

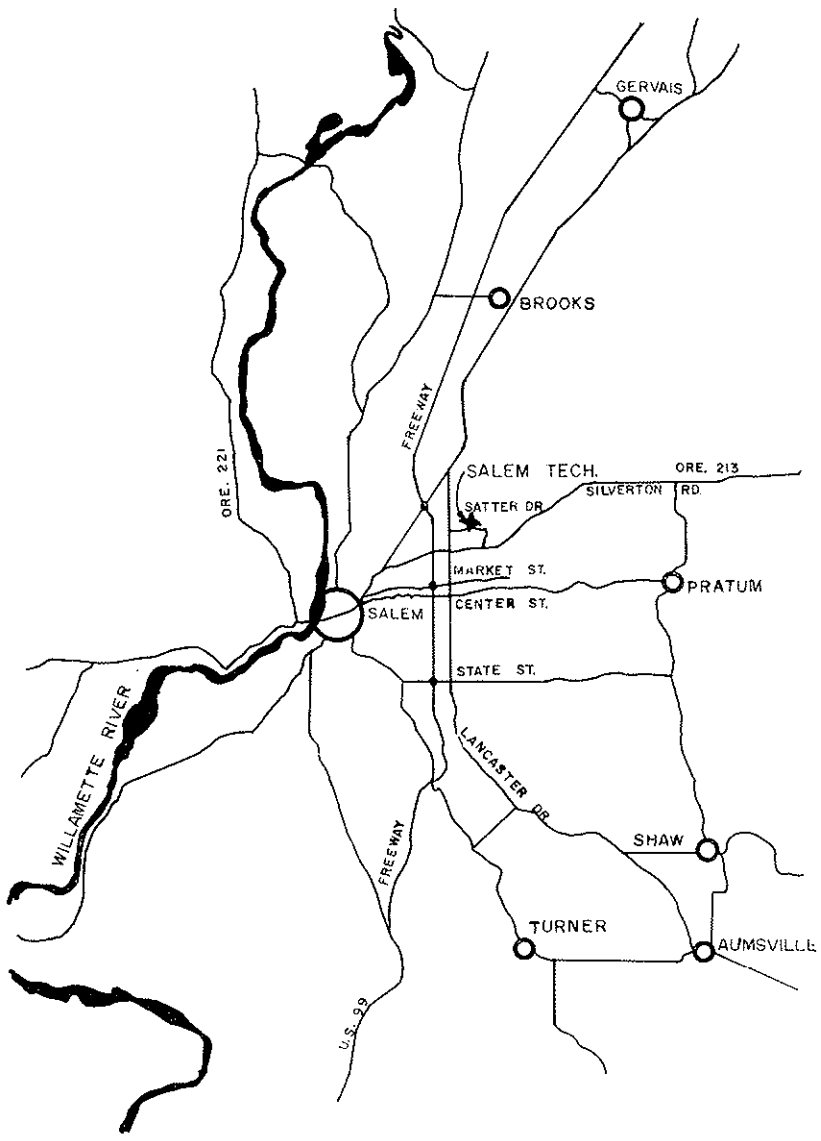
Salem
Technical
Vocational
Community
College (SALEM PUBLIC SCHOOLS)

CATALOG
1965-1966

4389 Satter Dr., N.E.
Salem, Oregon

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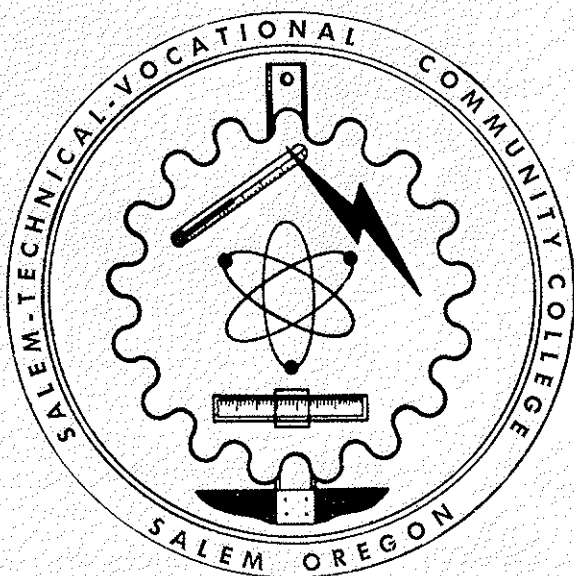
Highways leading to Salem Tech



SALEM TECHNICAL VOCATIONAL COMMUNITY COLLEGE

4389 Satter Drive, N.E.

Salem, Oregon



CATALOG 1965 - 1966

A Public Area Education Center Serving
MARION, LINN, and POLK COUNTIES

OPERATED BY SCHOOL DISTRICT NO. 24J
SALEM PUBLIC SCHOOLS

School District 24 J

Board of Education

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Salem Public Schools

PAUL F. WILMETH, Director

Technical Vocational Education

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Academic Calendar

Fall Term - 1965-66

Sept. 15-16	(Wed.-Thur.)	New Student Orientation
Sept. 15-16	(Wed.-Thur.)	.....	Registration
Sept. 20	(Mon.)	.....	Classes in regular session
Sept. 21	(Tues.)	.....	Last day to register without penalty
Sept. 27	(Mon.)	.....	Last day to register for fall term
Oct. 11	(Mon.)	.....	Last day to make program changes
Oct. 25-29	(Mon.-Fri.)	.....	Midterm Examinations
Nov. 3	(Wed.)	.....	Last day to withdraw from classes (See grading system)
Nov. 11	(Thur.)	.....	Veteran's Day
Nov. 25-26	(Thur.-Fri.)	.....	Thanksgiving vacation
Dec. 10	(Fri.)	.....	Pre-register for winter term
Dec. 20-21	(Mon.-Tues.)	.....	Final Examinations
Dec. 22	(Wed.)	.....	Fall term ends

Winter Term 1965-66

Jan. 3	(Mon.)	.....	Registration
Jan. 3	(Mon.)	.....	Classes in regular session
Jan. 4	(Tues.)	.....	Last day to register without penalty
Jan. 10	(Mon.)	.....	Last day to register for winter term
Feb. 7-11	(Mon.-Fri.)	.....	Midterm Examinations
Feb. 16	(Wed.)	.....	Last day to withdraw from classes (See grading system)
Mar. 1	(Tues.)	.....	Pre-register for spring term
Mar. 9-10	(Wed.-Thur.)	.....	Final Examinations
Mar. 11	(Fri.)	.....	Winter Term ends

Spring Term 1965-66

Mar. 21	(Mon.)	.....	Registration
Mar. 21	(Mon.)	.....	Classes in regular session
Mar. 22	(Tues.)	.....	Last day to register without penalty
Mar. 28	(Mon.)	.....	Last day to register for spring term
Apr. 25-29	(Mon.-Fri.)	.....	Midterm Examinations
May 4	(Wed.)	.....	Last day to withdraw from classes (See grading system)
May 30	(Mon.)	.....	Memorial Day Holiday
May 31-Jn. 1	(Tues.-Wed.)	.....	Final Examinations
June 3	(Fri.)	.....	Spring term ends
June 3	(Fri.)	.....	Graduation Exercises

Fall Term 1966-67

Sept. 14-15	(Wed.-Thur.)	.....	New Student Orientation
Sept. 14-15	(Wed.-Thur.)	.....	Registration
Sept. 19	(Mon.)	.....	Classes in regular session

Faculty

- BERG, Betty M. (1963)
South Dakota State College. Four years teaching Business Education.
- BLAKNEY, Clement D. (1965)
Oregon State University, B.S. (1949). Industrial experience in wood industries and production.
- BLANK, Franklin W., Jr. (1961)
B.A. Business Administration, Willamette University 1953. Nine years experience Business and Personnel Management.
- BORGEN, Arlen L. (1965)
B.S.C.E. Oregon State University, (1956). M.S.C.E. Oregon State University, (1961). Three years with U.S.N. Civil Engineering Corps, four years with Consulting Engineering Firm, professional engineer in Oregon.
- CHADWICK, Patricia (1960)
Diploma, Providence Hospital School of Nursing, Portland, Oregon, (1956). Two years nursing experience, five years hospital teaching.
- CIRCLE, Melvin W. (1957)
Sacramento Junior College, Capitol Radio Engineering Institute, Oregon State University. Ten years experience in radio-TV service, eight years experience in electronics, seven years experience as instructor in electronics.
- COLE, Henry T. (1963)
Oregon State University, B.S. (1959) (Ed. M. 1961 O.S.U.) Twelve years industrial experience, mechanical and manufacturing. Five years teaching, Oregon State University.
- COOK, Conrad (1964)
Oregon State University. Seven years Electronic Data Processing.
- DAVEY, Stanley H. (1965)
Oregon State University, Lower Columbia Junior College. Eleven years business and industrial experience.
- DEISCHER, Mildred E. (1964)
B.S. and M.S. Home Economics Education, Iowa State University. Advanced graduate study at Columbia University and Oregon State University. Experience in high school and college teaching in State Home Economics Supervision.

- DILL, Cecil L. (1962)
Oregon State University, Oregon College of Education. Fireman Training Supervisor for State of Oregon six years, ten years of experience in industry.
- DODGE, Thomas I. (1964)
Lewis & Clark College. Nine years sheet metal fabrication and installation experience.
- FOSTER, Selma A. (1963)
Tabor College, Hillsboro, Kansas. Ten years dental assisting experience, two years dental assistant teaching experience. Certified Dental Assistant.
- HARDING, Rex (1964)
B.S. (Eng.) University of London. Five years apprenticeship in aircraft industry, three years subsequent industrial experience (aircraft, sales, and refrigeration).
- HATFIELD, Gladys E. (1963)
B.S. Nursing Education, University of Oregon, (1947). Five years teaching, three years experience in Psychiatric Nursing.
- LATHAM, Robert S. (1964)
Colorado State College at Greeley, B.A. (1950). Oregon State University, Ed. M. (1963). Five years business experience, five years drafting and design experience, ten years teaching drafting and related subjects.
- MEFFORD, Harrison W. (1964)
Northern Idaho College of Education, Vanport Extension Center, Oregon State University. Twenty years experience in civil engineering and construction fields.
- NICHOLS, Victor (1962)
University of Washington. Seven years experience in machinist field, thirteen years boat building foreman, purchasing agent, and engineering, three years instructor.
- PINCKNEY, Dale E. (1964)
B.S., Social Science, University of Utah, (1947). Professor of Social Science, University of Montana, ten years, associated with Civil Service Personnel Training, one year.
- RICE, Leonard (1960)
B.S. Industrial Arts Education, Oregon State University, (1959). Four years industrial experience, three years as Senior Draftsman.

- SHOWERS, Keith M. (1965)
Oregon College of Education, B.S. (1963). Four years teaching science and social science.
- SLONECKER, William (1963)
University of Washington, A.A. Degree. Ten years experience as electronics technician working on microwaves and tele-metering installations.
- SMITH, Joseph W. (1963)
B.S. Forest Management, University of Washington, (1951). Field Assistant, Rehabilitation Assistant, Oregon State Board of Forestry, Management Forester. Ten years forestry experience.
- WILBRECHT, Lloyd C. (1952)
North Dakota State School of Science (A.A.), Purdue University, Mississippi Southern University, selected Air Force schools (U.S. Air Force, retired).
- WILMETH, Paul F. (1952)
B.E. Oregon State University, (1957). M.E. Oregon State University, (1960). Eight years industrial experience, four years teaching, thirteen years in Technical Vocational Education.
- ZARKOWSKI, Frank (1961)
B.S. Oregon State University, (1958). M.E. Oregon State University, (1960). Four years Flight Engineering U.S.A.F., six years instructor. (On leave 1965-66).

PART TIME INSTRUCTORS

PREPARATORY

Bishop, William O.	Technical
Bradshaw, James C.	Mathematics
Bruce, Frank	Mathematics
Bryant, Patricia H.	Stenographic
Loewen, Earl L.	General Education
Shepard, Violet	Related Health Occupations
Tebeau, William	Technical-Related

APPRENTICE

Anderson, Norris	Sheetmetal
Arthur, Robert	Inside Wire
Bell, Charles	Inside Wire
Crownover, James	Sheetmetal
Fisher, George P.	Plumbing
Henning, John	Cabinet Making
Jain, Lester	Carpentry
Johnson, Ace	Plumbing
Meade, Elmer	Auto Mechanics
Nickeson, Ralph	Painters
Overs, Jere	Power Lineman
Richter, Edward	Industrial Maintenance
Steponek, William	Machinist

HOME ECONOMICS EDUCATION FOR ADULTS

Bothman, Jackie	Family Finance
Chrisman, Keith S.	The House—Its Design and Construction
Ficklin, Alice	Clothing
Johnson, Elaine	Family Mealtime Magic
Lulay, Zelma	Wardrobe Coordination
McLaughlin, Richard	Home Maintenance
Morrow, Judith	Clothing
Martin, Dennis	Changing Roles of Today's Parents
Sorick, Beatrice	Clothing
Witteman, Floyd	Landscaping Home Grounds

SUPERVISORY, TECHNICAL

Crossland, Ronald	Applegate, Calvert
French, Richard L.	Annot, Clarence
Harvey, Peter C.	Beymer, Jack
Hughes, William	Johnson, Kerby
Listella, Guido	Kaiser, Ronald
Shattuck, Gordon	Loynes, Earnest
Shepherd, Robert	Mogstad, Lars F.
Steuqns, Robert E.	Moreland, Gerald
Weigers, William	Terpin, Frank

FIREMAN TRAINING

Cary, LaVern H.	Norton, Robert
DeRoss, Ronald	Pflughaupt, Walter
Ditter, Delbert	Reinke, Donald
Lee, O. W.	Reynolds, Franklin G.
Miller, W. C.	Snook, Bernard
Myers, James C.	Stettler, John D., Jr.

Advisory Committees Of Salem Technical Vocational Community College

CIVIL - STRUCTURAL AND DRAFTING TECHNOLOGY

Anderson, John
Baker, George (City Engineer's Office)
Morrow, Robert (Contractor)
Richardson, Don (Architect)

HIGHWAY ENGINEERING TECHNOLOGY

Hall, Frank L.
Huntley, Gene
Merchant, Ivan D.

DATA PROCESSING TECHNOLOGY

Giroux, Joe (State Farm)
LaDuke, Tom (Western Paper)
Peer, Donald (Civil Service)
Rice, Roy (U.S. National Bank)
Wilson, Edward (Allstate)

DENTAL ASSISTANTS

Bickler, Dr. Gordon
Lindsey, Dr. Robert
O'Brien, Dr. John
Siddoway, Dr. Robert

ELECTRONICS ENGINEERING TECHNOLOGY

Berg, Norman (Consumers Power—Corvallis)
Christensen, Robert (IBM)
Fields, Gene (Electric Corp.)
VanMeter, Joe (Pac. N.W. Bell)

MECHANICAL & MACHINE TECHNOLOGY

Butler, Roger (Ore. Met.)
Cummings, Truman (Job Shop)
Day, L. B. (Cannery Workers Union)
Gerlinger, Carl (Production Maint.)
Henken, George (Blue Lake)
Walker, Bill (WaChang)

PRACTICAL NURSING

Chaney, Kenneth, R.N.
Edwards, Thomas A., M.D.
Hansen, Wm. A.
Hiatt, Barbara, R.N.
Krieg, Helen, R.N.
Lefor, Fae, R.N.
Offenstein, Margaret, R.N.
Robinson, Florence, R.N.
Seamster, Esther, L.P.N.
Sullivan, Mary, R.N.
Wedel, Irwin
Yeary, Berniece, R.N.

FORESTRY ADVISORY COMMITTEE

Alley, Tom (U.S. Plywood)
Bergman, Morris (Willamette Valley Lumber Co.)
Ellicott, Ross (Columbia River Log Scaling & Grading Bureau)
Gray, William (Boise Cascade Corporation)
Hughes, William (State Forestry Department)
Jones, Wendall (U.S. Forest Service)
Krueger, Otto (Bureau of Land Management)
Patronsky, L. A. (Timber Engineering Company)

HOME ECONOMICS ADVISORY COMMITTEE

Cohen, Aaron (Mrs.)
Fratzke, Clifford (Mrs.)
Granato, Sam
Hampton, Earl (Mrs.)
Hoerauf, Al
Kyle, Cameron (Mrs.)
Siddoway, Robert (Mrs.)
Springer, Cathryn (Mrs.)

General Information

History

In 1955, the Salem Technical Vocational Community College was established as a post high school institute to meet the increasing technical and vocational needs of Marion County and parts of Linn and Polk Counties. The school's first curriculum, February 1955, was in Machine Shop Practices. Ten full-time students were enrolled. In June of 1957, the program of Practical Nurses for Licensure was opened. The Electronics Engineering Technician Curriculum was started in October of 1957 with the Civil Structural Engineering Technician program being opened in November of the same year. In September, 1958, General and Technical Drafting programs were added. March of 1959 saw the first class of Highway Engineering Technician students enrolled. The fall of 1961 a Business Data Processing program was established and the following fall of 1962 saw a program for Mechanical Technicians instituted. A Dental Assistant and Forestry Technology program were begun the fall of 1963.

Forest Products Technology, Fire Protection Technology, Industrial Electronic and Communication Technician, Surveyor Technician, Medical Assistant and Welding programs were made available in the fall of 1965. Several options in existing programs were also offered.

Salem Technical Vocational Community College is financially supported by funds from the State Department of Education, local School District and by student tuition. The State Board of Education determines the amount of money which is allowed to the school each year.

The fall of 1963 witnessed a completion of new facilities in North Salem for the expanding community college, and the subsequent removal of classes from the old site in West Salem to the new quarters on N.E. Satter Drive. The present facilities were expanded during the summer of 1965 to allow for increased enrollment and the expansion of programs.

