encompasses acid-base balance, electrolytes and enzyme chemistry with emphasis on materials and methods, principles, techniques, normal and abnormal values.

- MLT 5.430, 5.431 Routine Analysis I, II
  - 1 cl, 4/2 lab hr/wk, 3/1 cr/trm
  - Primarily laboratory practice. The student will learn the routine urinalysis tests and other tests on body fluids, and will practice these as a part of clinical laboratory training.

- MLT 5.450, 5.451 Hematology I, II
  - 1 cl, 6/3 lab hr/wk, 3/2 cr/trm
  - The student learns and practices routine procedures for drawing blood, handling blood, preparing blood smears, and counting blood cells and platelets, as well as other tests routinely performed in a hematology department.

- MLT 5.460, 5.461 Microbiology I, II, III
  - 1 cl, 2 lab hr/wk, 2 cr
  - In this sequence the student learns basic practices and procedures routinely used in bacteriology, parasitology and mycology, including sterilization techniques; collection, handling of specimens; preparation, use of media, methods of inoculation of media; diagnostic procedures for cultivation, identification of species; methods of planting and reading antibiotic sensitivity studies.

- MLT 5.465 Immunohematology
  - 1 cl, 2 lab hr/wk, 2 cr
  - Brief survey of blood banking, including ABO grouping and Rh factor typing; factors affecting blood grouping reactions. Performance of many serological tests used in the clinical laboratory.

- MLT 5.468 EKG – BMR
  - 1 cl, 1 lab hr/wk, 1 cr
  - Survey of theory and usage of electrocardiograph and the common BMR machines.

- MLT 5.469 Clinic Seminar
  - 4 lab hr/wk, 2 cr
  - Times arranged during the term to review practices and procedures already learned, and to guide the student into areas where more practice and proficiency are needed.

- MLT 5.470, 5.471, 5.472 Clinical Lab
  - 12/20/20/32 lab hr/wk, 3/5/5/8 cr
  - Students are assigned to various clinical laboratories within the metropolitan area to become familiar with organization, surroundings of clinical laboratory, gain practice and experience in performance of procedures required of a laboratory technician. Students are under direct supervision of a Registered Medical Technologist -- M.T. (ASCP) -- or a Pathologist at all times.
RECREATION CURRICULUM

This program prepares students for beginning positions of leadership, under supervision, in the field of recreation, working with people through activities enjoyed in leisure, such as sports, games, arts, crafts, music, dancing, dramatics, camping.

Students completing this program receive an Associate in Arts degree and may transfer to accredited four-year institutions to continue professional preparation for a career in recreation.

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<td>Dept. Cr. No.</td>
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<td>Wr 111</td>
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| **SECOND TERM** | | | | **FIFTH TERM** | | | |
| Wr 112 | English Composition | 3 | 3 | Eng 102, or Eng 105 | Literature | 3 | 3 |
| GS 102 | Sequence in Science, Biology, or Physical Science | 4 | 4 | Soc 205 | General Sociology | 3 | 3 |
| GS 105 | Fundamentals of Speech | 3 | 3 | Psy 202 | General Psychology | 3 | 3 |
| Art 110 | Recreational Use of Arts and Crafts | 2 | 2 | PE 180/190 | Physical Education Electives | 2 | 2 |
| HE 250 | Personal Health | 2 | 2 | RM 290 | Camp Counseling | 3 | 3 |
| PE 180/190 | Physical Education Electives | 1 | 1 |
| **TOTALS** | | 15 | 15 | | | 16 | 16 |

| **THIRD TERM** | | | | **SIXTH TERM** | | | |
| Wr 113 | English Composition | 3 | 3 | Eng 103, or Eng 106 | Literature | 3 | 3 |
| GS 103 | Sequence in Science, Biology, or Physical Science | 4 | 4 | Soc 206 | General Sociology | 3 | 3 |
| GS 106 | Relays and Games of Low Organization | 1 | 1 | Psy 203 | General Psychology | 3 | 3 |
| PE 234 | Recreational Use of Arts and Crafts | 2 | 2 | PE 180/190 | Physical Education Electives | 3 | 3 |
| Art 111 | First Aid Electives | 2 | 2 |
| PE 180/190 | Physical Education Electives | 1 | 1 |
| **TOTALS** | | 16 | 16 | | | 16 | 16 |


Portland Community College
PHYSICAL EDUCATION

T PE 180  
Physical Education (Women)  
3 cr/hr/wk, 1 cr

Variety of activities for physiological recreational values. Sections for restricted, corrective and specialized work. Classes offered: Fundamental body conditioning; basic tumbling; basic apparatus; gymnastics; basketball; volleyball; badminton; modern dance; beginning swimming; intermediate swimming; advanced swimming; life saving; water safety instructor course; synchronized swimming; tennis; beginning golf; advanced golf; personal defense tactics; skiing; ice skating; bowling; track and field; folk and square dance; cross country; archery; softball.

T PE 190  
Physical Education (Men)  
3 cr/hr/wk, 1 cr

Variety of activities for physiological and recreational values. Sections for restricted, corrective and specialized work. Classes offered: Body conditioning-weight training; basic tumbling; basic apparatus; gymnastics; basketball; beginning swimming; intermediate swimming; advanced swimming; life saving; water safety instructor course; aquatic games; volleyball; badminton; tennis; beginning golf; advanced golf; folk and square dance; cross country; archery; softball; track and field; wrestling.

T PE 195  
Professional Activities  
Basketball (Men)  
2 cr

Methods, teaching techniques, and basic skills for PE professionals.

T PE 234  
Relays & Games of Low Organization  
3 lab hr/wk, 1 cr

Exploration, observation, instruction, and practice in the leadership of games, stunts, and relays for children. Emphasis is given to basic movement patterns as utilized in these activities.

T PE 291  
Lifesaving in Aquatic Programs  
3 cr/hr/wk, 2 cr

Student becomes more capable of taking care of himself and better able to aid and rescue anyone in danger of drowning. The student increases safety and rescue skills; becomes mentally, physically ready to act in aquatic emergencies, recognized responsibility of being a trained lifesaver. Successful completion leads to award of American Red Cross Senior Lifesaving Certificate.

Prerequisite: PE 190, Intermediate Swimming or its equivalent or swimming ability test.

T PE 292  
Swimming, Lifesaving Instruction in Aquatic Programs  
3 cr/hr/wk, 2 cr

The student learns how to teach aquatic skills of popular swimming strokes and lifesaving techniques and skills, further develops own swimming and lifesaving techniques and skills. Successful completion leads to award of American Red Cross Water Safety Instructor's Certificate.

Prerequisite: 18 yrs. old, hold a current Senior Red Cross Lifesaving Certificate or its equivalent.

T RM 150  
Recreation in Society  
3 cr/hr/wk, 3 cr

Concept of community recreation, scope of recreation and leisure in American life, the role of recreation, parks and sports in human experience and the structure of community living.

T RM 252  
Recreation Leadership  
3 cr/hr/wk, 3 cr

The role of the recreation leader with emphasis upon methods of working with individuals and groups. Examples of leadership techniques utilizing various program activities in public and voluntary agency settings. A guide in the development of recreation programs.

T RM 290  
Camp Counseling  
3 cr/hr/wk, 3 cr

Introduction and orientation to counseling in camps; examination of the values and objectives of organized camps; understanding campers; knowledge and understanding of camp programs and staff responsibilities.

Rec. 5.200  
Specialized Recreation for Mentally Retarded  
3 cr/hr/wk, 3 cr

Offered by Portland Community College Department of Physical Education, Recreation, and Athletics in cooperation with City of Portland Bureau of Parks and Recreation. The instructor for the course will be the Director of Specialized Recreation for the City of Portland Bureau of Parks and Recreation. The course is basic to a work-training program in the field of specialized recreation and is designed to provide the student with information relative to the programming and teaching of recreational activities designed to meet the needs of the exceptional individual. Participants in the course will be selected by interview and recommendation of the course instructor and the student's college advisor.

HEALTH SERVICES

T HE 250  
Personal Health  
2 cr/hr/wk, 2 cr

Study of the personal health problems of men and women with emphasis on implications for family life. Covers mental health, communicable diseases, degenerative diseases, and nutrition. Satisfies the requirement in health education for men and women.

T HE 252  
First Aid  
3 cr/hr/wk, 3 cr/trm

A study of first aid and safety procedures for a wide variety of injuries or illnesses. Successful completion of the course meets certification standards of the American Red Cross.
The Mathematics Department of Portland Community College has developed a series of courses to fit the mathematical needs of all students enrolling at PCC. Some form of mathematics is needed by almost every student who attends a community college, but no every student should study a sequence in its entirety. The program at Portland Community College is designed so the student may profit from it on the level of his ability. It is important that each student recognize his level of achievement and proceed from that level. Mathematics department members are available at all times to assist the student in planning a program to meet his needs.

Each advisor has a placement chart which will aid the student in planning his mathematical program at PCC. Many of the courses that are listed in this catalog have prerequisites, and there is also a grade factor that is used to assist in placing a student. A student's background in mathematics plus an achievement grade are both used in placing a student in the correct course.

Courses offered provide full opportunity for fulfilling requirements and providing options for those who wish to continue their work in mathematics at a four-year college or university.

MATHEMATICS

Portland Community College
The student will gain familiarity with and demonstrate his comprehension of the real numbers with emphasis on radicals and the four basic operations (addition, subtraction, multiplication, and division) involving these radicals. The student will also study and demonstrate his knowledge of quadratic equations and use of the quadratic formula, radical equations and inequalities involving real numbers, rational exponents, variations. Cartesian products and the concept of graphing, relations and functions, inverse relations and inverse functions with special emphasis on the linear function and the quadratic function. The student will demonstrate his comprehension of absolute value functions, the graphing of these functions, inverse functions or relations of special functions, systems of linear equations, the graphing of such systems, graphing of linear inequalities and graphing of systems of inequalities, and elementary introduction to exponential and logarithmic functions with applications.

Mth 95 will transfer to Oregon State institutions as 4-hr elective.

This course is recommended for students who have completed one year of high school algebra and one year of geometry with high or very high grades, two years of high school algebra and one year of geometry with average or low grades, or four or five years of academic math in high school with average or lower grades. Any student that has not had a background of "modern" mathematics should enroll in Mth 4.202. The following are examples of problems in the course:

**Prerequisite:** Mth 4.204 or consent of the department.

**Mth 95 Intermediate Algebra**
4 or 5 cl hr/wk, 4 cr

1. \( \sqrt[3]{64} = -4 \) (T F)
2. \( \sqrt[3]{-3}^3 = -3 \) (T F)
3. \( 8^{2/3} = ? \)
4. \( x^{2/3} \div x^{1/2} = ? \)
5. \( (a^{1/2} - b^{1/2})(a^{1/2} + b^{1/2}) \)
6. Simplify: \( \sqrt{9x^2} + \sqrt{16x^2} \)
7. Rationalize the numerator:
   \[ \frac{2 + 3}{2 - 3} \]
8. Find solution set of the following: Domain is the set of real numbers.
   a) \( \sqrt{3x} + 6 = x \)
   b) \( |x + 4| = 3 \)
   c) \( |2x - 5| = 10 \)
9. Given \( F(x) = \frac{3}{4x} + 6 \)
   a) \( f(4/3) = ? \)
   b) What is the slope of the graph?
   c) What is the y-intercept of the graph?
10. Given the points \( (6, 8) \) and \( (2, 3) \);
    a) What is the slope of the straight line determined by these two points?