Through legislative and school board action, the name was changed, effective July 1, 1965, from Salem Technical Vocational School to Salem Technical Vocational Community College.

Definition and Philosophy

One of today's most rapidly growing demands on education is for technical and vocational training to support business and industry and its required skilled manpower needs. The Salem Technical Vocational Community College's purpose is to supply these demands through its one and two year post high school programs. The college anticipates and provides local needs with

well planned and well organized occupation centered curricula in the field of technical and vocational education.

Instructors at Salem Tech are selected primarily for their proven competency in the occupational or subject area in which they will teach, educational background, and ability to impart this knowledge to others. The Technical-Vocational instructors retain contact with their occupational areas through close cooperation with advisory committees and summer employment in the field or area in which they teach.

The underlying philosophy of Salem Technical Vocational Community College is to develop and instruct youth and adults for useful employment as skilled and/or highly skilled individuals in recognized occupations. The development of skills, abilities, attitudes, working habits and appreciations are all coordinated so that the graduate will enter and advance in his chosen occupation and participate in the social and civil life of the community.

Academic Regulations

Admission

Admittance to Salem Technical Vocational Community College will be granted to any person 16 years of age or older, who has completed High School requirements for a diploma or its equivalent (equivalency may be established by evaluation of experience and/or training, or by testing); and those who are able to benefit from specific courses.

To be admitted to a program a student must submit an application for admittance and an official transcript of all high school and college records. Upon acceptance of enrollment application, a registration fee of \$10.00 will be due which will apply to the student's tuition.

Entrance Examinations

All persons applying for entrance are required to take the entrance exam which will be scheduled at the earliest possible date after the application is submitted. These examinations indicate ability to do the work required and form a basis for counseling and guidance. Remedial programs may be required to overcome deficiencies, before entrance into certain programs will be permitted.

Tuition and Fees

Tuition and fees are payable in full at time of registration. In certain instances, a partial payment of tuition will be accepted with payment of balance at a later time during the term. In all cases fees and tuitions are established and maintained as low as possible in keeping with the type and scope of the program. All fees and tuitions are collected and deposited with the Clerk of District 24J.

TUITION

Full time students (includes \$10.00 registration fee).....	\$90.00 per term
Part time students \$6.00 per term unit (theory) and \$8.00 per term unit (Lab.)	
Out of State tuition	\$650.00 per year

LATE REGISTRATION

A late registration fee will be charged in accordance with the schedule shown below.

Day of Term	Late Registration Fee
1st and 2nd	No charge
3rd	\$1.00
4th or 5th	3.00
6th to closing date	5.00

Registration will be closed after the day indicated in the Academic Calendar. The college will not accept student registration for the current term after this day.

FEES

Locker Fee	\$2.50 per term
Machine Shop and Mechanical Tech lab fee	\$12.00 per year
Registration fee (paid as part of tuition).....	\$10.00 per term
Lab Fees in addition to the above will be assessed as necessary.	

BOOKS and SUPPLIES

Books and Supplies may be purchased at the college book store. The cost of books and needed supplies will vary, depending on the program. For example, in the Electronics program, a full time student can expect to purchase, during the first year, approximately \$60.00 worth of texts and roughly a like amount for necessary supplies.

TUITION REFUND

Students who withdraw from the college and who have complied with the regulations governing withdrawals are entitled to a partial refund of tuition paid, depending on the time of withdrawal. The refund schedule is obtainable at the time of registration. All refunds are subject to the following regulations. Any claims for refund must be submitted on a withdrawal form at the time of withdrawal. Refunds in all cases are calculated from the date of application for refund and not from the date when the student ceased to attend classes. The following is the refund schedule adopted by the School District and is followed by the college. The registration fee will be deducted before applying the below refund schedule in all cases of withdrawal from school, both in day and evening, part and full time.

During the first week	90% of tuition
During the second week	70% of tuition
During the third week	50% of tuition
During the fourth week	40% of tuition

Grading Systems

Grades will be issued at the close of each term as indicated by the calendar. The letters, A, B, C, D, F, W, and Inc. will be used to designate relative standing in the class; A denotes outstanding performance; B of lesser excellence, but above average; C as average work; D as below average, but still passing; W indicates withdrawal; F as failure; and Inc. as incomplete. Withdrawal from a course may be accomplished before the date indicated on the calendar, and W awarded. After that date, a withdrawal becomes an F. Incompletes may be made up within three months after close of the term and a grade earned. If this is not done in the specified time, the Inc. becomes an F.

All work that is graded is assigned a numerical point value as follows: A, 4 points per term unit; B, 3 points per term unit; C, 2 points per term unit; D, 1 point per term unit; F, 0 points per term unit. The grade-point average (GPA) is the quotient of total points divided by total term units for which grades are issued. Incompletes and withdrawals are disregarded in the computation of grade-point averages.

Scholarship Regulations

All students are required to maintain a GPA in accordance with their ultimate objective, whether it be a Certificate of Completion or Associate in Science Degree. Any term in which the GPA is less than that stated in the requirements would mean the student will be placed on probation and will be subject to dismissal (See requirements for A.A. and Certificate of Completion). A GPA of less than stated in requirements would definitely be looked upon as unsatisfactory performance.

Graduation Requirements

On or before the end of the third week of the student's final term, a written application must be submitted to the office for the Associate in Science Degree or Certificate, whichever is applicable. The Associate Degree is given for satisfactory completion, as outlined in requirements for Associate in Science Degree, of the following two year Technical Curricula:

- Data Processing Technology
- Electronics Technology
- Civil Engineering Technology
- Mechanical Engineering Technology
- Technical Drafting
- Industrial Mechanical Program
- Forest Products Technology
- Fire Protection Technology

The Associate Degree is awarded for meeting the requirements of the options which are offered within each of the Technical Curricula.

Approval for awarding the Associate in Science Degree was given to the Salem Technical Vocational Community College by the Oregon State Board of Education.

Requirements for Associate in Science Degree

The Associate in Science Degree is awarded after the following requirements are met:

1. A minimum of 90 term hours of planned course work within a technology.
2. Cumulative grade point average (GPA) of 2.00 or above.
3. A minimum of 18 term hours of selected general education courses or an approved equivalent.

Requirements for Certificate of Completion

The Certificate of Completion is awarded to those individuals who have satisfactorily completed the required courses within a curriculum. A standard of performance for all course work will be required of candidates for the certificates, as determined by the major instructors or department heads.

Scholarships

The School District has authorized a scholarship for graduates of the District High Schools. This scholarship is awarded on the basis of scholastic ability, financial need, and citizenship. Information can be obtained at the College general office.

Several working scholarships are available to students of Salem Tech. Further information can be obtained through the college office.

Clark & Groff Engineers, Inc., Student Loan Program

A loan of up to \$100 per month will be made available to students while maintaining satisfactory grades in their second year of Civil-Highway Engineering Technology program. Candidates for this loan are selected by a committee of three members on the basis of need, and probability of achievement in the field of Civil or Highway Engineering Technology. Requirements for application are that the student has an accumulative grade point average of at least 2.5 for the first year and a G.P.A. of at least 2.5 in the third term. Parents or guardians of minors will be required to co-sign any note.

Practical Nursing Scholarship

A fund has been established by a foundation composed of interested agencies and institutions for the purpose of providing scholarships to individuals selected for the Practical Nurse Program at Salem Tech. The scholarship will cover expenses such as tuition, books, and needed supplies.

The individual selected for the Practical Nursing program will become eligible to receive the scholarship.

Credit

The specific subject matter areas in the technical programs carry weight designated in TERM UNITS of credit. A term unit represents one hour of the student's time each week for one term in a theory class or three hours in a Lab. The number of class/laboratory hours per week for any course may be found in the sequence of courses for each program of studies and in the section on course description.

Placement

An active placement policy is maintained by the school for the benefit of the graduates of our programs. Instructors in each program are in close touch with employers and job opportunities in the area. Every possible assistance will be given students completing programs and who are seeking jobs in the occupation for which they have been training.

The college coordinates and plans employer recruitment visitations to the school for the convenience of its graduates each spring.

Evaluation

Certain courses within the curriculum may be waived if, upon evaluation of student's past experience by the Faculty Committee, it is felt that he has covered this area. When formal credit is desired after such evaluation, an examination over content of the waived courses would be required by complying with procedures already established for such.

Transcripts from other Post High School Institutions showing subject matter completed that compares with our offerings will be honored and credit automatically given, upon evaluation of such courses by the Faculty Committee.

Counseling and Guidance

A counseling and testing service is available to each interested individual in the community, without obligation. The service is offered to assist individuals with selecting and planning their educational futures in areas commensurate with their abilities and interests.

This service is especially helpful to young people who experience difficulty in choosing an occupation or an area of training.

Veterans

All courses listed are approved by the Veterans Administration and the State Department of Veterans Affairs for the payment of educational benefits to eligible veterans. Thirty hours per week of class time, lab time and supervised study is considered a full load for a veteran. The veteran is responsible for paying the cost of the tuition, fees, books, etc., directly to the college regardless of whether subsistence checks have been received or not.

Dates for payments of costs cannot be waived because of delay in receiving benefits. Prospective veteran students may receive help in submitting applications for educational benefits from either the State Department of Veterans Affairs, at 12th and Ferry Street, S.E., or County Veterans Service Officer in the Marion County Court House, Salem, Oregon.

Evening Program

The evening classes at Salem Tech consist of both full and part time students, persons just out of high school and employed workers who have been out of school for some time. The evening student may elect to take up an entirely new occupation, for example, study for his Electronic Engineering Technician degree, or enroll in a Math or Science class for refresher purposes.

The requirements for entrance into the evening program are that the individual be 16 years of age or over and be capable of profiting from the instruction. Tuition for the classes will vary depending on the number and type of courses. Generally the cost is \$6.00 per term unit of theory and \$8.00 per term unit of lab.

The classes normally are held between the hours of 6 P.M. and 11 P.M.

Further information on the evening program such as cost, time, and availability by various classes can be obtained by calling or writing Salem Tech, 4389 Satter Drive, N.E., Salem, Oregon. Phone 363-4171, Extension 341 or 342.

Occupational Extension

The Occupational Extension classes are offered by Salem Tech to interested persons who are already experienced in a trade or craft. The classes are planned so that the participants may increase their performance skills and related technical information in order that they may become more valuable employees.

Classes may be arranged for any interested group of 10 or more individuals in most industrial occupations, skilled or semi-skilled trade or craft, and in any service or business occupation. Some examples of classes which have been conducted in the past are: Firemen Training; Oil Burner Service; Welding; Inside and Outside Wiring; Supervisory training; and specialized courses for the food processing industry.

The cost of these classes will vary depending on the circumstances, however, in general the fee will range from \$8.00 to \$15.00 per course.

Home Economics Education For Adults

Home Economics Courses for Adults are organized on a non-credit basis to meet the needs of today's families. They are planned to add enrichment to the lives of young men and women entering homemaking, business people, married couples, homemakers who are combining wage-earning and homemaking

careers, as well as retired persons. An important goal is to provide information and to help develop managerial skills, attitudes and appreciations for better home and family living. Courses are available in various areas of home economics, including management, personal and family relations, child care and development, clothing, foods and home furnishings.

Federal Manpower Development and Training Act Programs

Certain programs are offered in conjunction with the Employment Service of Oregon through the Federal Manpower Training Act. Under the Act, the Employment Service makes the initial selection of the individuals for training in the programs. The Forester Aide and Clerk-Stenographer Programs are offered under the Federal Manpower Development Training Act.

Forester Aide Program

The Forester Aide program requires one year of study. The objective of the program is to prepare individuals for entry into the occupation as a forestry technician or aide. The program consists of courses such as tree identification, surveying, drafting, silvi-culture, general forestry, communication skills and sciences.

Clerk-Stenographer Program

The Clerk-Stenographer program requires one year of study. The program is designed to develop skills and knowledge for the office stenographer. The student will be given instruction in English, Mathematics, operation and application of standard office machines. Typical office procedures and filing systems will be studied. Applicants are referred to Salem Technical Vocational Community College by Oregon State Employment Service.

Fireman Training

This program consists of a series of courses designed to fill the need for technical instruction of volunteer and full-time firemen. The courses may be offered in the local fire station or the college. Instructors are selected on the basis of their experience and special competence in the subjects being taught. The interested individual or group may elect to follow several courses of action depending upon their needs, with an ultimate goal of an Associate Degree in Fire Protection Technology.

TO ENROLL IN THESE PROGRAMS OR OBTAIN ADDITIONAL INFORMATION TELEPHONE OR WRITE TO

SALEM TECHNICAL VOCATIONAL COMMUNITY COLLEGE
4389 Satter Drive, N.E.
Salem, Oregon
Telephone: 363-4171, Ext. 342
Evenings: 363-4176

Data Processing Technology

The objective of the Data Processing Program is to provide training for individuals preparing for positions in the various fields of business data processing and for those persons already engaged in the field who desire further training.

This is a two year program providing for specialization in the second year. The first year of the program provides for common business data processing training. The second year has two options; Electric Accounting Machines and Electronic Data Processing. The second year options provide for concentrated study and skill development in these specific fields. Selection of the second year option is based on testing and individual counseling of each student.

Students receive a thorough grounding in accounting, business data processing, computer programming, and management procedures. Comprehensive instruction in logic principles and actual operation of tabulating machines, collators, sorters, interpreters, key punch, reproducing punch and electronic computer is provided.

Upon satisfactory completion of the requirements in the Data Processing Program, an Associate in Science degree will be awarded, signifying that the student is prepared to effectively function and advance in the many job areas of the Data Processing Field.

Examples of opportunities are listed here:

Coders	EDP clerk and librarian
EDPM programmer trainee (CS)	EDPM programmer 1 (CS)
Machine operator—peripheral	Tabulating machine operator (CS)
Tabulating machine operator 1 (CS)	Machine operators—Computer
System and Procedures trainee	Procedures writer

Associate in Science Degree:

Electric Accounting Machine Option 97 term units

Electronic Data Processing Option 99 term units

Data Processing Curriculum

First Year

Term 1

Hours Class	Work Lab.	Course Title	Course No.	Term Units
3	3	Accounting	6.920	4
3		Communication Skills	1.100	3
3		Introduction to Psychology	1.606	3
3	3	Introduction to Electric Accounting Machines	6.913	4
1	3	Records and Reports	2.517	2

Term 2

3	3	Accounting	6.921	4
3		Communication Skills	1.102	3
3		American Institutions	1.600	3
2	6	Electric Accounting Machine—Logic Principles ...	6.940	4
3		Introduction to Business and Public Administration	2.502	3

Term 3

3	3	Accounting	6.922	4
3		Business Statistics	6.912	3
3		Technical Report Writing	6.126	3
3	2	Introduction to Automatic Data Processing	6.900	4
3		Data Processing Mathematics	6.925	3

Data Processing Technology

Second Year Options

Electric Accounting Machines Curriculum

Term 4

Hours Class	Work Lab.	Course Title	Course No.	Term Units
3	2	Introduction to Electronic Accounting Machine Applications	6.944	4
3		Introduction to Systems and Procedures	6.902	3
2	6	Introduction to Electric Accounting Machine Operations	6.941	4
3		Cost Accounting	2.576	3
3		Business Mathematics	6.923	3

Term 5

3	3	Intermediate Electric Accounting Machine Applications	6.945	4
3		Automated Systems and Procedures	6.904	3
2	6	Intermediate Electric Accounting Machine Operations	6.942	4
3		Business Economics	1.524	3

Term 6

3	3	Advanced Electronic Accounting Machine Applications	6.946	4
3		Business Management	6.908	3
2	6	Advanced Electric Accounting Machine Operations	6.943	4
2		Electric Systems Management	6.947	2
3		Psychology of Human Relations	1.608	3

Electronic Data Processing Curriculum

Term 4

2	3	Electronic Data Processing Machine Operations.....	6.909	3
3		Introduction to Systems and Procedures	6.902	3
3	3	Introduction to Programming	6.903	4
3		Cost Accounting	2.576	3
3		Data Processing Mathematics	6.926	3

Term 5

3	3	Electronic Data Processing Applications	6.949	4
3		Automated Systems and Procedures	6.904	3
3	6	Intermediate Programming	6.905	4
3		Business Economics	1.524	3
3		Data Processing Mathematics	6.927	3

Term 6

3	3	Electronic Data Processing Applications	6.950	4
3	6	Advanced Programming	6.907	4
3		Business Management	6.908	3
2		Electronic Systems Management	6.948	2
3		Psychology of Human Relations	1.608	3

Civil and Structural Engineering Technology

The first year (initial three terms) of the following curricula are common:

- Civil and Structural Engineering Technology
- Highway Engineering Technology
- Civil-Structural Drafting Technology
- Surveyor Technician Program

The student will make a choice of a major technology at the end of the first year.

The objective of the Civil and Structural Program is to prepare students to meet the requirements for entrance into the various branches of employment in Civil and Structural Engineering field and for advancement in the chosen field. Graduates will find excellent opportunities for careers in the wide areas of highway, bridge, dam, and factory development and construction. Comprehensive practical training in areas of surveying, strength of materials and construction activities provide application of the theoretical and mathematical courses which are taken concurrently.

The training is sufficiently broad so that the student can use the program as a base for further study in general Civil Engineering and related work. Together with further study and sufficient experience, the graduate would have opportunity to advance to a Civil Engineering Rating while in the employ of certain federal, state, or city organizations.

On a construction project that is being planned, Civil and Structural Technicians may help in estimating costs, preparing specifications for materials, or participating in surveying, drafting, or designing work. Once the actual construction work has begun, they may assist the contractors or engineers in scheduling construction activities and inspecting the work for conformance with blueprints and specifications.

Upon satisfactory completion of the requirements in the Civil and Structural Program an Associate in Science Degree will be awarded, signifying that the student is prepared to effectively function and advance in the many job areas of Civil and Structural Engineering.

Examples of opportunities are listed here:

Construction Foreman	Structural Designer	Contractor's Assistant
Assistant Engineer	Supt. of Construction	Technical Writer
Senior Draftsman	Inspector	Computer
Surveyor	Construction Estimator	Engineering Aide
Civil Engineering Technician	Cost Estimator	Instrument Man, Survey

Associate in Science Degree: Suggested 99 Term Units.

Civil and Structural Engineering Technology Curriculum

First Year

Term 1				
Hours Class	Work Lab.	Course Title	Course No.	Term Units
3	2	Applied Physics	6.371	4
1	6	Plane Surveying	6.101	3
	4	Drafting	4.101	2
3		Technical Mathematics	6.261	3
	2	Engineering Problems	6.135	1
3		Communication Skills	1.100	3
Term 2				
	2	Engineering Problems	6.136	1
3	2	Applied Physics	6.370	4
3		Communication Skills	1.102	3
	4	Drafting	4.105	2
1	6	Plane Surveying	6.103	3
3		Technical Mathematics	6.262	3
Term 3				
2	3	Applied Mechanics	6.109	3
	4	Practical Descriptive Geometry	6.127	2
1		Surveying Computations	6.500	3
2	3	Strength of Materials	6.105	3
3		Technical Mathematics	6.266	3
3		Technical Report Writing	6.126	3
*1	3	Properties of Materials	6.341	2

Second Year

Term 4				
	4	Mapping and Computing	6.131	2
2	3	Strength of Materials	6.128	3
2	3	Applied Mechanics	6.111	3
2		Earthwork Computations and Estimates	6.528	2
1	6	Route Surveying	6.507	3
3		Introduction to Psychology	1.606	3
Term 5				
2	2	Hydraulics	6.112	3
	6	Mapping and Computing	6.133	2
2	3	Soil Mechanics	6.124	3
1	3	Structural Analysis and Design	6.130	2
3	3	Timber and Steel Construction	6.125	4
3		American Institutions	1.600	3
Term 6				
2	5	Concrete Construction and Design	6.123	4
2	2	Hydraulics	6.114	3
	4	Structural Drafting	4.111	2
3		Contracts and Specifications	6.118	3
2		Construction Estimating	6.110	2
3		Psychology of Human Relations	1.608	3

*Taken by surveyor majors in lieu of Strength of Materials

Highway Engineering Technology

*(Optional upon the completion of the first year Civil program)

The graduates of this area become surveyors, design draftsmen or specialists in other well established technical jobs. Those working as surveyors determine the locations and measurements of land areas, buildings for construction, and other purposes; using the transit, level and other surveying instruments. Those employed in other technical jobs include estimators who prepare estimates of costs, materials, and terms necessary in the construction or repair of various highways and structures; highway inspectors who usually supervise the clearing rights of way and preparation of roads for surfacing.

Upon satisfactory completion of the requirements in the Highway Engineering Technology Program, an Associate in Science Degree will be awarded, signifying that the student is prepared to effectively function and advance in the many job areas of Civil and Structural Engineering.

Examples of opportunities are listed here:

Junior Construction Inspector	Construction Inspector
Map Draftsman	Soils Technician
Supervising Technician	Materials Lab Technician
Estimator	Land Surveyor
Instrumentman	Construction Surveyor
Engineering Office Technician	Highway Draftsman

Associate in Science Degree: Suggested 97 Term Units

Highway Engineering Technology Curriculum

Term 4				
Second Year				
Hours Class	Work Lab.	Course Title	Course No.	Term Units
2	4	Mapping and Computing	6.131	2
2	3	Strength of Materials	6.128	3
2		Earthwork Computation	6.528	2
1	6	Route Surveying	6.507	3
3		Introduction to Psychology	1.606	3
2	3	Applied Mechanics	6.111	3
Term 5				
2	2	Hydraulics	6.112	3
	6	Mapping and Computing	6.133	2
2	3	Soil Mechanics	6.124	3
2	5	Concrete Construction and Design	6.123	4
3		Practical Hydrology	6.535	3
3		American Institutions	1.600	3
Term 6				
1	6	Route Surveying	6.509	3
3		Traffic Engineering	6.553	3
3		Contracts and Specifications	6.118	3
2	2	Asphalt Paving	6.551	3
2		Concrete Practice	6.555	2
3		Psychology of Human Relations	1.608	3

Civil and Structural Drafting Technology

*(Optional upon the completion of the first year Civil program)

The objective of this program is to provide proficiency and understanding in the technical requirements for a career as a design draftsman in the field of civil and structural engineering. The courses within the program were specifically selected to train technicians to qualify for the detailing and designing of the plans of construction and engineering in the civil-structural area. Practical elements of engineering, drafting, mathematics, physics, strength of materials, structural analysis, and design analysis serve to constitute a broad curriculum, without sacrificing depth of instruction. The curriculum is centered around occupational elements that normally cannot be obtained through experience alone, elements such as: Principles of Structural Design, Strength of Materials, and certain other specialized areas.

Upon satisfactory completion of the requirements in the Civil and Structural Drafting Program an Associate in Science Degree will be awarded, signifying that the student is prepared to effectively function and advance in the many job areas of Civil and Structural Engineering Technology.

Examples of opportunities are listed here:

Structural Design Technician	Construction Inspector
Technical Layout Draftsman	Technical Writer
Topographical and Mapping Draftsman	

Associate in Science Degree: Suggested 99 Term Units.

Civil and Structural Drafting Technology Curriculum

Term 4		Second Year		
Hours Class	Work Lab.	Course Title	Course No.	Term Units
3		Introduction to Psychology	1.606	3
3		Introduction to Specifications	4.102	3
	8	Architectural Drafting	4.226	3
1	5	Mapping and Computing	6.350	3
1	6	Road Surveying	6.507	3
2		Earthwork Computation	6.528	2
Term 5				
3		American Institutions	1.600	3
2	6	Industrial Construction Drafting	4.133	4
1	5	Mapping and Computing	6.351	3
3	3	Timber and Steel Construction	6.125	4
		Restricted Elective		3
Term 6				
3		Psychology of Human Relations	1.608	3
2	6	Industrial Construction Drafting	4.137	4
	4	Structural Drafting	4.111	2
3	4	Photo Interpretation and Mapping	4.112	4
		Restricted Elective		3

Surveyor Technician Program

*(Optional upon the completion of the first year Civil program)

The objective of this program is to develop the capabilities of the student in the basic concepts and rules associated with surveying and inspection. The student upon graduating from this sequence of courses will be sufficiently founded in technical material to start work as a surveyor technician doing location work for roads or highways, building location, property surveys, office computations, and map preparation. An affiliated field of work is the construction inspector who represents the engineer on the job site and inspects the construction work as it progresses to assure compliance with the plans and specifications.

The training is wide enough in scope so the student can use the program as a base for further study in Surveying and general Civil Engineering. Together with further study and sufficient experience, the student will have an opportunity to become a registered surveyor or advancement to a civil engineering rating if employed by certain federal, state, or city organizations.

Upon satisfactory completion of the requirements in the Surveyor Technician Program an Associate in Science Degree will be awarded, signifying that the student is prepared to effectively function and advance in many job areas of Surveying and Civil Engineering.

Examples in opportunities are listed here:

Surveyor Aide	Engineering Aide	Construction Estimator
Surveyor	Construction Accountant	Contractor's Assistant
Inspector	Cartographer Technician	Computer

Associate of Science Degree: Suggested 101 Term Units

Surveyor Technician Curriculum

Term 4				Second Year	
Hours Class	Work Lab.	Course Title	Course No.	Term Units	
1	5	Mapping and Computing I	6.350	3	
2		Earthwork Computation	6.528	2	
1	6	Route Surveying	6.507	3	
1	2	Blueprint Reading for Construction	4.859	2	
1	2	Asphalt and Concrete Practice	6.556	2	
3		Introduction to Psychology	1.606	3	
Term 5					
1	5	Mapping and Computing II	6.351	3	
2	2	Hydraulics	6.112	3	
3		Industrial Safety	4.108	3	
2	2	Data Processing Applications	6.930	3	
2	2	Soil Mechanics	6.124	3	
3		American Institutions	1.600	3	
Term 6					
1	5	Mapping and Computing III	6.352	3	
2	2	Geodetic Surveying	6.343	3	
3	4	Photo Interpretation and Mapping	4.112	4	
3		Contracts and Specifications	6.118	3	
2	4	Construction and Special Surveys	6.342	3	
3		Psychology and Human Relations	1.608	3	

Electronic Engineering Technology

The first year (initial three terms) of the following curricula are common:

Electronic Engineering Technology
Industrial Electronic and Communication Technician
Electronic-Electrical Drafting Technology

The student will make a choice of a major technology at the end of the first year.

The objective of the Electronic Technician Program is to prepare individuals for careers in the broad field of Electronics. The program was especially designed and planned to give the graduate a broad and comprehensive understanding and practical know-how, without sacrificing depth and some specialization for entrance into such areas of the electronic industry as: research and development; radio and television; micro-wave station operations and maintenance; and in commercial and domestic maintenance and many other areas using vacuum tubes and semi-conductors circuits.

The student is given a strong background in Electronics Theory, Mathematics, and Physics to enable him to handle complex technical work. The student spends the major portion of his school time gaining proficiency in the practical application of the theory; analyzing circuits; development of elementary electronic units; working with modern test and measuring equipment; trouble shooting, and evaluating operating characteristics of electronic equipment.

Graduate Electronic Technicians employed in research and development activities usually assist physical scientists or engineers in designing, testing, and modifying experimental electronic devices. They may be called upon to devise practical solutions to problems of design, select suitable materials, determine the best method of building a piece of equipment, and test and evaluate the operating characteristics of the electronic device. They also may be called upon to make necessary modifications in the experimental equipment.

Upon satisfactory completion of the requirements in the Electronic Technician Program an Associate in Science Degree will be awarded, signifying that the student is prepared to effectively function and advance in the many job areas of the Electronic Technology.

Examples of opportunities are listed here:

Radio Communications Technician (Aircraft, etc.)	Electronic Computer Technician
Radio Operator and Dispatcher	Microwave Radio Technician
Electronics Technician	Electronic Instrument Service Technician
Laboratory Technician (Electronic)	Industrial Electronic Technician
Electronic Instrument Technician (Mfg.)	Supervisor
Guided Missile Technician	Electronic Equipment Designer
	Electronic Engineering Technician

Associate in Science Degree: Suggested 99 Term Units

Electronic Engineering Technology Curriculum

First Year

Term 1

Hours Class	Work Lab.	Course Title	Course No.	Term Units
3	2	Electrical Theory DC	6.200	4
	2	Engineering Problems	6.135	1
3		Technical Mathematics	6.261	3
3	2	Applied Physics	6.371	4
	4	Drafting	4.101	2
3		Communication Skills	1.100	3

Term 2

3	2	Electrical Theory AC	6.202	4
	2	Engineering Problems	6.136	1
3		Technical Mathematics	6.262	3
3	2	Applied Physics	6.370	4
3	3	Vacuum Tube and Transistor Analysis	6.223	4
3		Communication Skills	1.102	3

Term 3

3	3	Electrical Circuits	6.206	4
3	6	Amplifier Circuits and Design	6.217	5
3		Technical Report Writing	6.126	3
	4	Practical Descriptive Geometry	6.127	2
3		Technical Mathematics	6.266	3

Second Year

Term 4

3		Electrical Mathematics	6.115	3
2	6	Oscillators Circuits and Design	6.225	4
2	3	Wave Generation and Shaping	6.234	3
2	3	Semiconductors	6.237	3
2		Network Analysis	6.230	2

Term 5

	4	Electronic Drafting	4.103	2
3	3	Industrial Electronics	6.218	4
2	3	Industrial Television	6.228	3
3		Electronic Data Processing	6.240	3
3		American Institutions	1.600	3
2		Antennas and Transmission Lines	6.231	2

Term 6

2	3	Advanced Electronic Circuits	6.216	3
3		Electronic Instruments	6.220	3
2	6	Industrial Television	6.235	4
3	3	Industrial Electronics	6.248	4
2	3	Microwaves	6.242	3

Industrial Electronic and Communication Technician Program

*(Optional upon completion of the first year Electronic-Engineering Technology)

The objective of the Industrial Electronic and Communication Technician Program is to prepare individuals for entrance into the field of industrial instrument processes or into the field of mobile communication work. The courses are designed to build a background knowledge of these fields. A heavy emphasis is placed upon practical theory and application allowing the student to become familiar with the usage of the equipment for the purpose of testing and servicing. The technician in this field should have a good background in manual skill, also technical judgment based on mathematics and scientific principles with a proficiency of materials and processes in his specialized field and a knowledge of organization and communication skills.

For satisfactory completion of this program a minimum of a second class radio-telephone license is required. Upon satisfactory completion of the requirements in the Industrial Electronic and Communication Technician Program, an Associate in Science Degree will be awarded, signifying that the student is prepared to effectively function and advance in the many job areas of the industrial electronic and communication technician field.

Examples of job opportunities are listed below:

Mobile radio technician	Industrial instrumentation technician
Microwave technician	Instrument test and calibration technician
Microwave installer	Laboratory technician

Industrial Electronic and Communication Technician Curriculum

Term 4		Second Year		
Hours Class	Work Lab.	Course Title	Course No.	Term Units
2	3	Wave Generation and Shaping	6.234	3
2	3	Semiconductors	6.237	3
2		Network Analysis	6.230	2
3	3	Radio Transmitters	6.250	4
3		Introduction to Psychology	1.606	3
Term 5				
3	3	Industrial Electronics	6.218	4
2	3	Industrial Television	6.228	3
2		Antennas and Transmission Lines	6.231	2
2	3	Industrial Instrumentation	6.253	3
2	3	Communication Receivers	6.251	3
3		American Institutions	1.600	3
Term 6				
2	3	Microwaves	6.242	3
2		Radio Law	6.252	2
2	3	Industrial Instrumentation	6.254	3
3		Business Management	2.202	3
3	3	Industrial Electronics	6.248	4

Electronic-Electrical Drafting Technology

*(Optional upon completion of first year Electronic Engineering Technology)

The objective of the Electronic-Electrical Drafting Program is to prepare individuals to meet the requirements for entrance into electronic and electrical drafting fields. The courses within the curriculum were especially planned and selected to qualify the technician for detailing and drawing of electronic and electrical plans and layouts. Practical elements of the engineering, designing, drafting, mathematics, physics, electrical-electronic theory and design analysis, serve to constitute a broad program, but at the same time depth is emphasized in special areas. The program of study is centered around occupational elements that normally cannot be obtained through experience alone, elements such as: principles of electronic-electrical design, electronic-electrical theory and other specialized areas.

Upon satisfactory completion of the requirements in the Electronic-Electrical Drafting Program, an Associate in Science Degree will be awarded signifying that the student is prepared to effectively function and advance in the many job areas of the Electronic-Electrical Field.

Examples of opportunities are listed below:

- Electronic-Electrical Production Draftsman
- Electronic Detail Draftsman
- Electronic Research Draftsman
- Electronic Statistical Draftsman
- Production Layout Draftsman
- Electro-Mechanical Draftsman

Associate in Science Degree: Suggested 100 Term Units

Electronic-Electrical Drafting Technology Curriculum

Term 4		Second Year		
Hours Class	Work Lab.	Course Title	Course No.	Term Units
3		Introduction to Specifications	4.102	3
3		Introduction to Psychology	1.606	3
3		Industrial Safety	4.108	3
2	6	Introduction to Fabrication Practices	4.100	4
3		Electronic-Electrical Standards	4.114	3
	6	Scales and Graphs	4.139	2
Term 5				
3		American Institutions	1.600	3
3	2	Production Planning and Practices	4.104	4
2	3	Metals Application Treatment and Testing	4.106	3
1	6	Control Layout Systems	4.143	3
2	6	Cost Computations	4.142	4
2		Health Education	1.605	2
Term 6				
3		Psychology of Human Relations	1.608	3
	4	Technical Illustrations	4.127	2
1	8	Project Drafting	4.145	4
	6	Light Sheet Metal Drafting	4.147	2
	3	Pictorial Drafting	4.149	1

Mechanical Engineering Technology

This curriculum is designed to provide depth of understanding in the technical requirements of occupations in modern mechanical design and production. This program provides the educational background necessary for many functions in such jobs as design draftsmen, tool designer, research assistant, or engineering assistant. The curriculum is designed to provide a broad technical competence needed for these jobs rather than the specific skills or techniques required for a single skill occupation. The instruction centers around occupational elements that normally cannot be obtained through experience alone; elements such as physical metallurgy, materials, and processes and principles of machine design. The program of study is designed and arranged to provide the student with an understanding of the materials and processes commonly used in the technology; and extensive knowledge of a field of specialization with an understanding of the engineering and scientific activities that distinguish the field; a facility with mathematics and proficiency in the application of physical science processes that are pertinent to the individual's field of technology.

The graduate may enter the field of manufacturing, experimental shops, and development labs, performing such tasks as re-designing tools for efficiency, making cutting tools, jigs, and special fixtures.

Graduating technicians trained in this technology may assist engineers in design and development work by making free hand sketches, rough layouts of machinery and other equipment, using engineering data and specifications. They help in determining whether a proposed design change is practical and how much it will cost to produce. They may be called upon to apply their knowledge of elementary mechanical engineering principals to solve particular design problems such as those involving tolerances, stresses, strain, friction, and vibration.

Upon satisfactory completion of the requirements in the Mechanical Engineering Technology Program, an Associate in Science Degree will be awarded, signifying that the student will be prepared to effectively function and advance in the many job areas of the technology.