**T Mth 106 Elementary Calculus**
4 or 5 cl hr/wk, 4 cr

Introductory calculus primarily for majors in the biological and social sciences. The student will study and demonstrate his knowledge of the basic concepts of calculus and
their applications to the biological and social sciences.
Prerequisite: Mth 101 or consent of the department.

T Mth 110 Analytic Geometry
4 or 5 cl hr/wk, 4 cr

The student will study and demonstrate his knowledge of points; lines; equations and locus of circular parabola, ellipse, hyperbola; algebraic and transcendental curves; and parametric and polar equations.
Prerequisite: Mth 102 or consent of the department.

T Mth 114, 115, 116 Mathematics in Business Applications
3 cl hr/wk, 3 cr/trm

Mth 114: The student will study and demonstrate knowledge of relations, functions, equations, inequalities and their graphs, linear programming, exponential functions, logarithmic functions, matrices, and the applications of these concepts to business. Mth 115: Differential and integral calculus with business applications. Mth 116: Probability and statistics with applications to business decision making.
Acceptable as a lower divisional science sequence for a degree in Business Administration only at P.S.U. Mth 115 credit will not be allowed for students who have had one term of transferable calculus. Mth 116 credit will not be allowed for students who have had one term of transferable statistics.
Prerequisite: Mth 95, or 1½ years of high school algebra, or the consent of the department.

T Mth 191, 192, 193 Math for Elementary Teachers
3 cl hr/wk, 3 cr/trm

The student will study and demonstrate knowledge of the basic processes (addition, subtraction, multiplication, and division) in relationship to arithmetic, and how these ideas are related to more advanced mathematics which includes material that is largely inductive. The student will study and demonstrate comprehension of the language and nature of deductive reasoning; elements of set theory and how the operations on specific sets are used to present arithmetic concepts; numeration systems; elementary number theory; and the fundamental operations on sets of whole numbers, integers, rational numbers ("decimal" and "fractional"), and real numbers; basic properties of algebra and geometry.
Primarily for the student who has had one year of high school algebra and one year of high school geometry. Students who have not had these two courses should enroll in Mth 4.202, 4.204, and Mth 4.206 (geometry). Geometry may possibly be taken concurrently with Mth 191 or Mth 192.
Sequence not applicable to science group requirements for graduation from an Oregon State System of Higher Education institution.
Prerequisite: Mth 4.204 for Mth 191, Mth 191 for Mth 192, Mth 192 for Mth 193, or consent of the department.

T Mth 200, 201, 202, Calculus with Analytic Geometry 203
4 or 5 cl hr/wk, 4 cr/trm

Mth 200: The student will study and demonstrate knowledge of differential and integral calculus from an intuitive basis; and he will also demonstrate knowledge of plane analytic geometry including conic sections, translations and rotations in the plane.

Mth 201: The student will gain familiarity and demonstrate his knowledge of the graphing of polynomials, rational expressions including first and second derivatives; trigonometric functions and inverses; logarithmic functions, exponential functions and hyperbolic functions; integrals of trigonometric functions; evaluation of integrals by partial fractions, substitutions and by parts; the concept of limit; the Mean Value Theorem; and the existence and evaluation of definite integrals including Fundamental Theorem of Integral Calculus.

Mth 202: The student will study and demonstrate knowledge of calculus by solving problems related to the maximum and minimum concept related rates, force, work, and moments, polar coordinates by curve sketching, intersections and loci including the conic sections, and he will further demonstrate knowledge in solid analytic geometry.

Mth 203: The student will study and demonstrate knowledge of partial differentiation, applications in three-space (multiple integrals), and infinite series including Taylor's Theorem.
The student needs good background in college algebra and trigonometry; it is beneficial to have studied mathematics from the "modern" viewpoint. The student with four or five years of academic mathematics in high school with very high achievement may be able to start with Mth 200.
Prerequisite: Mth 102 or consent of the department for Mth 200; the preceding course for Mth 201, Mth 202, Mth 203.

T BA 232 Introduction to Business Statistics
3 cl hr/wk, 3 cr

The student will study and demonstrate knowledge of modern business decision theory and use of statistics as a tool for business decision making, statistical description (tables, charts, and frequency distribution), elements or probability, consideration of modern data processing, index numbers and time series analysis (trend, cyclical and seasonal adjustments) of modern business data.
Prerequisite: Mth 95 or consent of the department.

Mth 233 Introduction to Numerical Computation
3 cl hr/wk, 3 cr

The student will study and demonstrate his knowledge of the basic principles of computation, programming, and computer program language.
Prerequisite: Mth 101 or consent of the department.

Mth 2.128 Computer Math and Logic
5 cl hr/wk, 5 cr

The student will study and demonstrate knowledge of mathematical logic involving basic operations on propositions and their truth values, truth tables and tautologies, the algebra of logic, Boolean algebra, sets and operations on sets, the algebra of sets, quantifiers, equivalence of conditions, implications, properties of implications, and numerations systems (including the binary and octal systems).
Prerequisite: Mth 4.204, one year of high school algebra from a "modern" viewpoint, or the consent of the department.

Mth 2.308 Business Mathematics
(Dental Assistants)
2 cl hr/wk, 2 cr

The student will study and demonstrate knowledge of
invoices, discounts, commissions, profit and cost selling, interest, payroll and depreciation, insurance, taxes and managerial control balance sheets, income statements, inventory, turnover and business statistics. Specific mathematics applications for dental assistants.

Prerequisite: Mth 4.200 or consent of the department.

**Mth 2.308 Business Mathematics**
3 cl hr/wk, 3 cr
The student will study and demonstrate knowledge of arithmetic and the applications of arithmetic to basic ledger accounts, reconciliation of bank statements, invoices, conversions of one mathematical system to another; problems encountered in business, mathematics of invoices including purchases and sales invoices, trade discounts, commission sales and purchases; borrowing and lending money, depreciation including straight line depreciation, book value depreciation, and payroll, including hourly rate, straight piece rate and payroll deductions.
Prerequisite: Mth 4.200 or consent of the department.

**BA 2.404 Business Statistics**
5 cl hr/wk, 5 cr
The student will study and demonstrate knowledge of statistical concepts, such as index numbers, frequency distributions, measures of variability, normal curve of distribution, sampling-error theory including the test of the Null Hypothesis, time series and their graphical representations, analysis of seasonal variation, and secular trends and business statistics. For students in business data processing, other business-related programs.
Prerequisite: One year of high school algebra, Mth 4.204 or consent of the department.

**Mth 4.200 Basic Mathematics**
4 or 5 cl hr/wk, 4 cr
The student will gain familiarity and demonstrate knowledge of the basic concepts of numbers, the number line, systems of numeration, operations with whole numbers (addition, subtraction, multiplication and division), rational numbers written as fractions and decimals, percent, square root and conversions of denominate numbers. For students who need thorough review of basic arithmetical processes.
Examples of problems in this course:

1. $389 + 2 \cdot 1527 + \frac{4}{5} + \frac{1}{3} = ?$
2. $\frac{4}{3} + 35\frac{1}{12} = ?$
3. $9\frac{2}{3} - 857.39 = ?$
4. $504 \cdot 30\frac{1}{4} \times 16 = ?$
5. $0.4 \times 4.0 = ?$
6. $1.46 \cdot 3.6938$ (place decimal)
7. $\frac{2}{5} = ?$ (decimal)
8. $\frac{3}{4} = \frac{12}{16}$ (fraction)
9. $1.8934 = ?$ (decimal)
10. $75\% = \frac{1}{8}$ (fraction)
11. $12\%$ of 30 = 6
12. $2.4 \cdot 3\%$ of 16 = ?
13. $5 - 3 = ?$
14. $(x + 2)(x - 3) = ?$
15. $(3x - 2)(2x + 3) = ?$
16. $(x + 2)(x - 3) = ?$
17. $(3x - 2)(2x + 3) = ?$

**Mth 4.200 Basic Mathematics (Dental Assistants)**
2 cl hr/wk, 2 cr
The dental assistant student will study and demonstrate his knowledge in basic mathematics.

**Mth 4.200 Basic Mathematics**
(Dental Assistants, Machinists, Auto Mechanics, Welders, Nurses, Cooks, Medical Record Technicians, etc.)
Variable hr, 3, 4, 5 cr
The student will study and demonstrate his knowledge of arithmetical processes of whole numbers as well as rational numbers, decimals, percentages and conversion of units in the particular curriculum that he is studying.

**Mth 4.200, 4.202 Dental Technician Mathematics**
3 cl hr/wk, 3 cr/trm
The student will study and demonstrate his knowledge of the basic operations on the set of whole numbers and rational numbers, decimals, fractions, basic algebraic concepts, and fundamental geometric concepts in relation to the needs of the dental technician.

**Mth 4.202 Mathematics I**
4 or 5 cl hr/wk, 4 cr
The student will study and demonstrate knowledge of the basic operations on whole numbers and integers, the "modern language" of algebra, the concept of sets, the application of these sets to the development of whole numbers and integers, the mathematical structure of whole numbers and integers, fundamental operations on equalities, inequalities and absolute values and applied problems. For the student who has had no previous instruction in algebra; needs a review of elementary algebra; or has had previous algebra courses but has not been exposed to the "modern" concept.
Prerequisite: Mth 4.200 or the consent of the department.

Examples of problems in this course:

- Given:
- \( u \)
- \( A = \{ 1, 2, 3, 4, 5 \} \)
- \( B = \{ 2, 3, 4, 5, 6, 8, 9 \} \)
- \( U = \{ 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 \} \)

1. \( A \cup B = \{ \} \)
2. \( A \cap B = \{ \} \)
3. \( \{ 4, 5 \} \subseteq A \) (true or false)
4. \( A \triangle B = \{ \} \)
5. \( (4x^2)(-3x) = ? \)
6. \( 5 - 3 = ? \)
7. \( (b + c)^2 = ? \)
8. \( (x + 2)(x - 3) = ? \)
9. \( (3x - 2)(2x + 3) = ? \)
10. \(3 - 5 = ?\) 11. \(-15 + 3 = ?\)

12. \(7 - (-3) = ?\) 13. \(-[(8) (-4) (0) (5)] = ?\)

Find the solution set of the following given the domain is the set of integers.

14. \(5x + 10 = 3x - 20\)

15. \((x - 3)(x - 4)(x - 5) = 0\) 16. \(-5x = 15\)

Factor the following:

17. \(ax + bx\) 18. \(x^2 - 16\)

19. \(x^2 - 5x + 6\) 20. \(6a^2 + 7a + 2\)

Mth 4.204 Mathematics II

The student will study and demonstrate knowledge of rational numbers, equalities, inequalities, absolute value, other representations of rational numbers, scientific notation, verbal problems, and the basic operations on rational expressions.

Prerequisite: Mth 4.202 or the consent of the department.

Examples of problems in this course:

Reduce:

1. \(\frac{3xy}{6x(x - y)}\)

2. \(\frac{x^2 + x}{x}\)

3. The least common multiple of \(ab^2, a^2b, ab^3\)

4. \(\frac{2m + 3m}{s} \frac{2s}{2s}\)

5. \(\frac{x}{x^2 - y^2} - \frac{x + y}{x - y}\)

Multiply:

6. \(\frac{a^2 + 2ab + b^2}{(a - b)^2} \cdot \frac{(a - b)^3}{a + b}\)

Simplify:

7. \(1 + \frac{1}{x} \frac{x}{x - \frac{1}{x}}\)

Find the solution set given the domain is the set of integers.

8. \(\frac{2}{3} + \frac{1}{3} = 3\)

9. \(\frac{1}{x} = -3\)

10. \(x^2 - 7x + 12 = 0\)

11. \(\frac{12}{x} = \frac{10}{x} + 2\)

12. \((15x - 1)(6x + 5) = 0\)

13. \(\frac{3x}{4x^2} = \frac{9}{36x^2}\)

14. Write as a terminating decimal: \(0.4545\)

15. Solve using scientific notation:

\[
\frac{340 \cdot 0.0035}{5000 \cdot 0.017}
\]

16. A firm has an alloy of copper and tin that contains 10 per cent tin and an alloy of copper and tin that is 25 per cent tin. If the firm wishes to produce two tons copper and tin alloy that is 20 per cent tin, how much of the 10 per cent alloy must be used?

17. A man invested \$10,000 in two different mutual funds. He made a profit of 8 per cent from one of his investments, but he lost 3 per cent in his other investment. If his total income from both investments for the year was \$470, how much did he invest in each mutual fund?
or consent of the department.

Examples of problems in this course:

1. Solve for x:
   a) \[ 26 - 5(3 - 2x) = x - 4(x + 9) \]
   b) \[ \frac{a}{x} = b + c \]

2. Graph: \( f(x) = \frac{2}{3}x - 6 \)

3. Write equation of graph given
   slope of a straight line is \(-\frac{3}{4}\)
   and passes through the point \((4, 6)\).

4. Find the equation of the straight
   line determined by the points \((2, 3)\)
   and \((-4, 3)\).

5. Solve for \(x\) and \(y\)
   \[ 3x - 2y = 10 \]
   \[ x - y = 1 \]

6. Find the value of
   a) \[ \begin{bmatrix} 6 & 3 \\ -2 & 5 \end{bmatrix} \]
   b) \[ \begin{bmatrix} 8 & 7 & 3 \\ 5 & -4 & 1 \\ -6 & 7 & 2 \end{bmatrix} \]

7. \( x^{\frac{2}{3}} \cdot x^{\frac{1}{2}} = ? \)

8. Multiply:
   \( (m^{\frac{1}{2}} + n^{\frac{1}{2}})(m^{\frac{1}{2}} - n^{\frac{1}{2}}) \)

9. Simplify:
   \[ a^2b^2 + a^2c^2 = ? \] Where \( a \neq 0 \)

10. Combine:
    \[ \sqrt{75} - \sqrt{27} + \sqrt{48} = ? \]

11. Multiply:
    \[ -(\sqrt{2} - \sqrt{3})(\sqrt{3} - \sqrt{2}) \]

12. Solve for x:
    \[ x^2 - 81 = 0 \]

13. Given: \( x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \)
    Find the roots of the equation
    \[ 8x^2 - 2x - 15 = 0 \]

14. Solve for x: \( x^4 - 10x^2 + 9 = 0 \)

15. Solve for x: \( 3x + 7 = x + 1 \)

16. Solve for x:
    \[ (x - 4)(x + 8) = (x - 4) \]

---

The student will study and demonstrate knowledge of
logarithms and their uses; polar and rectangular coordinates;
trigonometric functions; right triangles; oblique triangles;
the laws of sines, cosines, tangents, half angles; areas of
triangles; applications of trigonometry; vectors and their
applications; trigonometric formulas, identities and equations;
and graphs of trigonometric functions.

Prerequisite: Mth 6.261 or consent of the department.

Mth 6.266 Technical Mathematics III
4 or 5 cl hr/wk, 3 cr

The student will study and demonstrate his knowledge of
simultaneous quadratic equations; ratio and proportion, and
variation; the binomial theorem, arithmetical and geometric
progressions; exponential functions and their applications;
complex numbers and vector algebra.

Prerequisite: Mth 6.262 or consent of the department.

Mth 6.270 Technical Mathematics IV
4 or 5 cl hr/wk, 3 cr

The student will study and demonstrate knowledge of
graphical methods of differentiation, including rates of
change, summation of areas, calculation of vector quantities
and scalar functions, graphical introduction to derivatives
and maximum-minimum values, function of a function, sine
and cosine function, natural logarithm function, product
and quotient and repeated differentiation, and an introduc-
tion to integration including the indefinite integral, the
constant of integration, the differential of a function, analy-
sis of motion, areas under graphs, the definite integral, and
volume by integration.

Prerequisite: Mth 6.266 or consent of the department.
Work in the Physical Sciences is an important part of many College programs. Courses at PCC are organized to present basic principles and to provide a coordinated overview of modern science as it relates to the many areas of modern life which it influences.

Special emphasis is provided for those students whose programs require such emphasis; in all courses, instructors make an effort to fit methods and approaches to the prior experiences and special needs of their particular class groups and the individuals in those groups.

Many Physical Science offerings require close correlation with Mathematics courses, a situation which is recognized at PCC and for which provision has been made in the coordinated planning of the Mathematics and Physical Sciences offerings within the same department.
Chemistry

**T Ch 101, 102, 103  General Chemistry**

2 cl, 3 lab hr/wk, 3 cr/trm

A terminal course for liberal arts, other non-science majors.

The student will study and demonstrate his knowledge of scientific method; laws, theories relating to physical properties and chemical changes; and contemporary problems of chemistry in a non-mathematical approach.

Sequence satisfies requirements in pre-nursing and home economics. Terms must be taken in sequence.

Prerequisite: Basic high school math is beneficial.

**T Ch 104, 105, 106  General Chemistry**

3 cl, 2/1/1 rec, 3 lab hr/wk, 5/4/4 cr/trm

Introduction to general chemistry. The student will study and demonstrate his knowledge of the basic principles of general chemistry. For science majors with little or no previous background in chemistry. Sequence fulfills prerequisites for Organic Chemistry (Ch 226, 227), and general chemistry for engineering students.

Prerequisite: High school algebra or its equivalent or consent of the department.

**T Ch 201, 202, 203  General Chemistry**

3 cl, 3 lab hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of (Ch 201): the scientific method, nature of matter, atomic structure, molecular structure, stoichiometry, gases, liquids, and solids; (Ch 202): solutions, acids, and basic colloids, kinetics, equilibrium, electrical chemistry, aqueous solutions, nuclear chemistry; (Ch 203): the various groups of elements.

Prerequisite: High school chemistry and one year of high school algebra or consent of the department.

**T Ch 204, 205, 206  General Chemistry**

3 cl, 1 rec, 3 lab hr/wk, 5 cr/trm

Introduction to general inorganic chemistry. The student will study and demonstrate his knowledge of the basic principles of general chemistry. Recommended for science majors; fulfills general chemistry requirements for pre-professional, life sciences, engineering, and chemistry majors.

Prerequisites: Ch 204: One year of high school chemistry. One year of high school algebra or its equivalent, or the consent of the department; Ch 205: Ch 204; Ch 206: Ch 205 or Ch 106.

**Ch 226, 227  Organic Chemistry**

3 lec, 6 lab hr/wk, 5 cr/trm

An introductory course in organic chemistry. The student will study and demonstrate his knowledge of aliphatic compounds, aromatic compounds, and their derivatives. This course may be taken by pre-medical, pre-dental, pre-veterinarian, and medical technology students. Chemistry and chemical engineering majors are usually allowed partial fulfillment of their organic chemistry requirements by completing this course sequence.

Prerequisite: Ch 106, 203, 206 or consent of the department.

**T Ch 234  Quantitative Analysis**

3 lec, 6 lab hr/wk, 5 cr

The student will study and demonstrate his knowledge of the principles of gravimetric analysis, volumetric analysis, and instrumental analysis.

Prerequisite: Ch 106, 203, 206, or an equivalent course.

General Science

**T GS 104, 105, 106  Physical Science**

3 cl, 2 lab hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of fundamental principles of physics (GS 104), chemistry (GS 105), astronomy and geology (GS 106). The student will also study and demonstrate his knowledge of the fundamentals of measurement and basic concepts of the scientific method.

No credit will be allowed for GS 104 after a transferable course in physics has been completed, nor in GS 105 after a course in chemistry, nor in GS 106 after a course in geology. A student should also check the catalog of the institution he plans to transfer to after completing his studies at Portland Community College. The course is intended to provide a broad background in physical science for the liberal art student and non-science major.

Prerequisite: One year of high school algebra or its equivalent for GS 104 is advisable; GS 104 for GS 105 and 106; or the consent of the department.

**T G 201, 202, 203  Geology**

3 cl hr/wk, 3 cr/trm

G 201: The student will study and demonstrate his knowledge of the general view of the earth, component parts, forces, present materials of the earth's crust, field study and labs, volcanic, active weathering and soils, erosion; G 202: glacier action, wind action, oceans, deformation of the earth's crust; G 203: history of the earth and its geology and its life forms.

**T G 204, 205, 206  Geology Laboratory**

3 lab hr/wk, 1 cr

Laboratory and field work to accompany G 201, 202, 203.

Physics

**T Phy 201, 202, 203  General Physics**

2 lec, 2 rec, 2 lab hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of (Phy 201) mechanics; (Phy 202) heat, light, sound; (Phy 203) electricity, and magnetism and modern physics. Introductory physics for science majors.

Prerequisite: Mth 101 (College Algebra) previously or parallel with Phy 201, Phy 201 for Phy 202, and Phy 202 for Phy 203; or consent of the department.

**T Phy 207, 208, 209  Introductory Classical Physics**

2 lec, 2 rec, 3 lab hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of mechanics, heat, light, sound, electricity, magnetism and modern physics for students majoring in engineering.

Prerequisite: Mth 200, 201, 202 parallel with or previous.
Sci 4.300 *Introduction to Physics*
3 cl, 2 lab hr/wk, 4 cr

The student will study and demonstrate his knowledge of the basic principles of practical physics covering matter, measurement, mechanics, and machines. Laboratory time is provided to help clarify the principles of procedures by demonstration and experimentation by the student.

Prerequisite: One year of high school algebra or its equivalent, or the consent of the department.

Sci 4.305, 4.306 *Applied Physical Science I, II*
2 lec, 2 lab hr/wk, 3 cr/trm

The student will study and demonstrate his knowledge of basic scientific measurements, basic mathematical manipulations applied to the physical world, systems of measurement, elementary problem solving, measurement with basic measuring devices, basic physics and chemistry principles.

This course is designed for the student that has had no physics or chemistry in high school and a minimum of mathematics. If the achievement of the student is low-average or low in math and/or science in high school, he should enroll in these courses for background before enrolling in Physical Science or Chemistry. The two courses may be taken parallel with Mth 4.202 and Mth 4.204. These two courses will also fulfill the two-term physical science requirement for the dental technology student.