Examples of opportunities are listed here:

Junior Mechanical Engineer	Junior Engineering (Drafting)
Production Technician (Planning - Control)	Safety Technician
Metallurgy Technician	Tool, Jig, and Fixture Technician
Technical Writer	Instrumentation Technician
Method Analyst	Production Inspector
Process Technician	Time Study Technician

Associate in Science Degree: Suggested 103 Term Units

Mechanical Engineering Technology Curriculum

First Year

Term 1				
Hours Class	Work Lab.	Course Title	Course No.	Term Units
2	3	Metallurgy	6.602	3
	2	Engineering Problems	6.135	1
3		Technical Mathematics	6.261	3
3	2	Applied Physics	6.371	4
	4	Drafting	4.101	2
3		Communication Skills	1.100	3
Term 2				
2	3	Metallurgy	6.604	3
2	3	Manufacturing Processes	6.606	3
	2	Engineering Problems	6.136	1
3		Technical Mathematics	6.262	3
3	2	Applied Physics	6.370	4
	4	Drafting	4.105	2
3		Communication Skills	1.102	3
Term 3				
2	3	Manufacturing Processes	6.610	3
2	3	Strength of Materials	6.105	3
1	3	Welding	4.150	2
3		Technical Mathematics	6.266	3
3		Technical Report Writing	6.126	3
2	3	Applied Mechanics	6.109	3

Second Year

Term 4				
Hours Class	Work Lab.	Course Title	Course No.	Term Units
3	3	Mechanisms	6.612	4
2	3	Strength of Materials	6.128	3
3		Introduction to Psychology	1.606	3
3	2	Machine Design	4.603	4
2	3	Applied Mechanics	6.111	3
Term 5				
3	3	Mechanisms	6.613	4
2	2	Hydraulics	6.112	3
1	6	Basic Tool Design	4.608	3
3		American Institutions	1.600	3
2	3	Industrial Instrumentation	6.2534	3
Term 6				
2	2	Hydraulics	6.114	3
3		Psychology of Human Relations	1.608	3
3	2	Electricity	6.208	4
2	6	Design Problems	4.605	4
2	3	Industrial Instrumentation	6.254	3

Industrial-Mechanical Program

The courses in this program are designed to provide the basic knowledges, skills and information needed by persons preparing to enter the industrial mechanical field of employment.

This is a two-year program providing for specialization in the second year. The first year of the program provides for common industrial mechanical training which applies in several fields. After successful completion of the common first year the student may elect to continue in one of the options which will be offered.

Second year options provide for concentrated study and skill development in these specific fields.

Upon satisfactory completion of the requirements in the Industrial-Mechanical Program, an Associate in Science Degree will be awarded.

Job opportunities for the graduate of this program are found in job shops, specialty shops, general machine or welding shops, production shops, and maintenance departments of large manufacturing plants such as the paper industry, or others of similar nature.

Associate in Science Degree: Suggested 93 Term Units

Term 1		First Year		
Hours Class	Work Lab.	Course Title	Course No.	Term Units
3		Mathematics	4.200	3
3		Communication Skills	1.100	3
3		Introduction to Psychology	1.606	3
	4	Drafting	4.101	2
2	3	Bench and Layout Practices	4.810	3
2	3	Machine Tool Process	4.802	3
Term 2				
3		Mathematics	4.202	3
3		Communication Skills	1.102	3
3		American Institutions	1.600	3
3	2	Practical Physics	4.300	4
	4	Drafting	4.105	2
2	3	Machine Tool Process	4.804	3
Term 3				
3		Mathematics	4.204	3
3		Psychology of Human Relations	1.546	3
2	4	Industrial Material and Processes	4.170	3
1	3	Welding	4.150	2
2	3	Machine Tool Process	4.806	3

Industrial-Mechanical Second Year Options

MACHINE SHOP

Term 4					
Hours Class	Work Lab.	Course Title	Course No.	Term Units	
3	3	Mechanical Systems	4.171	4	
3	4	Power Systems	4.172	4	
3		Machine Shop Problems	4.820	3	
3	6	Machine Shop Practices	4.841	5	
Term 5					
2		Health Education	1.605	2	
2	3	Hydraulic and Pneumatic Systems	4.173	3	
2	4	Metal Fabrication and Finishing	4.174	3	
2	4	Advanced Lathe Practices	4.833	3	
2	4	Advanced Milling Machine Practices	4.837	3	
Term 6					
2		Machine Shop Automation	4.824	2	
3	12	Job Machining Practices	4.845	7	
2	4	Tool and Fixture Design and Application	4.847	3	
2		Employer-Employee Relations	4.500	2	

WELDING AND FABRICATION

Term 4					
3	3	Mechanical Systems	4.171	4	
3	4	Power Systems	4.172	4	
2	2	Metallurgy	6.602	3	
1	3	Electric-Arc Welding I	4.160	2	
1	3	Oxygen-Acetylene Welding I	4.161	2	
Term 5					
2		Health Education	1.605	2	
2	3	Hydraulic and Pneumatic Systems	4.173	3	
2	4	Metal Fabrication and Finishing	4.174	3	
1	3	Inert Gas Welding I	4.163	2	
1	3	Advanced Oxygen-Acetylene and Electric-Arc Welding	4.162	2	
		Restricted Elective		2	
Term 6					
2		Employer-Employee Relations	4.500	2	
2	6	Advanced Inert Gas and Shielded Arc Welding	4.164	4	
2	6	Welding for Certification	4.166	4	
2	2	Welding for Production and Economy	4.165	3	
		Restricted Elective		2	

SMALL ENGINE REPAIR

Term 4				
Hours	Work	Course Title	Course	Term
Class	Lab.		No.	Units
3	3	Mechanical Systems	4.171	4
3	4	Power Systems	4.172	4
3	6	Small Gas Engine Theories and Lab	4.180	5
3		Fuels and Lubricants	4.181	3
Term 5				
2		Health Education	1.605	2
2	4	Metal Fabrication and Finishing	4.174	3
2	3	Hydraulic and Pneumatic Systems	4.173	3
2	4	Small Engine Electrical Systems	4.182	3
2	4	Small Engine Reconditioning	4.183	3
Term 6				
2		Employer-Employee Relations	4.500	2
3	12	Engine Overhaul	4.184	6
2	4	Tuneup and Trouble Shooting	4.185	4
2		Service Records and Customer Relations	4.186	2

DRAFTING

Term 3				
1	2	Practical Descriptive Geometry	6.127	2
Term 4				
	2	Engineering Problems	6.135	1
3		Technical Mathematics	6.261	3
3	2	Applied Physics	6.371	4
	3	Sketching	4.118	1
1	1	Geometric Construction	4.120	1
	8	Cam and Gear Drafting	4.225	3
		Restricted Elective		2
Term 5				
	2	Engineering Problems	6.136	1
3		Technical Mathematics	6.262	3
1	9	Project Drafting	4.119	4
	8	Technical Illustrations I	4.228	3
3		Business Economics	1.524	3
		Restricted Elective		2
Term 6				
3		Technical Report Writing	6.126	3
2		Machine Shop Automation	4.824	2
	8	Sheet Metal Drafting	4.230	3
	8	Jig and Fixture Drafting	4.231	3
		Restricted Elective		4

Technical Drafting

The objective of the Technical Drafting Program is to prepare individuals for positions in engineering departments, in the areas of mechanical drafting, design, or technical illustration and design. The courses within the program are specifically selected and planned to train technicians to qualify for tasks such as drawing preliminary sketches, making layouts from technical information, rendering drawings in pencil and ink, making overlays and paste ups and detailed drawing of complete and final plans.

The curriculum is centered around occupational elements that normally cannot be obtained through experience alone, elements such as principles of design, materials and processes, mathematics, and physical science concepts as applied to the technical drafting area.

Upon the satisfactory completion of the requirements in the Technical Drafting Program, an Associate in Science Degree will be awarded, signifying that the student will be prepared to effectively function and advance in the many job areas of the technical drafting field.

Examples of opportunities are listed below:

Technical Illustrator
Sheetmetal Layout Draftsman
Machine Drafting Technician
Structural Drafting Technician
Aeronautical Draftsman

Electronics and Electrical Drafting
Technician
Topographical and Mapping Draftsman
Engineering Graphics Drafting Technician

Associate in Science Degree: Suggested 95 Term Units

Technical Drafting Curriculum

First Year

Term 1

Hours Class	Work Lab.	Course Title	Course No.	Term Units
3		Communication Skills	1.100	3
3		Introduction to Psychology	1.606	3
3		Technical Mathematics	6.261	3
	2	Engineering Problems	6.135	1
1	6	Plane Surveying	6.101	3
	3	Sketching	4.118	1
1	1	Geometric Construction	4.120	1
	5	Machine Drafting I	4.221	2

Term 2

3		Communication Skills	1.102	3
3		Technical Mathematics	6.262	3
1	6	Plane Surveying	6.103	3
2	3	Manufacturing Processes	6.606	3
	2	Engineering Problems	6.136	1
2		Dimensioning and Layout	4.224	2
	5	Machine Drafting II	4.222	2

Term 3

3		Psychology of Human Relations	1.608	3
3		Technical Mathematics	6.266	3
2	3	Manufacturing Processes	6.610	3
1	7	Mapping and Platting	4.131	3
1	2	Practical Descriptive Geometry	6.127	2
	5	Machine Drafting III	4.223	2

Second Year

Term 4

3	2	Applied Physics	6.371	4
	8	Architectural Drafting I	4.226	3
	8	Cam and Gear Drafting	4.225	3
	4	Electrical Drafting	4.103	2
3		Introduction to Specifications	4.102	3

Term 5

3	2	Applied Physics	6.370	4
	8	Architectural Drafting II	4.227	3
	8	Technical Illustrations I	4.228	3
3		Business Economics	1.524	3
3		American Institutions	1.600	3

Term 6

3	2	Applied Physics	6.366	4
	8	Sheet Metal Drafting	4.230	3
	5	Technical Illustrations II	4.229	2
	5	Structural Drafting	4.111	2
	8	Jig and Fixture Drafting	4.231	3

Forest Products Technology

The Forest Products Program is designed to provide the basic knowledge and skills needed by persons preparing to enter the forest products field of employment. Emphasis is placed upon both the technical skills and the related educational fields of communication, report writing, human relations, and the sciences. The student will spend ample time in laboratory experiments to enable him to become familiar with the standard testing procedures, machines and apparatus used in the industry. Time is provided in the second year of study for a cooperative work-study arrangement with local industry.

Upon satisfactory completion of the requirements of the Forest Products Technology Program, an Associate in Science Degree will be awarded.

Examples of job opportunities are listed below:

Laboratory Technicians
Pulp and paper testing
Raw materials testing
Product certification

Laboratory assistants
Quality control work in plywood, particle and
fiberboard plants, pulp and paper mills.

Associate in Science Degree: Suggested 93 term units.

Forest Products Technology Curriculum

First Year

Term 1				
Hours	Work	Course Title	Course No.	Term Units
Class	Lab.			
3		Communication Skills	1.100	3
3	2	Physics	4.300	4
3		Mathematics	4.202	3
3		General Forestry	3.600	3
	3	Sketching	4.118	1
	2	Accident Prevention and First Aid	4.190	1
2	2	Introductory Chemistry	6.275	3
Term 2				
3		Communication Skills	1.102	3
3	2	Physics	4.302	4
2	2	Analysis (Mathematics)	4.207	3
2	3	Wood Anatomy and Structure	6.280	3
3		Forest Products I	4.280	3
2	2	Chemistry	6.276	3
Term 3				
3		Report Writing	6.126	3
2	3	Properties of Materials (Testing)	6.341	3
2	6	Logging and Milling	4.282	4
3		Forest Products II	4.281	3

Second Year

Term 4				
3		Introduction to Psychology	1.606	3
3	3	Wood Physics	6.281	4
		Production Practices I	4.283	8
Term 5				
3		Human Relations	9.506	3
2	3	Wood Preservation and Pre-Finishing	6.282	3
		Production Practices II	4.284	8
Term 6				
3		Wood Industry Economics	4.286	3
		Production Practices III	4.285	8
2	3	Elective		3

- Electives: 1. Theory and Practice of Seasoning and Kiln Drying.
 2. Plywood and Board Grading.
 3. Paper Products Development and Practices.

Fire Protection Technology

The courses in this program are designed to develop the skills and knowledges that are necessary for the maintenance and operation of the specialized equipment used in the fire protection field and to develop an understanding of the processes of fire protection. The technical courses in the program, coupled with general education courses, will form a broad base to prepare the graduate for entry into an interesting and rewarding field of related occupations.

Specialized courses will be taught in cooperation with local fire departments using fire department equipment. Certain technical and related courses will be taught in classrooms and labs at the technical school.

Upon satisfactory completion of the Fire Protection curriculum an Associate in Science Degree will be awarded.

Employment opportunities for qualified graduates are found in Fire Departments, Insurance Companies, Fire Equipment Sales, Industrial Security and Forest connected industries.

Associate in Science Degree: Suggested 94 term units.

Fire Protection Technology Curriculum

First Year

Term 1				
Hours Class	Work Lab.	Course Title	Course No.	Term Units
3		Communication Skills	1.100	3
3		Mathematics	4.200	3
3	2	Practical Physics	4.300	4
3		Introduction to Fire Protection	5.100	3
2	2	Fire Apparatus and Equipment	5.102	3
Term 2				
3		Communication Skills	1.102	3
3		Mathematics	4.202	3
3	2	Practical Physics	4.302	4
2	2	First Aid for Firemen	5.118	3
3		Fundamentals of Fire Prevention	5.101	3
Term 3				
3		Introduction to Psychology	1.606	3
3		Blueprint Reading for the Fireman	5.119	3
3	2	Physical Science of Fire	5.103	4
3	2	Fire Department Hydraulics	5.104	4
3		Hazardous Materials I	5.108	3

Second Year

Term 4				
3		American Institutions	1.600	3
2	2	Pump Operations and Practical Hydraulics	5.105	3
3		Fire Company Organization and Duty Assignments	5.112	3
	9	Firefighting Skills I	5.110	3
3		Hazardous Materials II	5.109	3
Term 5				
3		Psychology of Human Relations	1.546	3
	9	Firefighting Skills II	5.111	3
3		Fixed Systems and Extinguishers	5.106	3
	6	Rescue Practices	5.114	2
3		Firefighting Tactics and Strategy	5.113	3
Term 6				
3		Technical Report Writing	6.126	3
3		Fire Department Communications and Alerting Systems	5.115	3
3		Water Distribution Systems	5.107	3
3	2	Fire Investigation	5.117	4
3		Building Construction for Fire Protection	5.116	3

Television-Radio Service Program

The objective of this course is to prepare the students for employment in the field of radio and television servicing. The program is designed to provide the basic principles, theory and laboratory work in the practical phases of radio and television service work. Basic mathematics and communication skills necessary to the serviceman are given as part of the theory materials as they are needed.

Upon completion of the course each trainee should be able to take an entry job into the field of radio and television servicing, having had a good background in radio and television theory and maintenance and being familiar with both vacuum tube and transistor circuits. The trainee will also have a proficient knowledge in the use and application of test equipment.

The applicants must have a high school diploma or equivalent and be in good physical condition.

A Certificate of Completion is awarded to those individuals who have satisfactorily completed the required courses within the curriculum.

Examples of opportunities are listed below:

Radio-TV serviceman	Sound system maintenance man
HiFi serviceman	Factory service representative
Auto radio serviceman	Electronic parts salesman

Television-Radio Service Curriculum

Term 1				
Hours	Work	Course Title	Course	Term
Class	Lab.		No.	Units
12		DC Theory and AC Theory	4.255	9
	6	DC Theory and AC Theory Lab.	4.256	2
5		Vacuum Tube and Circuits Theory	4.257	5
	6	Vacuum Tube and Circuits Lab.	4.258	2
Term 2				
3	6	Transistors and Circuits Theory	4.259	5
2		Radio Principles	4.262	2
	6	Radio Principles Lab.	4.263	2
2		Use of Instruments I	4.260	2
3		Television Principles	4.266	3
	8	Television Principles Lab.	4.267	3
Term 3				
2		Radio Servicing	4.264	2
	6	Radio Servicing Lab.	4.265	2
3		Television Servicing	4.268	3
	8	Television Servicing Lab.	4.269	3
2		Use of Instruments II	4.261	2
3		FM and HiFi Theory	4.270	3
	3	FM and HiFi Lab.	4.271	1
3		Business Management	2.202	3

Welding Program

The courses in the Welding Program are designed to provide for skill development in the varied welding processes and to provide the necessary knowledge and information required in the welding occupations.

This is a one year program providing laboratory time for developing and practicing welding skills.

After satisfactory completion of the requirements of the Welding Program, the student will be awarded a certificate.

Job opportunities for the graduate of this program are found in job shops, specialty shops, production and maintenance shops.

Examples of job opportunities are listed below:

Welding Helper	Oxygen Cutter
Oxy-Acetylene Welder	Resistance - Welding Operator
Arc Welder	Arc Cutter

Welding Curriculum

Term 1			Course No.	Term Units
Hours Class	Work Lab.	Course Title		
2	3	Basic Arc Welding	4.240	3
2	6	Basic Oxy-Acetylene Welding	4.242	4
2	3	Blueprint Reading and Sketching	4.244	3
1	2	Shop Arithmetic	4.246	2
Term 2				
2	3	Intermediate Arc Welding	4.241	3
2	6	Intermediate Oxy-Acetylene Welding	4.243	4
2	3	Layout Practices	4.245	3
3		Industrial Safety	4.108	3
Term 3				
1	3	Tungsten Inert Gas Welding	4.247	2
1	3	Metallic Inert Gas Welding	4.248	2
2	6	Welding for Certification	4.166	4
2	3	Light Gage Welding	4.249	3

General Drafting Program

The objective of the General Drafting Program is to prepare students for employment in drafting jobs that require a broad knowledge of the fundamental aspects of drafting and a minimum of specialization. The program is designed to give the student a supporting background in basic mathematics, physical sciences, and communication skills which, along with the drafting work, serve to prepare a proficient general draftsman.