Sci 5.441, 5.442 *Basic Science Principles*
3 lec, 2 lab hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of the concepts of physics and chemistry that he will find applied in hospital situations and in medical practice. These will include psychological methods of problem solving, measuring systems, and conversions to other systems, physics, mechanics, simple machines, heat, electricity, magnetism, matter, atomic structure, chemical bonding, chemical reactions, elements, solutions, acids, bases, and salts, radioactivity, organic chemistry, biochemistry, and physiological chemistry.

3 lec, 2 lab hr/wk, 4 cr/trm

The student will study and demonstrate his knowledge of fundamentals of measurement, vectors, motion, momentum, work, machines, angular vectors (I); heat, optics, sound, (II); and electricity and magnetism (III).

This course is designed for the technology student.

Prerequisite: Tech Mth I (6.261), or the consent of the department.

XT 9.401, 9.402, 9.403 *Physics for X-Ray Technicians*
2 lec, 2 lab hr/wk, 3 cr/trm

This course is for Radiologic Technologists only. The student will study and demonstrate his knowledge of the elements of physics, and specifically electricity, as these apply to medical radiography. Some topics included are D.C. circuits, A.C. circuits, transformers and other electromagnetic devices, valve tubes and solid state rectifiers, radiographic tubes, the complete X-ray circuit, the production and nature of X-radiation, the interaction of X-rays and matter, and radioactivity in medicine.
The "Open Door" Educational Shopping Center
The role of public safety personnel grows daily in importance and complexity. In both the Law Enforcement and Fire Protection Technology fields, the requirements for service are being raised by higher selection standards, better training, and more education.

At Portland Community College, you can prepare for a career in these two areas of Law Enforcement and Fire Protection Technology, under the guidance of highly-qualified instructors with practical experience in the everyday application of the principles, methods and techniques they teach. Many are actively employed in specialized and highly-skilled jobs within these fields, thus bringing to you highly relevant and timely developments.

There are two plans of study: a day program for full-time students, leading to an Associate in Applied Science degree after two years of study; and a program of evening courses designed to serve the needs of working firemen and law enforcement officers who wish to advance their professional education. Credits earned in the evening program may be applied toward the associate degree.

PCC also offers a transfer curriculum in law enforcement for those planning to pursue this work at a four-year college or institution.

Courses in Corrections and Jail Management are also offered.
FIRE PROTECTION TECHNOLOGY

This program is designed for the person already employed as a fireman or in a related career field. It is a two-year course of study leading to the Associate in Applied Science degree. The program differs from a pre-employment program in that it assumes that students will have had some experience in the fire protection field and that they will be attending classes on a part-time basis.

A similar two-year program also leading to an Associate degree is under intensive exploratory study and will be initiated soon.

**FIRST YEAR**

<table>
<thead>
<tr>
<th>FIRST TERM</th>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
<th>Cr. Hr.</th>
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<tbody>
<tr>
<td>Mth 4.200</td>
<td>Mathematics I</td>
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<tr>
<td>Wr 1.101</td>
<td>Communication Skills</td>
<td>3</td>
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<tr>
<td>FP 5.254</td>
<td>Introduction to Fire Protection</td>
<td>3 2 4</td>
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</tr>
<tr>
<td>FP 5.250</td>
<td>Fire Fighting Skills I</td>
<td>9 3</td>
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</tr>
<tr>
<td>FP 5.256</td>
<td>Elementary Science for Fire Fighting</td>
<td>3 2 4</td>
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**TOTALS** 12 13 17

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<tr>
<td>Mth 4.202</td>
<td>Mathematics II</td>
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<tr>
<td>SDP 9.500</td>
<td>Principles of Supervision</td>
<td>3 3</td>
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<tr>
<td>FP 5.263</td>
<td>Fire Pump Construction and Operations</td>
<td>3 2 4</td>
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</tr>
<tr>
<td>FP 5.251</td>
<td>Fire Fighting Skills II</td>
<td>9 3</td>
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<tr>
<td>Wr 1.102</td>
<td>Communication Skills II</td>
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**TOTALS** 12 11 16

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<tr>
<th>THIRD TERM</th>
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<th>Class/Lab Hrs/wk</th>
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<tr>
<td>FP 5.275</td>
<td>Fire Science I</td>
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<tr>
<td>FP 5.258</td>
<td>Fire Company Organization and Station Management</td>
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<tr>
<td>FP 4.853</td>
<td>Blueprint Reading and Sketching for Firemen</td>
<td>2 2 3</td>
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<tr>
<td>FP 5.282</td>
<td>Fire Codes and Related Ordinances</td>
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**TOTALS** 11 4 16

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<tr>
<th>EDUCATIONAL AND TECHNICAL ELECTIVES</th>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
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<tbody>
<tr>
<td>Ec 1.506</td>
<td>Applied Economics</td>
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<tr>
<td>FP 5.269</td>
<td>Water Distribution Systems</td>
<td>3 3</td>
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<tr>
<td>FP 5.286</td>
<td>Fire Insurance Principles and Grading Schedules</td>
<td>3 3</td>
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<tr>
<td>FP 5.289</td>
<td>Legal Aspects of Fire Protection</td>
<td>3 3</td>
<td></td>
</tr>
<tr>
<td>FP 5.237</td>
<td>Fire Investigation</td>
<td>3 2 4</td>
<td></td>
</tr>
<tr>
<td>FP 5.253</td>
<td>Fire Apparatus and Equipment</td>
<td>2 2 3</td>
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**FOURTH TERM**

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<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
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<tbody>
<tr>
<td>FP 5.277</td>
<td>Fire Science II</td>
<td>3 2 4</td>
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<tr>
<td>FP 5.264</td>
<td>Building Construction for Fire Protection</td>
<td>3 3</td>
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<tr>
<td>FP 5.272</td>
<td>Fixed Systems and Extinguishers</td>
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<tr>
<td>FP 5.287</td>
<td>Training Programs and Techniques</td>
<td>3 3</td>
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<tr>
<td>FP 5.268</td>
<td>Fire Service Rescue Practices</td>
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**TOTALS** 14 4 16

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<tr>
<th>FIFTH TERM</th>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
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<tbody>
<tr>
<td>FP 5.260</td>
<td>Hazardous Materials I</td>
<td>3 3</td>
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<tr>
<td>FP 5.288</td>
<td>Fire Reports and Records</td>
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<tr>
<td>Psy 1.546</td>
<td>Psychology and Human Relations</td>
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<td>FP 5.257</td>
<td>Fire Department Hydraulics I</td>
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**TOTALS** 12 2 16

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<tbody>
<tr>
<td>FP 5.261</td>
<td>Hazardous Materials II</td>
<td>3 2 4</td>
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<tr>
<td>FP 5.274</td>
<td>Fire Fighting Tactics and Strategy</td>
<td>3 3</td>
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<tr>
<td>FP 5.262</td>
<td>Fundamentals of Fire Prevention</td>
<td>3 2 4</td>
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**TOTALS** 9 4 17
LAW ENFORCEMENT

The Law Enforcement curriculum is designed for young men and women desiring to pursue an educational program which will prepare them for career employment in police departments, sheriffs' offices and various other law enforcement agencies. It also provides opportunities for those persons already engaged in law enforcement occupations to obtain further training for additional competency or retraining that will help them qualify for higher level positions.

The curriculum, which leads to an Associate in Applied Science degree, has been developed cooperatively by the Oregon State Board of Education and the State Advisory Board on Police Standards and Training. The program of studies covers basic police science knowledge, skills and techniques. Students may participate in the program on a full-time or part-time basis, or on a cooperative part-time basis, whereby the student is employed part-time and also attends school part-time.

FIRST YEAR

<table>
<thead>
<tr>
<th>FIRST TERM</th>
<th>FOURTH TERM</th>
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</thead>
<tbody>
<tr>
<td>Dept. Cr.</td>
<td>Course Title</td>
</tr>
<tr>
<td>LE 5.200</td>
<td>Introduction to Law Enforcement (or Police and Society)</td>
</tr>
<tr>
<td>LE 111</td>
<td>Patrol and Traffic Procedure</td>
</tr>
<tr>
<td>LE 5.220</td>
<td>Defense Tactics I</td>
</tr>
<tr>
<td>LE 5.204</td>
<td>First Aid I</td>
</tr>
<tr>
<td>Wr 1.101</td>
<td>Communication Skills I</td>
</tr>
<tr>
<td>SS 2.501</td>
<td>Typing</td>
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SECOND TERM

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<tr>
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<tbody>
<tr>
<td>Dept. Cr.</td>
<td>Course Title</td>
</tr>
<tr>
<td>LE 5.202 or LE 112</td>
<td>Administration of Justice</td>
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<tr>
<td>LE 5.221</td>
<td>Patrol and Traffic Procedures</td>
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<tr>
<td>LE 5.206</td>
<td>Defense Tactics II (Crowd and Riot Control)</td>
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<tr>
<td>LE 5.213</td>
<td>First Aid II</td>
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<tr>
<td>Wr 1.102</td>
<td>Communications Skills II</td>
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<tr>
<td>SS 2.502</td>
<td>Typing II</td>
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<td>Electives</td>
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THIRD TERM

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<tbody>
<tr>
<td>Dept. Cr.</td>
<td>Course Title</td>
</tr>
<tr>
<td>LE 5.208 or LE 113</td>
<td>Criminal Law I - or - Elements of Law for Police Officers</td>
</tr>
<tr>
<td>LE 5.210</td>
<td>Patrol and Traffic Procedures</td>
</tr>
<tr>
<td>LE 5.214</td>
<td>First Aid III</td>
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<tr>
<td>Psy 111</td>
<td>Personality and Development</td>
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<td>Electives</td>
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*Class and Laboratory hours for elective courses not included.
LAW ENFORCEMENT ELECTIVES:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Scientific Interrogation</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Corrections Seminar</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Jail Management and Post Assessment</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Psychology of the Criminal Personality</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Polygraph Seminar</td>
<td>2</td>
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LAW ENFORCEMENT

Transfer Course of Study

For students who plan to transfer to the Portland State University program in law enforcement or to a similar program at Southern Oregon College, the program below is recommended.

The Portland State program requires a baccalaureate degree in political science, psychology, or sociology and a certificate program in law enforcement.

The Southern Oregon program leads to a baccalaureate degree in law enforcement.

Students may normally expect to complete the requirements at either PSU or SOC with two years of work beyond that completed at PCC.

<table>
<thead>
<tr>
<th>FRESHMAN YEAR</th>
<th>F</th>
<th>W</th>
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<tbody>
<tr>
<td>Wr 111, 112, 113 English Composition and three hrs. elective</td>
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<tr>
<td>LE 111, 112, 113 Law Enforcement and Society</td>
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<tr>
<td>SOC 204, 205, 206 General Sociology</td>
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<tr>
<td>Science sequence</td>
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<tr>
<td>Physical Education</td>
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<table>
<thead>
<tr>
<th>SOPHOMORE YEAR</th>
<th>F</th>
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</thead>
<tbody>
<tr>
<td>Psy 201, 202, 203 General Psychology</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>PS 201, 202, 203 American Governments</td>
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<td>Hst 201, 202, 203 History of the United States</td>
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<td>Humanities sequence</td>
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<tr>
<td>Second humanities sequence</td>
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<tr>
<td>Physical Education</td>
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<tr>
<td>TOTALS</td>
<td>16</td>
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</table>

1Community colleges teaching English Composition on the “vertical” plan should adjust the recommended curriculum so that the first term of English Composition is completed during the freshman year and the second term during the sophomore year.