After satisfactory completion of the requirements of General Drafting Program, the student will be awarded a certificate and will be prepared to effectively function and advance in many drafting areas.

Examples of opportunities are listed below:

General Drafting
Machine Draftsman
Tracer

General Drafting Curriculum

Term 1				
Hours Class	Work Lab.	Course Title	Course No.	Term Units
	4	Drafting	4.101	2
1	1	Geometric Construction	4.120	1
	3	Sketching	4.118	1
2	6	Introduction to Fabrication Practices	4.100	4
3		Mathematics	4.200	3
3		Communication Skills	1.101	3
Term 2				
	4	Drafting	4.105	2
	7	Architectural Drawing	4.107	3
	4	Electrical Drafting	4.103	2
1	9	Project Drafting	4.119	4
3		Mathematics	4.202	3
3		Communication Skills	1.104	3
Term 3				
	4	Mechanical Drafting	4.109	2
1	7	Introduction to Mapping	4.132	3
	8	Project Drafting	4.121	3
3		Mathematics	4.204	3
3	2	Practical Physics	4.300	4

Practical Nursing Program

The need for Practical Nurses has increased a great deal over the past few years because of the expansion of the Public Health Program, extreme growth in Hospital Insurance, the increase in life expectancy, our growing population, higher income levels, insufficient professional nurses to care for the sick and aged, rapid advances in the medical field, and our growing older age group.

The Practical Nurse is a person prepared by an approved educational program to share in the care of the sick, in the rehabilitation program and in the prevention of illness, under the supervision of a licensed physician and/or a registered nurse. She may provide nursing service in private homes, be employed in hospitals or health agencies, in public institutions or industrial establishments.

The program prepares selected people for a career in practical nursing, to perform the functions of a practical nurse and help fulfill the need of the health services in Oregon, and to prepare the student for the examination given by the State Board of Nurse examiners for Licensed Practical Nurses.

Applicants for the Practical Nurse course must be at least 17 years of age, be a graduate of an accredited high school or the equivalent as determined by test, be in good health as determined by an examination, and have suitable personal traits and character as to be accepted in such an important occupation. Persons interested in this course should check the front of catalogue for further information on the steps to become enrolled. Special requirements, if any, will be explained if requested.

A foundation fund has been established by interested agencies and institutions for the purpose of providing scholarships to individuals selected into the Practical Nurse program at Salem Tech. The scholarship will cover expenses such as tuition, books, and needed supplies.

The individual selected into the Practical Nursing program will become eligible to receive the scholarship.

Practical Nursing Program Curriculum

Theory Courses and Hours

I. Personal-Vocational Relationships

Professional Adjustments I	20 hours
Communication Skills	43 hours
Professional Adjustments II	20 hours

II. Nursing Skills

Fundamentals of Nursing	164 hours
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III. Normal Health Growth and Development

Nutrition	40 hours
Anatomy and Physiology	39 hours
Growth and Development during Life's span	26 hours

IV. Nursing Care in Conditions of Illness

Medical and Surgical Nursing	62 hours
Pediatric Nursing	20 hours
Obstetrical Nursing	19 hours
Total	447 hours

Clinical Practical Laboratory

I. Medical and Surgical Nursing Laboratory	594 hours
II. Maternal and Child Health Nursing Laboratory	360 hours
III. Supplemental Nursing Laboratory	216 hours
Oregon State Hospital	
Total	1170 hours

Medical Assistant Program

A Medical Assistant is a person trained to assist the licensed physician in his office. There is a steady demand for young women in this field performing in various types of medical offices. The range of duties will be from assisting with the physical examination, to receptionist and office responsibilities. Each office will differ in its requirements.

The objectives of the Medical Assistant Program are to develop understanding for the professional nature of the physician's practice and a respect for human dignity and rights of those who seek his service, and to develop the skills needed to function safely and effectively as a health team member in three principal areas of work assignment, the reception of patients, understanding business practices and medical record keeping, and the technical aspects of medical procedures.

The one year curriculum includes general education subjects, orientation to the health occupations, basic sciences, and technically-oriented courses in medical and office procedures. The third term makes provisions for supervised clinical experience in clinics, physicians' offices and selected areas of the hospitals. Instruction is given by a qualified staff and a registered nurse coordinates the program. Physicians, clinical pathologists, nurses, medical assistants and teachers of commercial and general education subjects will constitute the faculty and Advisory Committee.

Applicants for the Medical Assistant Program must be at least 17 years of age, be a graduate of an accredited high school or the equivalent as determined by test, be in good health as determined by an examination, and have suitable personal traits and character as to be accepted in such an important occupation.

Final selection of students for this program will be made in conjunction with an Advisory Committee representative of the occupation.

A Certificate of Completion will be given upon satisfactory completion of the program. After a suitable period of successful employment the American Association of Medical Assistants certifies graduates by examination.

Medical Assistant Curriculum

Term 1

3		Introduction to Medical Assisting	5.600	3
3		Communication Skills	1.100	3
3		Introduction to Psychology	1.606	3
3		Business Mathematics	2.650	3
1	4	Typing	2.633	3
3	4	Basic Sciences for Health Occupations	5.601	4

Term 2

2	6	Medical Assisting, Basic Procedures	5.602	4
3		Communication Skills	1.102	3
2		Nutrition for Health Occupations	5.430	2
2		Introduction to Pharmacology	5.603	2
2	6	Medical Office Procedures	5.604	4
2		Roentgenology I	5.406	2

Term 3

2		Medical Science	5.605	2
2	16	Medical Assisting, Advanced Procedures	5.606	4
3		Psychology of Human Relations	1.608	3
1		First Aid	5.450	1
3		Technical Report Writing	6.126	3
3		Medical Office Management	5.607	3

Dental Assistant

The objective of this program is to prepare individuals for employment in dental offices, laboratories, and clinics, and also to provide opportunities to those already working in this field to further their knowledge and skill. The program is designed to provide training in the specialized skills necessary in dental chair assisting and in business practice ability.

The program is sufficiently comprehensive in nature so that the student acquires proficiency in assisting the dentist in a variety of capacities in the private office or in a dental health clinic. The program of study includes such activities as mixing of filling materials, instruments and their uses, preparation of patient, sterilization, and other general and specialized courses in dental science. Dental office management is an integral part of the program and includes instruction in areas such as reception of patients, office records, fees and other business practices.

Upon completion of the course of study, the graduate will be ably qualified to assist in a dental office or clinic with a minimum of familiarization and orientation from the dentist.

Typical duties will include preparation of the patients for treatment, mixing filling materials and dental cement, checks and sterilizes equipment, and inventories and orders supplies. Laboratory duties include studying models of teeth, casting inlays and taking and developing X-ray films. In the capacity of office manager she acts as receptionist, schedules appointments, keeps accounts and records, sends out bills and is responsible for the general appearance of the office.

Applicants for the dental assistant program must be a minimum of 16 years of age, and be a graduate of an accredited high school or the equivalent. The assistant should be neat, clean, and in good health. A pleasant personality is essential in dealing with dentist's patients. She should be able to meet people and put them at ease and be able to express herself clearly and pleasantly.

Dental Assistant Curriculum

Term 1

Hours Class	Work Lab.	Course Title	Course No.	Term Units
2		Introduction to Dental Assisting	5.401	2
2	3	Basic Chairside Procedures	5.402	3
2		Dental Anatomy and Physiology	5.405	2
3		Communication Skills	1.100	3
3		Business Mathematics	2.650	3
3		Introduction to Psychology	1.606	3
1	4	Typing	2.633	3

Term 2

2	3	Chairside Assisting and Basic Laboratory Practices	5.403	3
2		Roentgenology I	5.406	2
5		Dental Sciences	5.404	5
2	3	Dental Office Management	5.410	3
3		Communication Skills	1.102	3
2		Nutrition for Health Occupations	5.430	2
1	3	Typing	2.634	2

Term 3

2	3	Advanced Laboratory Procedures	5.407	3
2	3	Roentgenology II	5.408	3
3		Technical Report Writing	6.126	3
3		Psychology of Human Relations	1.608	3
12		Dental Office Practice	5.409	2

Forester Aide Curriculum

Federal Manpower Development and Training Act

The courses in this curriculum are designed to provide for a thorough knowledge of specific forestry conditions in a specific geographical area and a working knowledge of specific forestry problems encountered in a work situation. A level of knowledge should be obtained to enable the trainee to qualify for GS-4 or higher.

The student will gain knowledge of use of tree measurement devices, survey and platting techniques and their corresponding computations, also a knowledge of regulations and rules regarding use of recreational areas by the public.

At the completion of training, each trainee should be able to operate compasses, measuring equipment, transit, abney level, growth instruments, do mathematical calculations, expected of a Forester Aide, write legible and comprehensive reports, do the mechanical work necessary, know the background of fire fighting and how to fight fires, and know the many other things necessary to become a Forester Aide.

The applicants must have high school diploma or equivalent and be in good physical condition. Prior experience in logging, fire control or similar outdoor work is desired.

The Certificate of Completion is awarded to those individuals who have satisfactorily completed the required courses within the curriculum. A standard of performance for all course work will be required of the candidates for the certificates as determined by the major instructors or department heads.

Term 1

Hours Class	Work Lab.	Course Title	Course No.	Term Units
1	6	Plane Surveying	6.101	3
3	2	Practical Physics	4.300	4
3		Communication Skills I	1.100	3
3		Math I	4.200	3
	4	Drafting I	4.101	2
1	2	Tree Identification I	3.610	2
1	2	Tools and Equipment I	3.605	2
2		General Forestry I	3.600	2

Term 2

1	6	Plane Surveying	6.103	3
3	2	Practical Physics II	4.302	4
3		Communication Skills II	1.102	3
3		Math II	4.202	3
	4	Drafting II	4.105	2
1	2	Tree Identification II	3.611	2
1	2	Tools and Equipment II	3.606	2
2		General Forestry II	3.601	2

Term 3

3		Technical Report Writing	6.126	3
3		Math III	4.204	3
	4	Structural Drawing and Specs.	4.120	2
2	4	Forest Operations	3.612	3
3	4	Mensuration	6.300	4
2	5	General Forestry III	3.602	3

Clerk-Stenographer Curriculum

Federal Manpower Development and Training Act

The program for Clerk-Stenographers is designed to develop skills and knowledge for the office stenographer.

At the completion of the program, the trainee should be able to type at the employable rate of 40 wpm and take shorthand at 80 wpm. The student will be given instruction in English, Mathematics, and filing procedures. Instruction will be given in the operation and application of standard office machines.

The applicant must have a high school diploma or its equivalent and must have had basic training or experience in typing and shorthand.

The Certificate of Completion is awarded to those individuals who have satisfactorily completed the required courses within the curriculum. A standard of performance for all course work will be required of the candidates for the certificates as determined by the major instructors or department heads.

Term 1

Hours Class	Work Lab.	Course Title	Course No.	Term Units
1	4	Typing I	2.606	2
3	4	Shorthand Theory I and Transcription	2.620	6
2	2	Business Relations and Office Routines	2.640	3
3		Applied Business Arithmetic	2.650	3
1	2	Business Machines	2.660	2
3		English Fundamentals	2.670	3

Term 2

1	4	Typing II	2.607	2
3	4	Shorthand Theory II and Transcription	2.621	6
2	2	Services, Reports, and Records	2.641	3
3		Introduction to Bookkeeping	2.651	3
1	2	Dictating Machines	2.663	2
3		Applied English Principles	2.671	3

Term 3

1	4	Typing III	2.608	2
3	4	Shorthand Principles Applied and Transcription	2.622	6
2	2	Filing Procedures and Application	2.642	3
3		Bookkeeping and Accounting for Stenographers	2.652	3
3		Business Correspondence	2.672	3
1	2	Business Machines	2.664	2

Industrial Supervisory Program

This program is a planned series of courses in Supervisory Methods and Techniques. The courses are available to individuals who are currently involved in supervisory duties or personnel which will assume supervisory duties eventually.

An interested individual may elect to follow one of three planned programs, depending upon his ultimate needs, culminating in a Certificate or an Associate Degree.

Instructors for these courses are selected from industry. These instructors are selected on the basis of experience in industry and special competence in the course to be taught. The instructor also must have a State teaching certificate in Industrial Supervision as the result of 60 hours of teacher training which is provided in cooperation with Oregon State University, School of Education.

The following gives an example of a suggested planned program of study.

TYPICAL COURSE SEQUENCE

I.	FOR CERTIFICATE IN BASIC SUPERVISORY PRACTICES (Limited Certificate)	*Term Units
	Elements of Supervision	3
	Basic Psychology for Supervisors	3
	Developing the Employee Through Training	3
	Written Communications, or Oral Communications	3
	(Restricted elective from Supervisory Courses)	3
	Elective, or credit evaluation for supervisory experience	3
	Total.....	18
II.	FOR CERTIFICATE IN PRINCIPLES AND PRACTICES (Special Certificate) (Courses required beyond those included in Limited Certificate)	
	Human Relations	3
	Labor Management Relations	3
	Oral Communications, or Written Communications	3
	(Restricted elective from General Education courses)	3
	(Occupational elective course)	3
	(Occupational elective course)	3
	(Occupational elective course)	3
	Electives or credit evaluation for supervisory experience	6
	Cumulative Total.....	45
III.	FOR DIPLOMA or ASSOCIATE DEGREE (Courses required beyond Limited and Special Certification)	
	Methods of Improvement for Supervisors	3
	Cost Control for Supervisors	3
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	(Occupational elective course)	3
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	Cumulative Total.....	90

(*A term unit represents 10 clock hours in class)

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COURSE DESCRIPTIONS

General Education Courses

		Lec.	Lab.	Term Units
American Institutions	1.600	3	0	3

A study of the effect of American social, economic, and political institutions upon the individual as a citizen and as a worker in business and industry. The inter-relationship of freedom and control is utilized as a common denominator in considering the fundamental principles and processes involved in the development of the basic institutions of our society. Topics considered are: culture, its functions and changes; social groups in relation to problems of urban living, personality formation, the family, and social classes; the American economic system, its concepts and organization; public opinion, the American political system, its constitutional foundations, judicial, executive, and legislative divisions; and international relations.

Business Economics	1.524	3	0	3
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Business Economics 1.524 deals with the underlying principles by which business is influenced. Production, income, management, prices, values, markets, money, wastes, interest, and profits are examples of subjects studied with illustrations of how they affect current business situations. The course is designed to help the student understand the problems of business and thus have a deeper insight into his personal responsibilities to his firm.

Communication Skills	1.100	3	0	3
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This course is designed to improve the student's speaking and writing skills by covering the four basic communication skills—reading, speaking, writing, and listening. The practical phase of communication problems is kept in the foreground. Cultivating the student's powers of analysis and evaluation of contemporary communication is an important objective in this course. Problems in outlining, notemaking, summarizing, report making, and in conventional usages in mechanics and grammar are considered.

Communication Skills	1.102	3	0	3
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This course is a continuation of the process of improving the student's speaking, reading, writing, and listening skills. Practice is provided for the student in developing reports; giving talks; taking part in conferences; reading, analyzing, and discussing both general and technical periodicals; and handling representative forms of business writing.

Prerequisite: Communication Skills 1.100 or equivalent.

		Lec.	Lab.	Term Units
Employer-Employee Relations	4.500	2	0	2

The objective of this course is to provide an understanding of the rights and responsibilities of employees. As a guide to making adequate decisions a study of population, economic and employment trends, and hours and working conditions is included. The development of and the role played by labor organizations, how labor representatives and management bargain, government laws and regulations covering collective bargaining, other state and federal labor laws, and how labor disputes are negotiated are given consideration.

Health Education	1.605	2	0	2
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This course is designed to provide individuals with select health and physical education activities through participation or study for the purpose of adding to their knowledge and appreciation of desirable mental and physical health practices as they relate to the individual and the community.

Industrial Economics	1.506	2	0	2
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Industrial Economics deals with the principles involved in the operation of the American economics system. The role of business and industry in the total economy is studied. Basic economic principles are applied to the relationship of employer and employee. Topics considered include historic trends, business organization, prices and competition, imperfect competition and monopoly, price levels, business cycles, taxation, labor unions, management association, labor-management relations, labor legislation, and social and private security.

Introduction to Psychology	1.606	3	0	3
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This course is designed for the student who desires an introductory course in psychology. It explains the scope, methods, basic concepts, and facts of psychology. Some of the subjects covered are motivation, learning, thinking, perception, emotion, personality, mental health, animal behavior, and applied psychology.

Psychology and Human Relations	1.546	3	0	3
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Psychological principles and fundamentals of individual behavior involved in understanding the relationship of the individual and his reactions to the social framework with emphasis on business situations.

Psychology of Human Relations	1.608	3	0	3
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A study of principles of psychology that will be of assistance in the understanding of inter-personal relations on the job. Motivation, feelings, and emotions, and learning are considered with

particular reference to their application to the on-the-job problems. Other topics investigated are: intelligence and aptitude tests, employee selection, supervision, job satisfaction, and industrial conflict as they relate to the employee and his work and situation. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community.

Public Speaking	1.610	2	2	3
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This course is intended to develop speaking skills with emphasis on the dual role of speech as both a speaking and listening skill, and on adjusting the approach to the specific audience. Practice is provided through individual speeches and group discussions with careful attention being given to effective organization and delivery. In addition to the general principles of speech, stress is placed on poise and confidence and on understanding their psychological basis.

Technical Report Writing	6.126	3	0	3
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This is a course which supplies knowledge of the principles of composition and basic forms of writing reports. The subjects covered are: why reports are written, types of reports, make-up of reports, effectiveness of writing styles, gathering of facts for a report, planning a report, method of writing a report, layout and typing of a report, and visual aids in a report.

Prerequisite: Communication Skills 1.100.

The Physical World	1.616	2	2	3
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This course introduces the student to the physical world through an integrated study of everyday applications of physical science principles with emphasis on the basic principles of physics and chemistry to provide an understanding of the scientific method and the role it has played in the intellectual history of mankind.

The Physical World	1.617	2	2	3
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This is a continuation of The Physical World 1.616 with emphasis on the basic principles of astronomy, meteorology, and geology.

Mathematics Courses

Analysis	4.207	2	2	3
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A theory-Lab course designed to provide for practical application and problem solving using basic mathematical concepts. Training is provided on a variety of calculating machines.

		Lec.	Lab.	Term Units
Business Mathematics	2.650	3	0	3

This is a course in practical mathematics including problems composed of whole numbers, fractions, measurements, formulas, graphs and roots. The mathematics used in determining dosage is included as related information.

Business Mathematics	6.923	3	0	3
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This is a course in practical business mathematics for data processors. The fundamentals of simple and compound interests, discount, annuities, and sinking funds, bond amortization tables, ratio and proportion inequalities, algebra, business graphs, percentage, redundant digit check systems, numerical relationships, and number coding systems.

Electrical Mathematics	6.115	3	0	3
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An applied course in mathematics for electronic engineering technicians. Includes an introduction to calculus covering graphical methods, differentiation, and integration with direct application to electronic and electrical circuitry.

Prerequisite: Technical Mathematics 6.266 or equivalent.

Engineering Problems	6.135	0	2	1
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This course of study in engineering problems is one in which the student is instructed in the development of accurate, effective, and efficient work and study habits. The course is intended to train the student to organize his analysis and record them in clear, concise form so that they can be interpreted.

Prerequisite: One year High School Algebra or Equivalent.

Engineering Problems	6.136	0	2	1
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This course aims to develop the skill of gathering together and sorting research results and problem solving records into logical summation. Mathematical and graphical analysis of data will be emphasized in the presentation of information in the report.

Mathematics	4.200	3	0	3
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This is a course in practical mathematics including problems composed of whole numbers, fractions, measurements, formulas, graphs, and roots.

Prerequisite: Ability to profit from instruction.

Mathematics	4.202	3	0	3
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This is a course in practical mathematics for skilled workers, including the fundamentals of applied algebra and applied geometry, including symbols, equations, ratios and proportion, exponents, radicals, formulas, geometric lines and shapes, common geometric constructions, and introductory applied trigonometry.

		Lec.	Lab.	Term Units
Mathematics	4.204	3	0	3

This course concentrates on actual problems encountered by machinists, precision inspectors, tool-and-dyemakers, draftsmen, tool designers, and other workers in related industrial occupations. It applies arithmetic, algebra, geometry, trigonometry, and their various phases to jobs encountered in every day industry. The emphasis is on the actual problem solving aspects growing out of various jobs. It is a continuous and more thorough coverage of many areas studied in the prerequisite Math. 4.202.

Mathematics for Automatic Data Processing	6.916	5	0	5
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Basic logic, numbering systems, algebra with emphasis on problem solving, computation with logarithms and with numbers in bases other than ten, and Boolean Algebra. This is a prescribed course for Automatic Data Processing Curriculum.

Prerequisite: Mathematics 4.204 or its equivalent.

Practical Descriptive Geometry	6.127	0	4	2
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This course gives a brief review of advanced drafting problems and takes the student further into the field of descriptive geometry principles. In the introduction of detailed drawing from assembly drawing the principles of Descriptive Geometry are necessary to the draftsman.

Prerequisite: Third Term standing or approval of dept. head.

Shop Arithmetic	4.246	1	3	2
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A one term course in basic arithmetic used in the weld shop. It will cover addition, subtraction, multiplication, division, ratios, and triangles in preparation for layout work and calculation of time and material costs, deposition rates, etc.

Technical Mathematics	6.261	3	0	3
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This course covers algebraic operations including the study of first and second degree equation solutions by analytic and graphical means, exponents and radicals, and their respective applications to technologies. Concurrent with the above, a review of plane geometric principles and introduction to the fundamental trigonometry operations will be offered.

Technical Mathematics	6.262	3	0	3
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This is an applied course in mathematics on the technician level including logarithms, right and oblique triangle problem solving, trigonometric applications, and graphs of trigonometric formulas, identities and equations, and graphs of trigonometric functions.

Prerequisites: Technical Mathematics 6.261 or equivalent.

		Lec.	Lab.	Term Units
Technical Mathematics	6.266	3	0	3

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

Prerequisite: Technical Mathematics 6.262 or equivalent.

Science Courses

Applied Physics	6.370	3	2	4
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A course in applied physics on the post high school level. Covers mechanics of measurement, structure of matter, heat, energy, heat engines, and sound and light. Laboratory time is provided for demonstrations and experiments to clarify principles and procedures covered in class.

Prerequisites: Applied Physics 6.371 or equivalent or approval of dept. head.

Applied Physics	6.371	3	2	4
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A course in applied physics on the post high school level. Covers the principles of vectors, kinematics, work-power-energy, machines, and angular velocity. Laboratory time is provided for demonstrations and experiments to clarify principles and procedures covered in class.

Prerequisites: Tech Math 6.261 or approval of dept. head.

Applied Physics	6.366	3	2	4
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A course in applied physics covering magnetism and electricity on the post high school level. Basic electronic currents, sources and effects of electric current, alternating current, generators, motors, distribution of electric power, and introduction to electronics and atomic energy in industry are covered. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.

Prerequisites: Applied Physics 6.370.

Chemistry		2	2	3
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A continuation of Introductory Chemistry covering the basic principles of General Chemistry.

Introductory Chemistry	6.275	2	2	3
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An introductory course presenting the fundamentals of modern chemistry for students who have had little or no previous training in chemistry.

		Lec.	Lab.	Term Units
Modern Physics	6.520	2	2	3

This course is designed to provide a working knowledge of the common theories and nomenclatures of the molecular, atomic, and nuclear sciences. Common physical phenomena relating to the molecular, crystalline, atomic states are studied. Radiation detection and measurement comprise the major areas of study in order that the student gain knowledge in the operation of equipment commonly used in the detection of nuclear radiation.

Prerequisite: Applied Physics 6.370 and 6.371.

Practical Physics	4.300	3	2	4
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This course in practical physics is designed for skilled workers, covering matter, measurements, mechanics, and machines. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.

Practical Physics	4.302	3	2	4
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This course in practical physics is designed for skilled workers, covering heat, light, and sound. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.

Prerequisite: Mathematics 4.200 or equivalent.

Practical Physics	4.304	3	2	4
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This course in practical physics is designed for skilled workers, covering magnetism and electricity. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.

Prerequisite: Practical Physics 4.302.

Practical Physics	6.919	3	2	4
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This course is designed to offer a broad introduction on the study of magnetism, electricity, and electronics. Laboratory time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.

Prerequisite: Mathematics 4.202 or approval of dept. head.

Technical Courses

Accident Prevention and First Aid	4.190	0	2	1
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A study of accident prevention, recognition of hazards, good housekeeping and personnel protective equipment. Study and practice of emergency treatment for various types of injuries, control of bleeding, artificial respiration, transportation, splinting and bandaging. Course leads to a Red Cross Standard Certificate.

		Lec.	Lab.	Term Units
Accounting	6.920	3	3	4

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

Accounting	6.921	3	3	4
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Accounting problems arising in different types of business, such as the corporation, partnerships, and individual proprietorship, together with their financing. Introduction to analysis and interpretation of financial statements.

Prerequisite: Accounting 6.920.

Accounting	6.922	3	3	4
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Methods of accounting for the corporate organization including capital stock, earnings, bonds, and intangibles. An introduction to accounting for manufacturing operations.

Prerequisite: Accounting 6.921.

Advanced Drafting Problems	4.115	3	0	3
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Introduction to practical descriptive geometry used by the draftsman. Theory of auxiliary views, true length, shape, angle, and point of intersection, developed from point-line-plane through the use of revolution. Introduction to graphical solution of simple vector problems. Emphasis on application of principles to problems commonly encountered by draftsmen.

Prerequisites: Drafting 4.105 and Math 4.204.

Advanced Drill Press and Shaper Practices	4.828	1	2	2
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This is an advanced course in machine shop practices. Angular shaping; contour shaping; tongue and groove cuts; slotting work; and dovetails are the shaper areas covered. Drill press practices include: reamers and reaming; counter-boring and counter sinking; boring on the drill press; and power tapping. Laboratory time is provided for individual students to perform the various operations.

Advanced Electric Accounting Machine Applications	6.946	2	6	4
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This course is a continuation of Intermediate Electric Accounting Machine Applications with emphasis on more complex business data processing applications. Students will be assigned a variety of projects designed to apply a wide range of concepts and practices in unit record installations.

Prerequisite: Intermediate Electric Accounting Machine Applications.

		Lec.	Lab.	Term Units
Advanced Electric Accounting Machine Operations	6.943	2	6	4

This course is a continuation of Intermediate Electric Accounting Machine Operations with emphasis on development of more complex operating procedures. Comprehensive operating procedures and control panel wiring practices will be stressed.

Prerequisites: Intermediate Electric Accounting Machine Operations.

Advanced Electronic Circuits	6.216R	2	3	3
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A course designed to simulate problems in industry. Covers six electronic areas including computers, communications, industrial controls, electronics, microwaves, and radar. Class meetings involve overview of each area and study of current problems and opportunities. Lab involves construction, testing, and reporting performance of assigned circuits.

Advanced Grinding Practices	4.839	2	3	3
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This is an advanced course covering precision grinding methods. Studies include: work and wheel speeds; wheel wear analysis; roughing and finishing cuts; arc and area of wheel contact; cylindrical grinding; internal grinding; surface grinding; and phase grinding.

Advanced Inert Gas and Shielded Arc Welding	4.164	2	6	4
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A continuation of Inert Gas Welding I. Introducing fundamentals and operations of consumable electrodes and metallic shielded arc welding.

Prerequisite: Inert Gas Welding I 4.163.

Advanced Lathe Practices	4.833	2	4	3
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A continuation of the lathe series of classes. Studies include: internal boring; threading, and taper turning; external threading taper turning and angular turning; and machine reaming. Laboratory time is provided for student operation of equipment.

Advanced Machine Drafting	4.117	0	5	2
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This course extends background in the area of machine drafting. It will include technical sketching and shape description, multi-view projections, sectional views, and revolutions.

Advanced Machine Drafting	4.123	0	5	2
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This course presents advanced studies in the major areas of machine drafting. The areas covered will include threads and fasteners, assembly drawings, pictorial drawings, and engineering graphics.

Prerequisite: Advanced Machine Drafting 4.117.

		Lec.	Lab.	Term Units
Advanced Machine Drafting	4.125	0	5	2

This course presents practical drafting problems requiring the application of previously learned principles of machine drafting. This will include advanced work on cams, gears, and the relationships of drafting to shop processes.

Prerequisite: Advanced Machine Drafting 4.123.

Advanced Milling Machine Practices	4.837	2	4	3
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A continuation of the milling machine series. Studies include: straddle milling; rotary table work; dividing head construction and indexing; gear cutting and gear terminology; and boring work on milling machines. Laboratory time is provided for student operation of milling machines.

Advanced Oxyacetylene and Electric Arc Welding	4.162	1	3	2
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A continuation of Oxyacetylene Welding I and Electric Arc Welding I. Developing techniques in the more complicated weld applications involving both ferrous and non-ferrous materials.

Prerequisite: Electric Arc Welding I 4.160.

Oxyacetylene Welding I 4.161.

Advanced Programming	6.907	2	6	3
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A continuation of Intermediate Programming 6.905 with emphasis on automatic programming systems such as COBOL, algebraic compilers, floating point arithmetic, introduction to scientific programming.

Prerequisite: Intermediate Programming 6.905 or approval of dept. head.

Amplifier Circuits and Design	6.217	3	6	5
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A continuation of oscillator circuits and design. Covers the application of vacuum tubes and transistors in amplifier circuits. Analyzes the vacuum tube amplifier into its basic and equivalent circuit. Includes load-lines, distortion, and pentode and beam-power tube considerations. Analyzes transistor amplifiers in various circuit configurations and covers biasing methods. Also includes transformer analysis, transformer-coupled amplifiers, and R-C coupled amplifiers. Special amplifiers using vacuum tubes and transistors are studied. Includes push-pull circuit analysis and phase inversion; Class C amplifier analysis, and high frequency amplifiers.

Antennas and Transmission Lines	6.231	2	0	2
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A course in both the practical and theoretical aspects of transmission lines and antennas. Showing the concepts of the circuit and field theory. The theory of antenna design, pattern design, phasing and coupling networks are studied.

		Lec.	Lab.	Term Units
Applied Mechanics	6.109	2	3	3

This course deals with forces and the effect of forces acting upon rigid bodies at rest. This includes resolution of forces, equilibrium and resultants of force systems, friction and centroids. Laboratory time is provided for the conducting of experiments to clarify the principles and procedures covered in class.

Prerequisite: Third Term standing or approval of dept. head.

Applied Mechanics	6.111	2	3	3
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This course deals with the motion of rigid bodies and with the forces that produce or change their motion. The principles of rectilinear motion, curvilinear motion, rotation, and plane motion are covered in the course. Laboratory time is provided for the conducting of experiments to clarify the principles and procedures covered in class.

Prerequisite: Fourth Term standing or approval of dept. head.

Architectural Drafting I	4.226	0	8	3
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A course emphasizing basic architectural drafting techniques and methods. The course will cover architectural lettering, layout, arrangement, symbols, and conventional construction methods used in residential or light commercial buildings.

Prerequisite: Two terms of drafting.

Architectural Drafting II	4.227	0	8	3
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A course emphasizing basic architectural drafting techniques and methods. The course will familiarize the student with advance planning, detailing, design, presentation drawing, and rendering.

Prerequisite: Architectural Drafting I, 4.226.

Architectural Drawing	4.107	0	7	3
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This course is designed to train the student in the area of architectural detailing. Typical units of study will be footings and foundation walls, sill construction details, conventional house framing, window details, stairway details, fireplace details, floor plans, and elevations. The student will prepare a complete set of detail plans for an average sized home in meeting the requirements for this course.

Prerequisite: Drafting I, 4.101.

Asphalt and Concrete Practice	6.556	1	2	2
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This is a course for developing an understanding of the composition, materials, proportion, mixing and properties of concrete and asphaltic materials. Design, testing and inspection is also studied.

		Lec.	Lab.	Term Units
Asphalt Paving	6.551	2	2	3

A study of asphalt paving including types of asphalt pavements, petroleum asphalts, aggregates, design of hot mix asphaltic concrete, plant construction, liquid asphalt mixes, seal coats, surface treatment, reconstruction of old pavements, design of flexible pavements, and testing procedures. Laboratory work will consist of field trips, testing of mixes, surfaces and aggregates, design of mixes, and application of a patch.

Prerequisite: Sixth Term standing or approval of dept. head.

Automated Systems and Procedures	6.904	3	0	3
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Fundamentals of automated data systems and procedures. Techniques and principles of systems analysis, forms design and control, systems economics, feasibility studies, and the installation of electronic data processing systems.

Automation Systems	6.244	3	0	3
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This course is devoted to the study of the techniques of automation. Introduces the basic concepts of automation and covers automatic controls, pneumatic control devices, hydraulic control devices, and electronic and electric control devices. The application of automation is studied from examples in the areas of materials handling and assembling, production of metals, metal casting processes, mechanical working of metals, press working of metals, metal cutting operations, heat treating of metals, metal joining operations, and inspection and quality control.

Basic Arc Welding	4.240	2	3	3
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This is a beginning course in arc welding, covering arc welding equipment, materials, and procedures as they are used in industry. This course is designed to develop basic techniques in flat, horizontal, vertical and overhead welding by demonstration and supervised practice. Basic technical and related information concerning processes and metallurgy will be included.

Basic Chairside Procedures	5.402	2	3	3
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This course is designed to give the student basic knowledge and practical experience in all of the general dental office procedures including seating and dismissing patients, charting cavities and making basic set-ups for general operative procedures.

Basic Oxy-Acetylene Welding	4.242	2	6	4
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This is a beginning course in oxy-acetylene welding covering basic procedures and techniques used in flame cutting and welding. Related information concerning metallurgy and the control of distortion will be included. This course is designed to develop basic techniques in flat, horizontal, vertical, and overhead welding by demonstration and supervised practice.

	Lec.	Lab.	Term Units
Basic Sciences for Health Occupations 5.601	3	4	4

This is a course designed to provide a general understanding of the basic sciences, emphasizing principles directly related to health occupations. Subjects include: elementary biology, bacteriology, anatomy, physiology, serology, immunology, and chemistry. It will include practical material relating to sterilization principles, simple optics as applied to use of microscopes, scientific principles applicable in use of equipment and instruments in health occupation laboratories.

Basic Tool Design 4.608	1	6	3
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Lectures, classroom discussion, and actual drawing board work are combined to help the student gain knowledge and experience necessary to design tools commonly used in modern manufacturing. The work consists of designing and laying out cutting tools, gauges, simple jigs, fixtures, and dies. Mass production methods are discussed so that the student may apply the information gained in the practical work of tool designing.

Basic Tool Design 4.609	1	6	3
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This course is a continuation of Basic Tool Design I. Lectures, classroom discussion, and actual drawing board work are combined to help the student gain knowledge and experience necessary to design tools commonly used in modern manufacturing. The work consists of designing and laying out cutting tools, gauges, simple jigs, fixtures, and dies. Mass production methods are discussed so that the student may apply the information gained in the practical work of tool designing.

Bench and Layout Practices 4.821	2	3	3
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This is a course on bench tools and their use, with layout principles and applications. The bench tools studied will include hand tools such as: hammers; screwdrivers; files; chisels; wrenches; hand taps and reamers; hacksaws and threading dies. Layout work will consist of the use of tools, measurements, coating materials, and applications of bench and surface plate layout.