2Students planning to transfer to PSU are urged to take 12 hours of mathematics. Students planning to transfer to SOC should take Bi 101, 102, 103 General Biology or another laboratory science.

3Students planning to transfer to SOC should complete three courses from Art 201, Survey of Visual Arts, Mus 201 History of Music and Its Literature, Phi 201 Introduction to Philosophy, and Sp 111 Fundamentals of Speech. Students planning to transfer to PSU should complete Sp 111, 112, 113 Fundamentals of Speech.

4Students planning to transfer to SOC should take this second sequence in Introduction to Literature or World Literature.

Portland Community College...
The “Open Door” Educational Shopping Center
Fire Protection Technology

FP 4.853 Blueprint Reading, Sketching for Firemen
2 cl, 2 lab hr/wk, 3 cr
Orthographic and pictorial freehand sketching of building layouts, structural components, maps, schematics and diagrams. Interpretation of standard symbols and drawings used in building construction.

FP 5.237 Fire Investigation
3 cl, 2 lab hr/wk, 4 cr
Effect on fire prevention by isolating cause of fire; study of burning characteristics of combustibles; interpreting clues, burn patterns leading to point of origin; identifying incendiary indications, sources of ignition and materials ignited; preservation of fire scene and evidence.
Prerequisite: Student must be a member of a fire department or law enforcement officer.

FP 5.250 Fire Fighting Skills I
9 lab hr/wk, 3 cr
Individual skills using small tools, minor equipment; practices in forcible entry; use of masks; salvage and overhaul; safety practices.

FP 5.251 Fire Fighting Skills II
9 lab hrs/wk, 3 cr
Practice in team skills used in fireground operation including hose and ladder evolutions; salvage; overhaul; rescue; fire attack; other activities requiring team effort.

FP 5.252 Fire Fighting Skills III
1 cl, 6 lab hr/wk, 3 cr
Practices in skills involving multi-company operations; simultaneous activities of ladder, engine and salvage companies; manning large stream appliances; coordinating communications.

FP 5.253 Fire Apparatus and Equipment
2 cl, 2 lab hr/wk, 3 cr
Familiarization with fire apparatus; principles of application; care and preventive maintenance; safe operating practices, emergency and non-emergency; National Board standards.

FP 5.254 Introduction to Fire Protection
3 cl, 2 lab hr/wk, 3 cr
History, development of fire service, safety and security movements. Role of fire service, protection and safety personnel. Ancillary organizations. Identification of general fire hazards, their causes, application of fire protection principles.

FP 5.256 Elementary Science for Fire Fighting
3 cl, 2 lab hr/wk, 4 cr
Characteristics and behavior of fire; fundamentals of physical laws and chemical reactions occurring in fire and fire suppression; analysis of factors contributing to fire: cause; rate of burning; heat generation and travel; by-products of combustion; confinement, control and extinguishment.

FP 5.257 Fire Department Hydraulics
3 cl hr/wk, 3 cr
Review of basic mathematics; hydraulic laws and formulae as applied to the fire service; application of formulae and mental calculations to hydraulic problems; fire ground water supply problems; Underwriter’s requirements for pumps and accessories.

FP 5.258 Fire Company Organization, Station Management
3 cl hr/wk, 3 cr
Fire company organization and operation; company responsibilities in station; record keeping; station communications and watch; housekeeping and house privileges; tours and public relations; company organization for response to alarms; company morale.

FP 5.260 Hazardous Materials I
3 cl hr/wk, 3 cr
Review of basic chemistry; identification of hazardous materials by color, symbol, and marking; recommended safe practices for storage and handling of solids, liquids, and gases; methods for fire control of these materials.

FP 5.261 Hazardous Materials II
3 cl hr/wk, 3 cr
A study of electrical, exotic metal and space age fuel fires; the effect of the atomic age on the fire service; handling of radioactive materials involved in fire; the use of monitoring equipment; personnel safety practices.

FP 5.262 Fundamentals of Fire Prevention
3 cl hr/wk, 3 cr
Fundamentals of fire inspections including standards, techniques of evaluation of hazards as to degree of the hazard, and practical recommendations. Reports including maps and sketches of each building inspected. On-the-site inspections of buildings to locate hazards and to recommend safe practices and improvements.
Prerequisites: FP 4.853, FP 5.264.

FP 5.263 Fire Pump Construction, Operation
3 cl, 2 lab hr/wk, 3 cr
For command officers, pump operators. Fire pump hydraulics and measurement including velocity of flow, friction loss; engine and nozzle pressure: discharge; stream range; drafting water; pumping from hydrants; and relaying by hose or tanker.

FP 5.264 Building Construction for Fire Protection
3 cl hr/wk, 3 cr
Classification of buildings; structural features affecting fire spread; effect of fire on structural strength; fire stops and ratings of materials; fire retardants; Sanborn maps.

FP 5.267 Fire Department Communications, Alerting Systems
3 cl hr/wk, 3 cr
Receiving, dispatching and radio communication procedures; FCC regulations; municipal alarm; telephone and tone-activated alarm; recording messages; tap-out procedures, running cards.

FP 5.268 Fire Service Rescue Practices
2 cl, 2 lab hr/wk, 3 cr
Trains fire company personnel to render emergency
service in life saving and rescue work. Development and organization of a rescue company; rescue equipment; training for rescue service; practices and procedure, using a mechanical device for artificial respiration, as well as manual skills.

FP 5.269 Water Distribution Systems 3 cl hr/wk, 3 cr
Water-main systems; hydrants: size, gridding, valving, distribution; residential and commercial districts; fire flow requirements; pumping stations; high pressure systems; storage tanks and cisterns; mobile supplies.

FP 5.272 Fixed Systems, Extinguishers 3 cl hr/wk, 3 cr
Portable extinguisher equipment; fire alarm and detection systems; sprinkler systems and standpipes; protection systems for special hazards; explosion release; ventilation systems; inert atmospheres and static bonding.

FP 5.274 Fire Fighting Tactics, Strategy 3 cl hr/wk, 3 cr
Response and size-up; fire ground tactics; analysis and post-mortem; prefire survey and planning; combined operations; mutual aid; disaster planning; problems in unusual fire operations.

FP 5.275 Fire Science I 3 cl, 2 lab hr/wk, 3 cr
Practical physics for skilled fire workers, covering matter measurements, mechanics, and machines. Lab for demonstrations and experiments to clarify principles and procedures covered.

FP 5.277 Fire Science II 2 cl, 2 lab hr/wk, 3 cr
Physical and chemical properties of substances; chemical changes; elements, compounds, gases, chemical combinations; weights and measurements; theory of metals; acids, bases, salts, solvents, solutions, and emulsions. In addition, study of carbohydrates; electrochemistry, electrolytes, and electrolysis in their application of chemistry to industry.

FP 5.281 Pump Operation, Fire Streams 2 cl, 2 lab hr/wk, 3 cr
For instructors, command officers, pump operators. Fire pump hydraulics and measurement including velocity of flow, friction loss, engine and nozzle pressure, discharge, water in mains and supply.
Prerequisite: FP 5.263.

FP 5.282 Fire Codes, Related Ordinances 3 cl hr/wk, 3 cr
Fire code, building, exit, flammable liquid and other fire prevention codes followed by supervised building inspection field trips. Primarily for fire department inspectors.

FP 5.286 Fire Insurance Principles, Grading Schedules 3 cl hr/wk, 3 cr
Insurance grading schedules and their principles of application. Methods of analyzing fire hazard and the effects of fire hazards on fire insurance rates. A study of the National Board Grading Schedule in detail; other schedules covered briefly. The fundamentals of fire insurance rating methods, loss records, municipal gradings, etc.

FP 5.287 Training Programs, Techniques 3 cl hr/wk, 3 cr
Purposes of fire service drills and training programs. The development and operation of the departments' training program. Facilities and equipment necessary for modern training. Selecting and training the instructional staff. Psychology of learning: four-step method; lesson planning. Instruction techniques; training aids, tests, workbooks; training objectives and curriculum development; conducting conferences, and meetings.
Prerequisite: FP 5.262.

FP 5.288 Fire Reports, Records 3 cl hr/wk, 3 cr
Fire department record systems; principles of report writing; applications in the areas of pre-fire surveys; post fire reporting; research and planning.

FP 5.289 Legal Aspects of Fire Protection 3 cl hr/wk, 3 cr
History and background of laws relating to the fire service; tort liability of municipalities, municipal employees, and members of the fire service; clarification of legal terminology; civil service laws and requirements; pensions, mutual aid, and fire prevention codes.

Law Enforcement

EDP Survey of Electronic Data Processing 5 cl hr/wk, 4 cr
First five weeks include general orientation to data processing; need for processed data; history; development of mechanical and electronic machines for processing data; brief description of equipment, how it operates; possibilities, limitations; how to use machines to best advantage. Last six weeks cover special application of data processing to law enforcement agencies; conversion from manual records system to an automated records system in municipal police departments; projected uses in communications, investigations.

LE 111 Police and Society 3 cl hr/wk, 3 cr
Critical issues of crime facing police and society today; crime, delinquency, and social change; relation of crime and law; reporting of crime; range of criminal behavior; involvement of juveniles in delinquency; major behavioral deviations related to crime; role of the victim; new developments in law enforcement and criminal justice; punishment and correctional substitutes.

LE 112 Administration of Justice 3 cl hr/wk, 3 cr
Review of court systems; procedures from incident to final disposition; principles of constitutional, federal, state and civil laws as they affect law enforcement. Kinds and degrees of evidence, rules governing admissibility of evidence in court.

LE 113 Criminal Law I 3 cl hr/wk, 3 cr
Structure, definition of various crimes; classification of crimes, with descriptions, elements in focus to determine if
a crime has been committed and what crime. Union of
criminal intent with a criminal act which establishes
the corpus delicti is discussed to determine the degree of in-
volvement of the principal or accessory. Capability or in-
capability of persons to commit a crime either legally or
physically because of age, physical conditions, mental con-
dition, intoxication, etc. Exemptions afforded the spouse,
attorney, physician, corporations, diplomats, agents, etc.,
and conditions under which criminal acts are justifiable or
excusable. Crimes studied are offenses against persons,
home, property, public health, safety and morals, public
justice, public peace, federal government, and governments
of other nations.

LE 5.204 Defense Tactics I
3 lab hr/wk, 1 cr

Rudiments of self-defense and attack. Boxing, wrestling,
hand-to-hand combat.

LE 5.206 Defense Tactics II
3 lab hr/wk, 1 cr

Combat and crowd control for the law enforcement offi-
cers. Use of weapons and principles necessary for self-defense
and attack in situations requiring use of force in law
enforcement.

LE 5.212 First Aid I
2 lab hr/wk, 1 cr

Standard first aid procedures and techniques, designed to
meet the needs of special interest groups who wish to secure first aid training. Upon successful
completion of course, a standard first aid card may be
secured.

LE 5.213 First Aid II
2 lab hr/wk, 1 cr

Advanced first aid procedures and techniques to meet the
needs of special interest groups who have opportunity to
give first aid care frequently in the course of their daily
routine. Upon successful completion of course, an advanced
first aid card may be secured.