Bench and Pedestal Grinding Practices 4.829	1	3	2
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This course considers the bench and pedestal grinder. Wheel construction, selection, mounting, and dressing methods are studied. The grinding of single and multiple point tools is undertaken. Care and maintenance of grinders and safety precautions receive attention. Laboratory time is utilized for grinding practice demonstrations and individual student operation of grinders.

Prerequisite: Bench and Layout Practices 4.821.

		Lec.	Lab.	Term Units
Blueprint Reading and Sketching	4.244	2	3	3

This course covers basic sketching techniques, and reading of three view drawings for welders. Included will be: dimensioning practices, scaling, line alphabet, notes and symbols. Emphasis will be placed on developing an ability in reading detail and weldment drawings.

Blueprint Reading and Sketching	4.853	0	2	1
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This is the first in a series of blueprint reading courses. Common machine shop terms, abbreviations, decimal equivalents, tap drill sizes, dimensions, notes, three view drawings, line alphabet, notes and symbols are discussed.

Prerequisite: Curriculum entrance requirements:

Blueprint Reading and Sketching	4.855	0	2	1
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A continuation of the blueprint reading series. Areas discussed are: scaling and scaling dimensions, holes; fillets; radii; title block; bill of materials; alterations and revisions; section and auxiliary views.

Prerequisites: Blueprint Reading and Sketching 4.853.

Blueprint Reading and Sketching	4.857	0	2	1
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A continuation of the Blueprint Reading Sequence. This course covers a study of gears, gear terminology, and gearing principles. Industrial blueprints are given attention, with the emphasis on reading and accurate interpretation of complex drawings.

Prerequisite: Blueprint Reading and Sketching 4.855.

Blueprint Reading for Construction	4.859	1	2	2
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Introductory course on the development of plans; symbols used for drawings; basic construction methods; and electrical, plumbing, and heating schematics. Students develop ability to interpret and draw plans for light construction.

Blueprint Reading for Firemen	5.119	3	0	3
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A course designed to teach the fundamentals of blueprint reading including the interpretation and meaning of lines, views, elevations, conventions and symbols, and the relationship of the various elements comprising architectural drawings and specifications.

Building Construction for Fire Protection	5.116	3	0	3
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Classification of buildings, structural features effecting fire spread; effect of fire on structural strength; fire stops and ratings of materials; fire retardants; Sanborne maps.

		Lec.	Lab.	Term Units
Business Management	2.202	3	0	3

A practical course to give an understanding in five basic areas important to business. These areas are the billing of customers, the art of letter writing, simplified accounting, inventory control, and business advertising.

Business Management	6.908	3	3	4
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The over-all picture of how industry is organized and how it functions, including the history of American industry, organization of the industrial enterprise, industrial risk and forecasting, financing the enterprise, building the internal organization, developing the product, constructing the physical facilities, planning and controlling the manufacture of the product, principles of industrial relations, and managing the office.

Prerequisite: Introduction to Business and Public Administration 2.502.

Business Statistics	6.912	3	3	4
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A practical course in the use and interpretation of statistics, incorporating elementary statistical concepts, frequency distribution analysis; trends and seasonal business cycles.

Prerequisites: Introduction to Business and Public Administration; Math 4.204 and Accounting 6.920.

Cam and Gear Drafting	4.225	0	8	3
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This is an advanced course in the area of mechanical and machine drafting. The course work involved will include the calculation of various types of gears in addition to the detail drawing of gears. The principles of the cam will be discussed and displacement diagrams and detail drawings will be made to illustrate various types of motion and various styles of cams in common use.

Prerequisite: Machine Drafting III, 4.223 and Technical Math II or Math III.

Chairside Assisting and Basic Lab Procedures	5.403	2	3	3
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A continuation of Basic Chairside procedures including mixing filling materials, preparing impression materials for use, and processing the impression. The course also provides practical dental laboratory experience in pouring models and making base plates, and bite rims.

Communication Receivers	6.251	2	3	3
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A study of the principles of operation and servicing techniques of commercial radio receivers, mobile radio receivers, both AM and FM models, and CB radio receivers. Practical applications are applied in the laboratory sessions.

		Lec.	Lab.	Term Units
Concrete Construction and Design	6.123	2	5	4

A study of concrete materials, shear and bending calculations, shear and bending stresses and design calculations. Coverage is given to rectangular, tee, and reinforced beams; reinforced floor systems and columns, foundations, retaining walls and miscellaneous members. Laboratory work will consist of problem solving.

Prerequisite: Sixth Term standing or approval of dept. head.

Concrete Practices	6.555	2	0	2
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A study of the producing, placing, finishing, and curing of concrete; the composition of various grades of concrete and their application to construction projects, forms, inspection, properties of concrete, and related factors.

Prerequisite: Sixth Term standing or approval of dept. head.

Construction and Special Surveys	6.342	2	4	3
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This course is designed to acquaint the student with the methods in the layout of structures, utilities for public and private projects, hydrographic surveys, and mine and tunnel surveys. The material will be presented in such a manner so as to lead the student to a more complete understanding of the basic principles involved in these varied types of surveys.

Construction Codes	6.122	2	0	2
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This course is designed to familiarize the student with the various codes which specify the standards of construction and the installation of electrical and plumbing fixtures. Students study the Pacific Coast Uniform Building Code, The National Electrical Code and the Oregon State Plumbing Laws, and the Regulations governing Plumbing and Water supply. The function of Government units (state and local) charged with the administration and inspection of building construction will be covered.

Prerequisite: Approval of dept. head.

Construction Costs Computation	4.136	2	5	4
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Introduction to the basic principles of estimating the amount and cost of materials required and the attendant labor cost involved in various types of construction projects.

Prerequisite: Fifth Term standing or approval of dept. head.

Construction Estimating	6.110	2	0	2
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Designed to develop skills in estimating the amount and cost of materials required, and labor cost involved in various types of construction. An opportunity is provided for the application of these skills by requiring the student to make estimates of material

and labor quantities and costs for representative type of construction.

Prerequisites: Fifth Term standing or approval of dept. head.

Construction Standards 4.110 2 0 2

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

Prerequisites: Fourth Term standing or approval of dept. head.

Contracts and Specifications 6.118 3 0 3

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

Prerequisites: Second Year Standing or approval of dept. head.

Control Layout Systems 4.143 1 6 3

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

Prerequisites: Fifth Term standing or approval of dept. head.

Cost Accounting 2.576 3 0 3

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

Prerequisite: Accounting 6.921.

Cost Computations 4.142 2 6 4

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

Prerequisites: Fifth Term standing or approval of dept. head.

Data Processing Mathematics 6.925 3 0 3

An introduction to business data processing mathematics. The course contains accounting control logic, binary numbering systems, accounting numbering systems, report and accounting system balancing methods, and business data processing formulas, with an emphasis on problem solving.

		Lec.	Lab.	Term Units
Data Processing Mathematics II	6.926	3	0	3

This is an applied course in mathematics for Electronic Computer Applications. It provides a practical foundation for the solution of business, business management and applied science problems.

Data Processing Mathematics III	6.927	3	0	3
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A continuation of Data Processing Mathematics II. This course covers: problem solutions by iteration, matrix algebra, linear programming, etc. Sample problems developed in class are operated on the IBM 1401 Computer and then analyzed.

Data Processing for Surveying	6.930	2	2	3
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Preparation of source data for computer entry for open and closed traverses; observation of problem operation; computer report interpretation.

Prerequisite: Second year standing.

DC Theory and AC Theory	4.255	12	0	9
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This is a course covering the basic principles of DC and AC Theory. The DC and AC theory is a necessary background for the understanding of the various phases of electronics. A basis is given for the principles of operation of the radio and television circuits and their components. Basic mathematics is taught and coordinated with the theory areas as needed.

DC Theory and AC Theory Lab.	4.256	0	6	2
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This course uses the basic principles of soldering, wire connecting and the proper use of hand tools and hand powered tools. Safety procedures to be used in the shop. Also practical experiments proving the theories taught in the DC Theory and AC Theory class, with the use of basic meters and other equipment as needed.

Dental Anatomy and Physiology	5.405	2	0	2
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A study of anatomical terminology, head anatomy including skeletal structure, blood supply, innervation of the face, oral anatomy and physiology, muscles of mastication, paranasal sinuses.

Dental Office Practice	5.409	0	12	2
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This course consists of practice and observation in an ethical dental office.

Dental Sciences	5.404	5	0	5
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A study of the various fields of specialized dentistry recognized by the American Dental Association and the sciences

connected with them. The course includes such subjects as oral hygiene, bacteriology, sterilization, drugs, and diet and nutrition.

Design Problems 4.605 2 6 4

Opportunities in advanced drafting room practice are offered in this course. The student applies his knowledge of mathematics, science, and drawing to practical problems while he is designing complete machines or component parts machines. He analyzes the problem, gathers data, sketches ideas on paper, does all necessary mathematical calculations, makes working drawings, and finally checks his work. Throughout the course he is encouraged to use his judgment and work on his initiative.

Design Problems 4.606 2 9 5

This is a continuation of Design Problems I.

Opportunities in advanced drafting room practice are offered in this course. The student applies his knowledge of mathematics, science, and drawing to practical problems while he is designing complete machines or component parts machines. He analyzes the problem, gathers data, sketches ideas on paper, does all necessary mathematical calculations, makes working drawings, and finally checks his work. Throughout the course he is encouraged to use his own judgment and work on his own initiative.

Prerequisite: Design Problems I.

Dimensioning and Layout 4.224 2 0 2

This is a theory course designed to give a detailed presentation of modern dimension and layout techniques. Typical areas of study in this course will include principles and rules of dimensioning, datums, elements of gaging, layout practices, and projective and descriptive geometry as related to layout drawings.

Prerequisite: Machine Drafting I, 4.221.

Drafting 4.101 0 4 2

This is a fundamental course in drafting designed to give the student a basic understanding of drawing techniques. Emphasis will be placed on the application of drafting instruments, standard orthographic projection, layout procedures, and ASA approved lettering techniques. Drawing techniques such as geometric construction, selection of views, sectional and auxiliary views, revolutions, heads, and standard dimensioning practices will be covered.

Drafting 4.105 0 4 2

This is an intermediate course designed to prepare students to enter mechanical, structural, civil, and architectural drafting.

It includes isometric projection, perspective drawings. Emphasis is placed on the concept, technique of inking, and the development of working drawings as used in industry. Limitations of general shop equipment are discussed.

Drafting and Sketching	4.118	0	3	1
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A course designed to develop basic Drafting and Sketching skills used in drafting room and industrial applications. Laboratory time is devoted to identification of technique and application.

Drill Press Practices	4.827	2	3	3
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This course is an introduction to the construction, care, function and operation of drill presses. Studies of the sensitive, radial, and gang drill presses will be made. Speeds and feed for drilling will be discussed and applied. Different types of drill bits, methods of mounting the work, and drilling procedures will receive attention. Operations will be performed on the drill press during scheduled laboratory periods.

Prerequisite: Curriculum entrance requirements.

Earthwork Computations and Estimates	6.528	1	3	2
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Problems in computing cuts and fills in highway work, mass diagrams, borrow pits, are worked out in detail. Estimating is limited to computations of quantities and costs on highway, bridge and heavy construction work.

Prerequisites: Fourth Term standing or approval of dept. head.

Electric Accounting Machine Applications	6.917	3	2	4
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Theory and practice in the application of electric accounting machines to the solution of business problems. Examples of currently operating punch card systems in basic industries.

Electric Accounting Machine—Logic Principles	6.940	2	6	4
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Intensive study and practice on punch card equipment studied in Introduction to Electric Accounting Machines 6.913. Application of machine programming logic principles necessary to perform machine functions.

Electric Accounting Machine Operations	6.915	2	6	4
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Intensive study and practice on punch card equipment studied in Introduction to Electronic Accounting Machines 6.913. Functional wiring principles of basic punch card data processing machines.

		Lec.	Lab.	Term Units
Electric Arc Welding I	4.160	1	3	2

A course in fundamentals on electric arc welding. Machine setting and electrode selection. Development of technique and electrode manipulation.

Prerequisite: Welding 4.150.

Electric Systems Management	6.947	2	0	2
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This course is designed to provide instruction in the fundamentals of management and coordination of an electric accounting machine installation. Management of operating procedures, machine acquisition, personnel administration, and coordination of business data processing activities will be stressed.

Electronic Systems Management	6.948	2	0	2
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This is a course in computer systems management. It covers the basic standards of management systems control, systems analysis, operation and performance standards.

Electrical Circuits	6.206	3	6	5
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A continuation of electrical theory with an emphasis on the analysis of the characteristics of complex waveform circuits. Covers passive filter networks, bi-directional wave forms, complex waveform analysis of simple circuits, waveform analysis of series R-C circuits, waveform analysis of series R-L circuits and waveform analysis of combined networks.

Electrical Drafting	4.103	0	4	2
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A course covering the techniques and inventions used in the electronic-electrical industry. It includes symbols, wiring diagrams, introduction to pictorial drawings, chassis layout schematic diagrams, power distribution diagrams and charts, graphs, and ASA and EEIA approved symbols.

Prerequisite: Drafting 4.101 or approval of dept. head.

Electrical Theory DC	6.200	3	2	4
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Presents an introduction to electronics on the basis of direct currents with an emphasis on contemporary techniques as a supplement to basic concepts. Covers the principles of electron physics, unidirectional current, and factors affecting its magnitude, series-circuit analysis, parallel-circuit analysis, complex unidirectional-current circuits the phenomena of magnetism and electromagnetism, inductance and its characteristics, characteristics of capacitance, and electrical measurement instruments.

Electrical Theory AC	6.202	3	2	4
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A continuation of electrical theory on the basis of alternating currents with an emphasis on contemporary techniques as a

supplement to basic concepts. Covers the principles of electron physics, unidirectional current, and factors affecting its magnitude, series-circuit analysis, parallel-circuit analysis, complex unidirectional-current circuits, the phenomena of magnetism and electromagnetism, inductance and its characteristics, characteristics of capacitance, and electrical measurement instruments.

Electricity 6.208 3 2 4

An introduction to electrical circuitry and equipment with emphasis on the concepts of electrical physics. Students will study electricity and magnetism, circuits and components, currents, power, basic electronics and motors and controls.

Electronic Data Processing 6.240 3 0 3

An introduction to the principles of electronic digital computers. Covers the application and programming of computers in business, industrial, and scientific organizations. Reviews the decimal and binary numbering systems as they relate to computers; analyzes computer circuitry with emphasis on transistor and diode switching circuits; presents the fundamentals of logical design with an introduction to Boolean Algebra and the use of block diagrams; analyzes the major divisions of a digital computer in terms of the arithmetic element, the memory element, input and output devices, and the control element.

Electronic Data Processing Machine Applications
6.911 3 2 4

The applications of electronic computers to the solution of data processing problems in such areas as inventory control, sales analysis, payroll, production scheduling, etc., in basic industries. The function of Electronic Data Processing machines in banking, insurance, utilities, government, and manufacturing.

Prerequisites: Introduction to Programming; Automated Systems and Procedures.

Electronic Data Processing Machine Applications
6.949 3 3 4

The applications of electronic computers to the solution of data processing problems in such areas as inventory control, sales analysis, payroll, production scheduling, etc., in basic industries. The function of Electronic Data Processing machines in banking, insurance, utilities, government, and manufacturing.

Prerequisites: Introduction to Programming 6.903 and Introduction to Systems and Procedures 6.903.

Electronic Data Processing Applications II
6.950 3 0 4

A continuation of Electronic Data Processing Applications I,

with an emphasis on cybernetics and scientific data processing. Laboratory periods will be devoted to processing current data in school, research, and development fields.

Electronic Data Processing Machine Operations

6.909	2	3	3
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Study and practice in computer center operations including console operating, job setup, tape changing, and operating peripheral equipment such as card readers, punches, and high speed printers.

Prerequisite: Introduction to Automatic Data Processing 6.900 or approval of department head.

Electronic-Electrical Standards

4.114	3	0	3
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A study of the industrial standards published by the ASA, AIEE, and the NEMA. Also includes a survey of typical state, federal, and military electronic-electrical practices as they affect the draftsman.

Prerequisite: Fourth term standing or approval of dept. head.

Electronic Instruments

6.220	3	0	3
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A study of both service and laboratory type instruments, to gain the knowledge of the fundamental operating principles, to understand how the instruments work, using representative examples and explaining the specific function of the instruments and illustrate practical applications of the instruments.

Fire Apparatus and Equipment

5.102	2	2	3
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Familiarization with different types of fire apparatus; principles of application care, and preventive maintenance; safe operating practices, emergency and non-emergency; National Board standards.

Fire Company Organization and Personnel Duty Assignment

5.112	3	0	3
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Fire company organization and operation; company responsibilities in station including record keeping, station communications and watch, housekeeping and house privileges, tours and public relations; company organization for response to alarms; company morale.

Fire Department Communications and Alerting Systems

5.115	3	0	3
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Receiving, dispatching and radio communication procedures; FCC regulations; municipal alarm; telephone and tone-activated alarm; recording messages; tap-out procedures, running cards, etc.

		Lec.	Lab.	Term Units
Fire Department Hydraulics	5.104	3	2	4

Review of basic mathematics; hydraulic laws and formulas as applied to the fire service; application of formulas and mental calculations to hydraulic problems; fire ground water supply problems; Underwriter's requirements for pumps and accessories.

Fire Fighting Skills I	5.110	0	9	3
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Individual skills using small tools and minor equipment; practices in forcible entry, use of masks, salvage and overhaul, and different applications of small tools and minor equipment, safety practices.

Fire Fighting Skills II	5.111	0	9	3
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Practice in team skills in various fire ground operations including hose and ladder evolutions, ventilation and coordinated attack simulation.