LE 5.214 First Aid III
2 lab hr/wk, 1 cr

Medical self-help training by U.S. Public Health Service,
Office of Civil Defense, American Medical Association, to
prepare people for survival in national disaster, when ser-
vice of a physician or health personnel are not available.
Also trains First Aid instructors.

LE 5.216 Criminal Investigation I
3 cl hr/wk, 3 cr

Fundamentals of investigation; crime scene search;
sketching and recording; collection and preservation of
physical evidence; scientific aid, modus operandi; sources of
information; interviews and interrogation, follow-up and case preparation.

LE 5.217 Criminal Investigation II
3 cl hr/wk, 3 cr

Collection and preservation of physical evidence; scientific aids; modus operandi; sources of information; inter-
views and interrogation, follow-up and case preparation.
LE 5.240  Police Report Writing I
3 cl hr/wk, 3 cr
Supplies knowledge of the principles of composition and basic forms of writing reports. Why reports are written; types of reports; makeup 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; visual aids in a report.

LE 5.241, 5.242, 5.243  Problems of Physical Evidence
3 lab hr/wk, 3 cr/trm
Practical application of photography to problems of investigation, proof, identification and court exhibits; techniques of locating, collecting and identifying physical evidence. Uses and methods of fingerprinting casts and molds; sketching; application of scientific laboratory equipment and techniques to physical evidence.

LE 5.244  Police Report Writing II
3 cl hr/wk, 3 cr
Advanced police report writing course involving investigative reports; presentence investigation reports; prison admissions; oral and written composition for supervisors.

LE 5.245  Police Community Relations
3 cl hr/wk, 3 cr
Gives officer a better understanding of himself and of the people with whom he works. Goal is to improve relationships with the various segments of society, reduce hostilities, grievances between the police and groups in the society.

LE 5.250  Narcotics and Dangerous Drugs
2 cl hr/wk, 2 cr
History of narcotics and drug problems today. Causes of problems; identification of drug addicts and drug abusers; definition and classification of various types of narcotics and dangerous drugs; hallucinogenic drugs and their sources, uses, and symptoms; local, Federal laws and other controls; rehabilitation programs available.

LE 5.252  Plant and Store Security
3 cl hr/wk, 3 cr
Provides an understanding of problems facing retail merchants and private and plant security forces, and outlines modern techniques of handling check cashing, shoplifting, employee thefts, and general security of plants, warehouses and loading docks.

LE 5.255  Burglary Investigation
3 cl hr/wk, 3 cr
Detailed study of burglary investigation. Two principal types of burglary, residential and commercial; many variables of each type, including safe burglary. Limited to detective and law enforcement agency investigation only. Prerequisite: Employment in law enforcement agency detection and investigation.

LE 5.260  Police Supervision
3 cl hr/wk, 3 cr
Supervisory techniques related to law enforcement; planning, reporting, improving, directing and evaluating in a minimal contact situation.

LE 5.270  Corrections Seminar
3 cl hr/wk, 3 cr
A seminar for the law enforcement officer involved in administration, operation of the jail. Examines goals, philosophies and methods in establishment of the jail as a component in the correctional process; security measures; prisoner supervision; jail services; problems of operation. Role of the correctional officer, his relation to the prisoner as a community representative.

LE 5.271  Jail Management & Post Assessment
3 cl hr/wk, 3 cr
A seminar in jail management, using workshop approach to problems of general and specific operational plans for realistic prisoner handling and treatment within the local or country jail setting.

LE 5.272  Psychology of the Criminal Personality
3 cl hr/wk, 3 cr
Basic personality theory and abnormal personality types. Foundation for understanding the criminal, his characteristics, his motivations and his pathology.

LE 5.273  Scientific Interrogation
3 cl hr/wk, 3 cr
Detailed study of proven successful techniques for interrogation. Psychology of interrogation of suspects; fundamentals in questioning of witnesses and victims; taking statements; confessions and declarations; understanding and using instruments for detection of deception.

LE 5.280  Polygraph Seminar
2 cl hr/wk, 2 cr
Historical background and various examination procedures in lie detection. Primarily for law enforcement investigative officers who wish more specific information in polygraphy.

LE 5.282  Fingerprint Identification
3 cl hr/wk, 3 cr
Gives the police officer a basic experience with fingerprints, their uses and values, to enable him to apply this knowledge in a working manner during the course of his duties.
At Portland Community College, students in Radio-Television Broadcasting, Speech and Drama, and Journalism are all working in programs designed to help them learn to bridge the gaps between people . . . to learn to use the arts of communication to aid understandings and to build appreciation, in a variety of media.

Student in these areas must learn not only the skills and abilities required for professional performance, but also must develop sensitivities and appreciations of their own, guiding them to creative and satisfying accomplishments.

There are many employment opportunities in these fields, and there is a growing demand for persons with a broad background of learning in a number of fields as well as specific skills in the technical areas.

Programs at PCC offer opportunities for preparation for immediate employment and also for building the base required for further study in four-year colleges and universities.
RADIO-TV BROADCAST TECHNICIAN PROGRAM

This two-year program offers options to prepare the student seeking a career in radio-television for early specialization and entry-level preparation as announcers and program production personnel, or for more technical aspects of radio-TV broadcast employment.

Upon completion of the sequence, an Associate in Applied Science degree is conferred.

### FIRST YEAR

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### SECOND YEAR

**Option I — Radio Production**

Option I is designed to prepare students for careers as radio announcers or to work on the production phases of radio.

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Portland Community College
SECOND YEAR

Option III – Radio Television License Preparation

Option III is designed for those who want to enter the more technical aspects of radio or television. This curriculum option prepares the student to take the First Class Radio-Telephone Operator's License examination which is a highly desirable qualification for announcers and other employees of the smaller stations.

FOURTH TERM

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Radio-TV Broadcasting

RT 3.360  Radio-TV Traffic
3 cl hr/wk, 3 cr

Student is introduced to methods of planning and inserting commercials into a programmed schedule for radio and television stations. Emphasis on accuracy, efficiency of operation.

RT 3.362  Radio Station Organization
3 cl hr/wk, 3 cr

Problems of station management; Personnel; development of station image; creation of sales promotions; public relations for stations.

RT 3.364  Writing for Radio-TV
3 cl hr/wk, 3 cr

Radio and television techniques: special concern on the differences between the two. Imagery with words emphasized in radio writing. Coordination of words and visual communications is stressed in television writing. Commercial and regular program format discussed.

RT 3.365  Broadcast Programming
3 cl hr/wk, 3 cr

Fundamentals of radio-telephone programming; news, sports, community service, documentaries, entertainment.

RT 3.371, 3.372  Broadcasting I & Lab I
3 cl, 9 lab hr/wk, 8 cr/trm

Using control room equipment and operation, the student will study basic practices of radio broadcasting, technical development of the industry, familiarization with FCC rules and regulations. Fundamental station organization, job responsibilities, basic radio station technical equipment, operation, maintenance. Introduction to the radio program; various types of programming; development of program format. Lab and lecture must be taken concurrently.

RT 3.373, 3.374  Broadcasting II & Lab II
3 cl, 9 lab hr/wk, 8 cr/trm

Introduction to microphones of various types with advantages and disadvantages of each. Emphasis on speed, accuracy in reading from prepared scripts. Projection of warmth, friendly attitude stressed. Vocabulary improvement with focus on frequently mispronounced words. Pronunciation of foreign languages, classical composers and their compositions. Sponsored programs and advertising. Lab and lecture must be taken concurrently.

Prerequisite: RT 3.371, RT 3.372.

RT 3.375, 3.376  Broadcasting III & Lab III
3 cl, 9 lab hr/wk, 8 cr/trm

Study of technical equipment in a radio station: control room, studio, transmitter. Routine maintenance of all technical equipment; Interpretation of meter readings; procedures for coping with equipment failure. Set-up of studio for live programs. Procedure for entries in engineering, program logs, with emphasis on responsibility required by FCC. Lab and lecture must be taken concurrently.

Prerequisite: RT 3.373, 3.374.

RT 3.390  Media Management
3 cl hr/wk, 3 cr

The student will study television and radio newsroom organization, editorial responsibility, balance in news program content, reporting and editorial standards.

Prerequisite: 2.111 or consent of instructor.

RT 3.392  Studio Organization
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate a knowledge of: function and purpose of equipment in a typical studio; isolating a faulty piece of equipment; methods of circumventing the problem with confidence and a minimum loss of air time.

RT 3.394  Transmitters and Receivers I
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate a knowledge and understanding of the methods of modulation, demodulation, conversion and transmission of amplitude modulated signals. The coordinated lab will emphasize the measurement, tuning and maintenance of the high power circuits.
RT 3.395 Transmitters and Receivers II
3 cl, 3 lab hr/wk, 4 cr

The student will demonstrate a knowledge of FM, vesti-
brial sideband and pulse modulation techniques. He will also
demonstrate a knowledge of antenna and transmission line
theory and measurements.

RT 3.738 Radio-Telephone Operator's
Preparation I
3 cl, 2 lab hr/wk, 4 cr

Fundamentals of electricity and electronic theory in gen-
eration, transmission, reception of radio signals. Review of
rules, regulations of the FCC for radio operators, radio
station licenses. Students will study typical questions and
answers used in FCC examinations. Laboratory demonstra-
tions.

Prerequisite: AC/DC electrical theory or consent of
instructor.

RT 3.739 Radio-Telephone Operator's
Preparation II
3 cl, 2 lab hr/wk, 4 cr

Advanced electronic theory concerning generation, trans-
mission and reception of radio and television signals. Student
will study more advanced questions and answers used
in FCC radio-Telephone Operators First Class License exam-
ination. Laboratory demonstrations.

Prerequisite: RT 3.738. Holders of Second Class FCC
Radio-Telephone commercial licenses may attend.

Journalism
T J 215 Journalism Laboratory
1 cl hr/wk, 1 cr

Participation in publication of the student newspaper,
"The Bridge." Students gain practical experiences in all
activities necessary in the preparation of materials for the
publication of a newspaper.

T J 216 Reporting I
2 cl hr/wk, 2 cr

Basics of gathering and reporting news, with emphasis on
accuracy and clarity or writing. J 215 required concurrently.
Prerequisite: WR 111 or consent of instructor.

T J 217 Reporting II
2 cl hr/wk, 2 cr

Accuracy and objectivity standards, reader appeal in writ-
ing. Methods of gathering and organizing material for multi-
Prerequisite: J 216.

T J 218 Copy Editing and Makeup
2 cl hr/wk, 2 cr

Copy reading, heading writing, proofreading and makeup.
(Recommended for advanced positions of "The Bridge.") J
215 required concurrently.
Prerequisite: J 216 or consent of instructor.

T J 224, 225, 226 Introduction to Journalism
3 cl hr/wk, 2 cr

Recommended for pre-journalism majors; open to non-
majors. Survey and criticism of communication media; dis-
cussion of journalistic techniques. Fall term: News and ed-
torial functions. Winter term: Advertising and public rela-
tions. Spring term: Production methods. Terms need not be
taken in sequence.

Speech & Drama
T Sp 111, 112, 113 Fundamentals of Speech
3 cl hr/wk, 3 cr

Sp 111: Original speeches; analysis and synthesizes of
material, with emphasis on organizations, outlining and
practice to increase student's poise before an audience.
Sp 112: Greater depth in clear thinking and organization,
providing intensive study of persuasive speaking.
Sp 113: Further practice in persuasive speaking and the
study of other types of speeches.

For all students regardless of speech objectives. Must be
taken in sequence.

T Sp 229 Oral Interpretation
2 cl hr/wk, 2 cr

Techniques of vocal expression for the coordination of
voice and body in the interpretation of modern forms of
literature, including the essay, narration, poetry, and drama.
Effective communication of meaning to others. For all stu-
dents who wish to achieve facility in oral expression for
special or general purposes.

Prerequisite: Sp III or consent of instructor.

T Sp 270 Projects in Public Speaking
2 cl hr/wk. 1 cr

Instruction and practice for participation in intercol-
legiate forensic activities: debate, oratory, interpretive read-
ing, extemporaneous speaking, etc. Other speech projects
designed for non-competitive students. Course repeatable to
4 credit hours.

Prerequisite: Sp 111 or permission of instructor.

Sp 1.610 Public Speaking
3 cl hr/wk, 3 cr

Principles of oral communication and their application.
Stresses analysis and organization of material, evaluation of
audience, and speaker's purpose. Practice through regular
assignments related to student's interest and experience.

T Sp 250 Theatre Workshop
1/3 cr

Provides channels for creativeness, self-expression
through participation in various aspects of theatre produc-
tion. Students practice arts and skills of theatre production:
acting, directing, stage management, scene design and con-
struction, lighting, properties, costuming, makeup, business
and promotion. Participants experience opportunity to
work together cooperatively on presentation of theatrical
pieces involving student and members of the community.

T Sp 251, 252, 253 Elements of Acting
Lec-lab 5 hr/wk, 3 cr/trm

Each student explores the actor's resources to develop
physical and vocal expressiveness. Experiences lead to an
insight into nature, principles of concentration and relaxa-
tion, and practical application to stage and other life activi-
ties. Practice in process of dramatic characterization, build-
ing desired emotional response, establishing belief and truth
in a role and its actions.

T Sp 267, 268, 269 Appreciation of Drama
3 cl hr/wk, 2 cr/trm

Acquaints the student with the theatre as an art form by
exploring modern theatre theory and practice. Guided read-
ing of representative plays from important eras in western
theatre aids the student to build an understanding of major
historical eras of the theatre.

Portland Community College
The systematic study of man in his relationships with other men is the purpose and content of the Social Sciences. Men make contributions to common patterns of interaction, meeting and fulfilling their own needs and that of their societies.

At Portland Community College, courses and programs in the Social Sciences offer the student opportunities to learn about the world in which we live, the things we should value, the goals that are worth pursuing, and the patterns of interaction among men that have led to change and modification among societies.

A variety of courses is offered to meet the needs of students in all programs of the College, as well as those of individuals in the communities served by the College, who wish to take selected courses for enrichment and personal growth.

Courses are open to all students in the College; however, only those prefaced with a T are approved for transfer to four-year colleges and universities. Other courses may apply toward associate degrees conferred by PCC, depending upon the student's program. Check your counselor for information.
Anthropology

**T Ath 101, 102, 103 General Anthropology**

3 cl/hr/wk, 3 cr/trm

*Ath 101*: Physical characteristics of man as living organism, his biological evolution and present state of development, including nature of race. *Ath 102*: Archaeological record of fossil man, evolution of culture, survey of world prehistory. *Ath 103*: Nature of culture, forces at work in organization of a society. Ethnographic data from several cultures illustrate such aspects as language, technology, social organization, government, economics, religion, art.

101, 102 should be taken in sequence; 103 may be taken first or last.

**T Ath 207, 208, 209 Cultural Anthropology**

3 cl/hr/wk, 3 cr/trm

Meaning of culture for men; its diverse forms, and degrees of elaboration; processes of growth and expansion. Culture is viewed as integrated system of behavior patterns man uses to adapt to his social and natural environment. *Ath 207*: Divisions of anthropology, nature of culture; significance of language in the transmission of culture; interdependence of heredity, society, environment. *Ath 208*: Social, political and religious organization. *Ath 209*: Processes of cultural change; implications for developing nations of technical assistance programs.

Economics

**T Ec 201, 202, 203 Principles of Economics**

3 cr/hr/wk, 3 cr/trm

Student is introduced to history, principles of economics including production, exchange, distribution, money and banking, trade regulations, taxation, labor relations, unemployment, business cycles. Terms must be taken in sequence.

**T Ec 1.506 Applied Economics**

3 cl/hr/wk, 3 cr/trm

Special emphasis on current economic issues introduces student to study of economic principles: production, distribution, consumption of goods, services. Topics include business organization, money and credit, price determination, government economic policies, international trade, personal planning.

Geography

**T Geog 105, 106, 107 Introductory Geography**

3 cl/hr/wk, 3 cr/trm

General introduction to geography. Students study: physical geography including landforms, climate, vegetation, soil, surface and underground water; human geography including cultural, economic, urban and population geography; regional geography; techniques and methodology including cartography, aerial photo interpretation and field geography. Terms must be taken in sequence.

History

**T Hist 101, 102, 103 History of Western Civilization**

3 cl/hr/wk, 3 cr/trm

Students are introduced to human experience from which Western civilization has evolved, emphasizing social, political, economic aspects from ancient times to the present. *Hist 101*: Pre-history to 1500 A.D. *Hist 101*: 1500 to about 1850. *Hist 103*: 1850 to present. Should be taken in sequence; exceptions require instructor approval.

**T Hist 201, 202, 203 History of the United States**

3 cl/hr/wk, 3 cr/trm

Student surveys social, cultural, economic, political history of U.S. from colonial times to present. *Hist 201*: Period to 1850. *Hist 202*: 1850 to 1914. *Hist 203*: 1914 to present. Should be taken in sequence; exceptions require instructor approval.

**T Hist History of Black Man in United States**

3 cl/hr/wk, 3 cr

Survey of Negro’s role in American history, from African, colonial backgrounds to present. Emphasizes social, cultural developments of Reconstruction and their relation to 20th Century problems.

Philosophy

**T Phi 201 Problems of Philosophy**

3 cl/hr/wk, 3 cr

Student encounters major philosophic problems: nature, scope of knowledge; relationships between individual, society; character of “ultimate reality”, how determined; attempts to demonstrate existence of God; possibility of free will, its relation to responsibility. Rationalism, empiricism, idealism, realism, determinism, fatalism, materialism, and their interrelationships, are considered, with evidence, reasoning leading to specific views, evaluation of merits of arguments advanced.

**T Phi 202 Elementary Ethics**

3 cl/hr/wk, 3 cr

Examination, evaluation of major ethical systems developed by Plato, Aristotle, Epicurus, Hobbes, Kant, and Mill, including consideration of kinds of questions raised, answers proposed, and justification. When possible, these systems are related to contemporary issues.

**T Phi 203 Elementary Logic**

3 cl/hr/wk, 3 cr

Linguistic structures are analyzed to show relationships within propositions, between reasons and conclusions, and ways in which fundamental logical principles are used in evaluating logical structures. Modern symbolic techniques are used to show logical relationships, with continuous effort to establish relationships between such techniques and ordinary English usages.
Political Science
T  PS 201, 202, 203  American Governments  
3 cr/hr/wk, 3 cr/trm

Background, structure, functions, processes of American government at national, state, local levels. PS 201, 202: American national government, stressing constitutional development, distribution of power, institutional structure, processes of American politics. PS 203: State, local governments, emphasizing federal-state relations, state politics, state-local government relationships, processes of state-local governmental functions. At each stage, Oregon state, local politics studied in detail. PS 201, 202 must be taken in sequence; PS 203 should be in sequence, may be taken at any time with instructor approval.

T  PS 205  International Relations  
3 cr/hr/wk, 3 cr

Nature of relations among states; specific reference to contemporary international issues. Motivating factors such as nationalism, imperialism, economic rivalries, quest for security. Questions of national sovereignty, international cooperation in contemporary situations.

T  PS 206  Comparative European Governments  
3 cr/hr/wk, 3 cr

Comparative analysis of major European states and political systems including cultural, social foundations, processes of governmental policy-making: Great Britain, France, Germany, USSR.

Prerequisites: PS 201, 202. Recommended: Hs 101, 102, 103; Hs 201, 202, 203.

PS 1.600  American Institutions  
3 cr/hr/wk, 3 cr

For student who wants to increase knowledge, understanding of American social, economic, political institutions as they affect the citizen. Contemporary problems focus attention on evolution of U.S. political institutions over the years. Students develop interest in kinds of questions citizens must answer in democratic society.

PS 4.500  Employer-Employee Relations  
3 cr/hr/wk, 3 cr


Psychology
T  Psy 111  Personality and Development  
3 cr/hr/wk, 3 cr

Student learns to identify elements within processes and theories of motivation, learning and development, and personality, demonstrating understanding of concepts and principles by applying knowledge to described situations. Course emphasis is adapted to student interests. For students who do not intend to take Psy 201, 202, 203.

T  Psy 201, 202, 203  General Psychology  
3 cr/hr/wk, 3 cr/trm

In this study of basic principles, theories of behavior, students study, discuss, brain processes, intelligence, aptitude, psychological measurement and testing, drives and motives, emotions, reactions to stress, perception, learning, personality, response mechanisms, communication processes, attitudes, social processes, frontiers in psychology. Courses must be taken in sequence; sophomore standing recommended.

Psy 1.546  Psychology and Human Relations  
3 cr/hr/wk, 3 cr

Specially designed for students majoring in vocational-technical areas. Basic principles of general psychology: heredity, environment, motives, instincts, competition, learning, habits, attitudes, interests; motivation; emotion; personality and character. Concepts studied, discussed, analyzed, applied in light of influence on behavior, and resulting human relations in our society, emphasizing relationships within business and industry.

Sociology
T  Soc 204, 205, 206  General Sociology  
3 cr/hr/wk, 3 cr/trm

Students are introduced to scientific study of human interaction, especially in groups. Soc 204: Processes of social interaction, nature and meaning of culture, process of socialization, dynamics of population, implications of social stratification. Soc 205: Basic institutions of society: marriage and family, religion, economic and political order, education; social consequences of urbanization and social change. Soc 206: Identifies, describes significant American social problems, analyzes causes, possible solutions: Crime, delinquency, prejudice, alienation, poverty, family instability. Terms should be taken in sequence.

The “Open Door” Educational Shopping Center
The "Open Door" Educational Shopping Center
Many business firms and industries are constantly seeking for persons who can become supervisors of operation, processes, and procedures. Portland Community College offers training in this field which can prepare the student to become a new supervisor, can assist the experienced worker to move ahead into new responsibilities or can fill his need for refresher course work to bring him up-to-date on techniques. All PCC classes in supervisory development are taught by working supervisors who can draw on years of practical experience in meeting and solving problems in this field. PCC programs lead to a Certificate in Supervision or to a Certificate in Advanced Supervisory Development, and completion of the two-year sequence brings an Associate in Applied Science degree.
Supervisory Development

This program develops new supervisors, facilitates refresher work for experienced supervisors who feel the need for brushing up on techniques and methods, and prepares persons who are to be placed in supervisory capacities.

Three sequences are offered, leading to a Certificate in Supervision, a Certificate of Advanced Supervisory Development, and finally to an Associate degree in Applied Science. Students seeking the Associate degree must be high school graduates or must pass the General Educational Development tests.

CERTIFICATE IN SUPERVISION

<table>
<thead>
<tr>
<th>Dept.</th>
<th>Cr. No.</th>
<th>Course Title</th>
<th>Class/Lab Hrs/wk</th>
<th>Cr. Hr.</th>
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<tbody>
<tr>
<td>SDP</td>
<td>9.500</td>
<td>Principles of Supervision</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>SDP</td>
<td>9.502</td>
<td>Basic Psychology</td>
<td>3</td>
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<tr>
<td>SDP</td>
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<td>Communications for Supervisors, Oral</td>
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<td>Training Employees</td>
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CERTIFICATE IN ADVANCED SUPERVISORY DEVELOPMENT

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<td>SDP</td>
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<td>Communications for Supervisors, Oral</td>
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<tr>
<td>SDP</td>
<td>9.501</td>
<td>Communications for Supervisors, Written</td>
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<tr>
<td>SDP</td>
<td>9.506</td>
<td>Human Relations</td>
<td>3</td>
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<tr>
<td>SDP</td>
<td>9.508</td>
<td>Labor-Management Relations</td>
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<td></td>
<td>Occupational Courses</td>
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ASSOCIATE IN APPLIED SCIENCE DEGREE IN SUPERVISION

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<th>Dept.</th>
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<tbody>
<tr>
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<td>9.508</td>
<td>Labor-Management Relations</td>
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<tr>
<td>SDP</td>
<td>9.509</td>
<td>Industrial Economics</td>
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<td>3</td>
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<tr>
<td>SDP</td>
<td>9.512</td>
<td>Work Simplification</td>
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<tr>
<td>SDP</td>
<td>9.514</td>
<td>Cost Control for Supervisors</td>
<td>3</td>
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<tr>
<td>SDP</td>
<td>9.503</td>
<td>Communications for Supervisors, Oral</td>
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<td>Communications for Supervisors, Written</td>
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<td>Occupational Courses</td>
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Electives (from prescribed lists) 45

TOTAL 90

Principles of Supervision

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<th>SDP 9.500</th>
<th>Principles of Supervision</th>
<th>3 cr</th>
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<tbody>
<tr>
<td></td>
<td>Responsibilities of a supervisor in industry: organization, duties and responsibilities, human relations, grievances, training, rating, promotion, quality-quantity control, management-employee relations, etc.</td>
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<tr>
<th>SDP 9.501</th>
<th>Written Communications for Supervisors</th>
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<th>SDP 9.502</th>
<th>Basic Psychology for Supervisors</th>
<th>3 cr</th>
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<tbody>
<tr>
<td></td>
<td>Assists supervisor in understanding people with whom he works; emphasis on psychological aspects, perceptions, learning processes, emotions, attitudes, and personalities.</td>
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<table>
<thead>
<tr>
<th>SDP 9.503</th>
<th>Oral Communications for Supervisors</th>
<th>3 cr</th>
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<tbody>
<tr>
<td></td>
<td>How we communicate; effective speaking and listening. Kinds of supervisory communications. Saying what we mean: oral versus written communications. Understanding what is communicated as related to intent and effect. Conference leading and practice for supervisors.</td>
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<tr>
<th>SDP 9.504</th>
<th>Training Employees</th>
<th>3 cr</th>
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<table>
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<tr>
<th>SDP 9.506</th>
<th>Human Relations</th>
<th>3 cr</th>
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<tbody>
<tr>
<td></td>
<td>Principal application of basic psychology in building better employer-employee relationships through human relations techniques.</td>
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<tr>
<th>SDP 9.508</th>
<th>Labor-Management Relations</th>
<th>3 cr</th>
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<tr>
<th>SDP 9.512</th>
<th>Work Simplification</th>
<th>3 cr</th>
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<tbody>
<tr>
<td></td>
<td>Supervisor’s responsibility for job methods improvement. Basic principles of work simplification. Administration and problems involved. Motion study fundamentals for supervisors. Time study techniques.</td>
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<table>
<thead>
<tr>
<th>SDP 9.514</th>
<th>Cost Control For Supervisors</th>
<th>3 cr</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>How costs are determined in industry. Cost control and its function. Supervisor’s responsibility for costs. Factors in cost control: costs, materials, waste, salvage, quality control, control of time.</td>
<td></td>
</tr>
</tbody>
</table>
SUPERINTENDENTS ADVISORY COMMITTEE

D. Herbert Armstrong—Forest Grove
Orville R. Bailey—Scappoose
Robert Blanchard—Portland
Loren A. Douglas—Newberg
Delbert Fennell—Tigard
Wayne Foster—St. Helens
Ray K. Godsey—Columbia County
Lloyd A. Gooding—Gaston
Robert N. Gourley—Beaverton
Rev. Emmet Harrington—Portland

Lane E. Dubose—Hillsboro
Lloyd F. Millhollen—Lake Oswego
William Opitz—Yamhill-Carlton
Elvan Pitney—Sherwood
Darrold R. Proehl—Vernonia
Kenneth Ramey—Yamhill County
Thomas J. Sommerville—Multnomah County
L. G. Rood—Clackamas County
Austin T. Scrafford—Washington County
Frank W. Smith—Banks
PORTLAND COMMUNITY COLLEGE
ADMINISTRATION AND FACULTY

RUSSEL L. ABRAHAM
Mathematics
DONALD ALDRICH
Automotive Mechanics
WALTER E. ALLEN
Coordinator, Properties and Maintenance
HAZEL D. ANDERSON
Department Chairman, Home Economics
JAMES A. ANDERSON
Chemistry
VINCENT AST, JR.
Data Processing
JOSEPH L. ATKINS
Coordinator, Staff Personnel
HAROLD R. AUGUSTUS
Dental Laboratory Technician
RODNEY C. BACH
Instructional Materials
JERRY D. BAKKE
Electronics
DOROTHY J. BALL
Practical Nursing
JACK N. BARKER
Mathematics
ELIZABETH T. BARNES
English, Literature
EUGÈNE F. BARRETT
English
DANIEL BELTRAMI
Airframe and Power Plant
NANCY BENNANI
English
DENALI BERLAND
Certified Dental Assistant
GARY L. BETTS
English
JAMES E. BLACKBURN
Automotive Mechanics
PAUL H. BLIXT
Photography, Instructional Materials Aides
HENRY BLOOD
Mechanical Engineering
MAURICE C. BOLEY
Business
H. JEAN BRECK
Recreation, Physical Education
LYNN H. BROKAW
Psychology
RICHARD J. BRUNO
History
JEAN L. BUCK
English, Counseling
DIANNA BUCKIEWICZ
Physical Education
JAMES BUENGER
English
DOROTHY BURCHETTE
Nursing
LOYAL F. BUROKER
Coordinator, Food Services
RALEIGH BUTTERFIELD
Art, Instructional Materials
ROBERT CANDELLO
English
ELMER C. CARD
Drafting
MARJORIE CARSON
Business Education
ROSE CHRISTENSEN
Department Chairman, Nursing
FLORENCE M. CLARK
Business Education
KENNETH CLARK
Business Education
ANN B. CLARKSON
Psychology
HELEN L. CLAUNCH
Medical Secretarial
GARNARD COLES
Employment Orientation
CAROL S. CONNOLLY
Nursing
WILLIAM H. COOKSLEY, JR.
Student Personnel Services
DONALD W. CREEK
Biology
TOM CROWDER
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<td>JOHN E. NORTON</td>
<td>Coordinator, Purchasing and</td>
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<td>COMMERY WARRELL</td>
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<td>CLARABELLE WILLIAMS</td>
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<td>NORMAN YAP</td>
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<td>K. GORDON YOUNG</td>
<td>English</td>
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<td>RICHARD L. YOUNG</td>
<td>Coordinator, MDTA</td>
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<td>ROBERT E. ZERTANNA</td>
<td>Dean, Mathematics, Physical</td>
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<td>DONNA ZUCKERMAN</td>
<td>History</td>
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</table>
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MARDEEN HULTGREN
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KENNETH A. HUMPHREY
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HELEN V. HUNT
Community Education

GUY HUPE
Community Education

VIRGINIA W. HURST
Mathematics

JOH M. HYTREK
Apprenticeship

HARRY H. INKLEY
Community Education

DALE JOHNSON
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DAVID W. JOHNSON
Writing

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Law Enforcement

JANET M. JOHNSON
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JOY L. JOHNSON
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LEIGHTON W. JOHNSON
Engineering

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MARGARET C. JONES
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ESTHER KOCH
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ROBERT T. LAHERTY
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PAUL H. SUNSET
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JEAN TAGGART
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FRANKLIN TARR
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LEE CECIL TEYEMA
Apprenticeship

FRANK W. THERGROSN
Law Enforcement

RAY D. THOMPSON JR.
Apprenticeship

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NEAL J. TIGNER
Speech

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KATHARINA TUNDER
Community Education

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JOHN H. UPTON
Apprenticeship

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Portland Community College has received national recognition for its strong career and occupational programs. These programs are growing in scope and popularity, primarily because they are relevant to student and community needs.

This relevance and functional success is due in large measure to the knowledge and energy given to the programs by the Advisory Committees which work closely with the College to make the programs practical and meaningful. The Committees assist the College in determining needs, defining training objectives, planning and developing program content, organizing practical evaluation, serving as liaison for student placement in working positions, and providing follow-up of graduates and continuing liaison with the industry or business.

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### 1970-1971

#### PORTLAND COMMUNITY COLLEGE

**CALENDAR OF INSTRUCTION**

### Fall Term

- **Staff Orientation**: September 10-18
- **Registration**: September 21-October 2
- **Classes Begin**: September 28
- **Last Day to Register or Add Classes**: October 2
- **Thanksgiving Holidays**: November 26-27
- **Final Examinations**: December 14-18
- **Fall Term Ends**: December 18
- **Final Grades Due in Registrar's Office 4:00 p.m.**: December 21

### Winter Term

- **Registration — Fall Term Students**: January 4
- **Open Registration**: January 5-8
- **Classes Begin**: January 6
- **Last Day to Register or Add Classes**: January 8
- **Final Examinations**: March 15-19
- **Winter Term Ends**: March 19
- **Final Grades Due in Registrar's Office**: March 22

### Spring Term

- **Registration — Winter Term Students**: March 29
- **Open Registration**: March 30-April 2
- **Classes Begin**: March 31
- **Last Day to Register or Add Classes**: April 2
- **Memorial Day — Classes in Recess**: May 31
- **Final Examinations**: June 7-11
- **Spring Term Ends**: June 11
- **Commencement**: June 13
- **Final Grades Due in Registrar's Office — Noon**: June 14

### Summer Term

- **Registration**: June 21
- **Classes Begin**: June 22
- **Last Day to Register or Add Classes**: June 25
- **End of Eight Week Session**: August 13
- **Final Grades Eight Week Session in Registrar's Office — Noon**: August 16
- **End of Summer Term**: September 3
- **Final Grades Summer Term Due in Registrar's Office — Noon**: September 6