Fire Fighting Tactics and Strategy	5.113	3	0	3
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Pre-fire survey and planning; response and size-up; fire ground tactics; analysis and post-mortem.

Fire Investigation	5.117	3	2	4
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Effect on fire prevention by isolating cause of fire; interpreting clues and burn patterns leading to point of origin; identifying sources of ignition and materials ignited; preservation of the fire scene.

First Aid	5.450	1	0	1
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This course is designed to develop skills and knowledge for the immediate and temporary care in case of accident or sudden illness; preventive measures. This will be the standard Red Cross First Aid Course.

First Aid for Firemen	5.118	2	2	3
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A first aid course with emphasis on respiratory shock, burns, cuts, cardiacs, drownings, fractures, and other emergencies; practice in use of resuscitator and inhalator.

Fixed Systems and Extinguishers	5.106	3	0	3
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Portable extinguisher equipment; sprinkler system; protection systems for special hazards; fire alarm and detection systems; ventilating systems.

FM and HiFi Lab.	4.271	0	3	1
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This lab consists of applying the principles studied in the theory course and the maintenance of FM and HiFi equipment. Basic record player units will be set up and checked out, serviced and lubricated and the cartridges studied and checked out.

		Lec.	Lab.	Term Units
FM and HiFi Theory	4.270	3	0	3

In this course a study is made of the principles of FM receivers, the different kinds of FM detectors, the principles of multiplexing, the principles of HiFi, the operation of stereo sets, a study of HiFi amplifiers, and speaker systems.

Forest Products I	4.280	3	0	3
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This course is devoted to the manufacture of plywood and laminated wood; adhesives and their proper employment; and second forest industries, particle boards, chip boards.

Forest Products II	4.281	3	0	3
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This course is devoted to the manufacture of pulp and paper; the various types of pulp production, their similarities and differences.

Foundations of Structures	6.120	3	0	3
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A study of various materials, devices, and designs used in structural foundations such as footings, cofferdams, caissons, abutments, piers, and under-pinnings.

Prerequisites: Applied Mech. 6.111 and Tech. Math 6.266.

Fundamentals of Fire Prevention	5.101	3	0	3
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Organization and function of a fire prevention bureau; fire prevention codes; state and local laws and ordinances; familiarization with principles of fire prevention; the inspector's job; public relations.

Geodetic Surveying	6.343	2	2	3
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This course is designed to acquaint the student with the basic principles of geodetic surveying. The material is presented in such a manner as to lead the student to a more complete understanding of the principle involved.

Geometric Construction	4.120	1	1	1
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A course designed to develop an understanding of the basic geometric constructions used in drafting. Laboratory time is provided for practice of construction and application of concepts.

Hazardous Materials I	5.108	3	0	3
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Review of basic chemistry; safe practices for storage and handling of flammable liquids, and gases; identification of hazardous materials by color, symbol, and marking; recommended methods for fire control.

		Lec.	Lab.	Term Units
Hazardous Materials II	5.109	3	0	3

Tactics for combating fires involving hazardous chemicals and other materials; radiation hazards of the fire service; space age fuel; highway transportation, explosives, etc.

Heat Treatment of Steel	4.849	2	3	3
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A study of methods and procedures for improving the characteristics of steel by hardening and tempering. Process of heat treating include: Furnace and flame hardening; case hardening; tempering, annealing, and normalizing; and hardness and tensile testing. Laboratory time is provided for hardening, tempering and testing demonstrations and experiments.

Prerequisite: Practical Physics 4.300.

Hydraulics	6.112	2	2	3
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The first course in the study of hydraulics covers the fundamental properties of fluids, principles of hydrostatic pressure—including Pascal's Law, the hydro-static paradox, the Archimede's principle—measurement by manometer, the measurement of fluid properties. The relationship of hydrostatic pressure and center of gravity and the effect of hydrostatic pressure exerted against plane surfaces will also be discussed. Time is provided for demonstrations and experiments to help clarify the principles and procedures covered in class.

Prerequisite: Fifth Term standing or approval of dept. head.

Hydraulics	6.114	2	2	3
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Consists of the fundamentals of fluid flow, Bernoulli's theorem, flow profiles, stream restrictions (such as weirs, flumes, metering runs), distribution of energy in the stream, flow through pipe, Reynolds Law, Newton's Laws of hydrodynamics, vector representation, hydraulic similitude, and dimensional analysis. Time is provided for demonstration and experiments to help clarify the principles and procedures covered in class.

Prerequisite: Hydraulics 6.112 or equivalent.

Hydraulic and Pneumatic Systems	4.173	2	3	3
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The course is designed to provide instruction in the fundamental principles of hydraulic and pneumatic systems. The course includes study of the basic components of hydraulic and pneumatic systems and how they are combined to build up various circuits and the ultimate use of these circuits. The student will learn the factors to be considered in the selection, installation and maintenance of hydraulic and pneumatic systems.

Prerequisites: Mathematics II and Mechanical Systems or approval of department head.

		Lec.	Lab.	Term Units
Industrial Construction Drafting	4.133	2	6	4

Introduction to the steps of construction for commercial and industrial building. Discussion of modern construction techniques; materials; drawing requirements; inter-relationship of architectural, civil, mechanical, and electrical professions in industrial construction; labor trends as they affect building design; and elements of industrial electrical drawing. Laboratory time is used to develop typical drawings requiring application of principles discussed.

Prerequisite: Fifth term standing or approval of dept. head.

Industrial Construction Drafting	4.137	2	6	4
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Continuation of the industrial construction processes with emphasis on bridge and tower construction, plant layout, field drawings, revisions, and piping drawings. Laboratory time is used to develop typical drawings requiring application of principles discussed.

Prerequisite: Fifth Term standing or approval of dept. head.

Industrial Electronics	6.218R	2	3	3
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An introductory class and laboratory course covering the principles and applications of electronics in industry. Involves a review of the principles of D-C motors and generators, and covers D-C motor controls with emphasis on electronic controls. Also covers relays and time-delay circuits; industrial photo-electric control and typical applications; electronic power-control with saturable core reactors and the amplidyne; and electronic control of welding.

Prerequisite: Amplifier Circuit and Design.

Industrial Electronics	6.248	3	3	4
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A continuation of industrial electronics with emphasis on A-C principles and applications in industry. Covers alternating current characteristics, generation of A-C, vector diagram analysis, properties of electric circuits, and graphical representation of resistance, reactance, and impedance. Single phase circuits are analyzed in terms of power factor, and three phase wye and delta combinations are studied. Also includes transformers and regulators, alternating-current generators, polyphase induction motors, synchronous motors and self-synchronous devices, single phase motors, circuit-protective and switching equipment, electrical instruments and electrical measurement.

Prerequisite: Industrial Electronics 6.218R.

Industrial Instrumentation	6.253	2	3	3
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A study dealing with pneumatic, hydraulic and electrical instruments and measurements for temperature, pressure flow and

related phenomena. Employing many of the principles and laws of physics. The laboratory classes demonstrate and apply the ideas brought forth in theory sessions.

Industrial Instrumentation 6.254 2 3 3

A further study of pneumatic, hydraulic and electrical instruments and measuring devices, as they apply to process and control systems. The laboratory classes demonstrate and apply the ideas brought forth in theory sessions.

Industrial Materials and Processes 4.170 2 4 3

A course designed to familiarize the student with the materials used by modern industry to manufacture industrial products. The ferrous and non-ferrous metals and alloys are covered as well as a number of the newly developed "exotic" metals. Emphasis is placed on the non-metallic materials used in industry. Included in the course are the study of the processes and methods of utilizing these industrial materials. From time to time industrial consultants are brought into the laboratory to orient the student to the application of industrial materials and processes in their firms.

Prerequisites: Machine Tool Practices and Welding Practices concurrently or approval of department head.

Industrial Safety 4.108 3 0 3

A survey of the principles of safety for industry. Includes safety codes, personnel considerations, and safety practices relating to design work, materials handling, and equipment.

Industrial Television 6.228 2 3 3

A theory and lab course designed to cover television systems, scanning and synchronization, composite video signal, frequency modulation, television receivers and monitors, picture tubes, power supplies, video amplification, practical design of video amplifiers, brightness-control and D-C reinsertion video detection automatic gain-control and sync-separation, and deflection oscillator and amplifier circuits.

Industrial Television 6.235 1 2 1

A theory and lab course covering closed-circuit television systems, picture transmission, scanning process and the composite signal, camera tubes and circuits, camera video amplifier systems, camera sync and deflection generators, and several types of commercial industrial cameras with emphasis on circuit analysis, set-up procedure, operation, and adjustment.

		Lec.	Lab.	Term Units
Inert Gas Welding I	4.163	1	3	2

A course in fundamentals on tungsten inert gas welding processes, machine setting and application.

Prerequisites: Electric Arc Welding I 4.160;
Oxyacetylene Welding I 4.161.

Intermediate Arc Welding	4.241	2	3	3
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This is a continuation of Basic Arc Welding covering ferrous and non-ferrous alloys and welding procedures. Demonstration and supervised practice of techniques on various metals, applied in fabrication and repair will run concurrently with related information concerning the use and structure of these metals.

Intermediate Electric Accounting Machine Applications	8.945	3	3	4
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This course expands concepts presented in Introduction to Electric Accounting Machines Applications 6.944. However the emphasis is placed on the preparation of formal operating procedures. The applications used are such that all electric accounting machines in the laboratory will be included in the operating procedures.

Prerequisites: Technical Report Writing 6.126 and Introduction to Electric Accounting Machines 6.913.

Intermediate Electric Accounting Machine Operations	6.942	2	6	4
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A continuation of Electric Accounting Machines Operations and is designed to develop more skill and confidence in the student by operating unit record procedures. Applications performed during this course may include student records, personnel accounting, payroll accounting and school census rolls. Machine control panel wiring will be performed by the student on selected applications.

Prerequisites: Introduction to Electric Accounting Machine Operations 6.941.

Intermediate Oxy-Acetylene Welding	4.243	2	6	4
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This is a continuation of Basic Oxy-Acetylene Welding covering ferrous and non-ferrous alloys and welding procedures. Demonstrations and supervised practice in heating, hard and soft soldering, brazing, hard surfacing, etc., will run concurrently with technical and related information concerning materials and features of various fused and bonded joints. This course is designed to complete a thorough preparation and familiarization with the oxy-acetylene flame as used in industry.

		Lec.	Lab.	Term Units
Intermediate Programming	6.905	2	6	3

Practice in programming with emphasis on methods of generalized programs; sorting, report generating, table look-up, and program testing.

Prerequisites: Introduction to Programming 6.903 and Mathematics for Automatic Data Processing 6.916 or approval of department head.

Introduction to Automatic Data Processing	6.900	3	2	4
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A basic orientation to the field of Automatic Data Processing. Emphasis on the growing technology in the field of processing business data and how this growth in business, industry, and government has necessitated the automation of business routines. Applications of input-output preparation, manipulation of data in automated systems, communication with data processing machines, and computer languages.

Introduction to Business and Public Administration	2.502	3	0	3
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A basic background course in the general fields of business aimed at developing an awareness of the nature of the business in the capitalistic system. Included are problems of ownership, organization, personnel, finance, marketing, and managerial and governmental control. This course or its equivalent is prerequisite to all professional courses in Automatic Data Processing. The nature of public administration, its rules, trends, and functions. Study of government corporation; finances and controls.

Introduction to Dental Assisting	5.401	5	0	5
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A course to acquaint the student with the dental assisting curriculum and the qualifications necessary for success in that field.

Introduction to Electric Accounting Machine Applications	6.944	3	2	4
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This course places emphasis on the study and design of unit record accounting systems for customer vendor accounting. The student will be introduced to accounting systems used by business and industries which may include public utilities, service organizations, manufacturers, merchandising, publishing, transportation and banking.

Prerequisites: Introduction to Electric Accounting Machines 6.913 or approval of department head.

Introduction to Electric Accounting Machine Operations	6.941	2	6	4
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Intensive study and practice in the operation of electric

accounting machines and control panel wiring. The machine operations are learned while processing and solving typical machine accounting applications, i.e., accounts receivable, accounts payable and sales analysis.

Prerequisites: Introduction to Electric Accounting Machines 6.913 or approval of department head.

Introduction to Electric Accounting Machines

6.913	3	3	4
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The nature and purpose of electro-mechanical machine operation. Principles and practice of punch card operations including key punches, interpreters, verifiers, sorters, collators, reproducers, accounting machines, and calculating punches.

Prerequisite: Accounting 6.920.

Introduction to Fabrication Practices 4.100

2	6	4
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An introductory course of observation and drafting. Students will be assigned drawing projects and will normally view the physical object of the drawing in order to develop their visualization of the subject on the drafting board. Frequent field trips should be made to observe modern methods of manufacturing, casting, forging, construction, and assembly at local industry. Emphasis will be placed on materials, methods of fabrication, glossary, scaling for drawing, and visualization of fabricated objects or assemblies.

Introduction to Fire Protection 5.100

3	0	3
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Philosophy and history of fire protection, history of loss of life and property by fire; role and responsibility of the fire department in the community; organization and function of local, county, state, federal, and private fire protection agencies and allied organizations; sources of professional literature; survey of professional career opportunities.

Introduction to Mapping 4.132

1	7	3
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This course is designed to acquaint the student with the basic principles of map construction and uses. The material is presented in such a manner so as to lead the student to an understanding of the basic principles of map drafting.

Introduction to Medical Assisting 5.600

3	0	3
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This course give an introduction to the professional health services and the function of the assistant as a member of the health team. It will include a review of the requirements and qualities necessary for success in this field: personal appearance and grooming, conduct and attitude, professional and patient

relationships. The legal relationship of physician and patient, professional liability, the physician's public duties and liabilities, types of medical practice, systems of medical care, bases for determining fees, health and accident insurance programs, and government medical care programs will be studied.

Introduction to Pharmacology	5.603	2	0	2
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This course is designed to introduce principles of medication as a basis for understanding the duties and responsibilities in regard to ordering, storing, dispensing, administering, and preparing medications. It will include a study of the name, source, and physical and chemical properties of drugs; physiological action and therapeutic uses of the more commonly used and the emergency drugs kept in a doctor's office.

Introduction to Programming	6.903	3	3	4
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Theory and practice in solving business data processing problems on modern digital computers. Principles of problem analysis, block diagramming, coding and checkout of programs.

Introduction to Specifications	4.102	3	0	3
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This is a course designed to acquaint the student with the common usage and practice in preparation and interpretation of specifications. Examinations of existing specifications covering current subjects will be used whenever possible with practical problems to teach the application of theory learned.

Introduction to Systems and Procedures	6.902	3	0	3
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Procedures as a basic administrative technique. The principles of organizing, planning and administering a procedure program. Methods of carrying out individual systems and procedures studies. Procedures analysis and improvement techniques, the role of systems and procedures in business management, systems charting, working simplification and measurement.

Jig and Fixture Drafting	4.231	0	8	3
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This is an advanced course in the area of tool drafting. In the lab work the student will use his ingenuity in the design and detailing of jigs and fixtures to perform a variety of machining operations. The adaptation of common machine tools to high speed and high precision production is the main objective of this type of design.

Prerequisite: Sixth term standing in Technical Drafting or consent of drafting department head.

Job Machining Practices	4.845	3	12	7
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This course covers typical job shop applications. Students

repair and manufacture a variety of machines, equipment, parts, and tools. Typical job shop sequence will be followed with emphasis on speed and quality of finished product.

Lathe Practices	4.831	2	4	3
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This is a course which introduces engine lathe work and practices. Studies of lathe construction, function, operation and care of lathes are included. Operations such as facing, drilling, turning, and parting are performed by students during laboratory periods.

Layout Practices	4.245	2	3	3
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This is a course on layout tools and their use in fabricating structural members, bins, hoppers, pipe fittings, chutes, etc. Principles and practices of pattern development for typical forms and fittings will be included.

Light Gauge Welding	4.249	2	3	3
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This course is designed to be a review and application of the welding, layout and fabrication processes covered during the year, as applied to the joining of various light gauge metals. Also it will cover resistance welding and a comparative study of metal joining processes in terms of costs and function of the product. Field trips will be arranged to illustrate industrial practices.

Prerequisites: Successful completion of the previous courses and concurrent registration in Tungsten Inert Gas Welding and Metallic Inert Gas Welding courses.

Light Sheet Metal Drafting	4.147	0	6	2
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A study of pattern development, basic die development techniques, and steps of fabrication for light sheet metal construction as applied to the electronic-electrical industry. Production design and layout for chassis, raceways, ducts, and metal cabinets are included.

Prerequisites: Sixth Term standing or approval of dept. head.

Logging and Milling	4.282	2	6	4
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A course designed to acquaint the student with the harvesting and transportation of logs. The manufacturing processes and machines in the wood products industry. (IES)

Machine Design	4.603	3	2	4
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A course in which the design principles of machine elements are taken up and calculations are made in determining the size and shape of various machine parts. It includes factors which

influence the selection of the materials to be used in designing such elements as beams, bearings, clutches, brakes, shafts, bushings, screws, rivets, gears, belts, and fly-wheels. Attention is given to various types of loading conditions, stresses, deformations, fits, finishes, and other factors which must be considered in the design of machine elements.

Prerequisite: Fourth Term standing or consent of Instructor.

Machine Drafting I 4.221 0 5 2

This is an introductory course in the general area of machine drafting. Lettering, the use of drafting machines and instruments, and line quality will be stressed in this course. Shape description and elements of modern dimensioning will be taught through the application of problems in the areas of orthographic projections, section views, and auxiliary views.

Machine Drafting II 4.222 0 5 2

This is a continuation of Machine Drafting I. Lettering, line quality, and drafting techniques will continue to be stressed. Areas of study will include the application on precision dimensioning, secondary auxiliary views, isometric drawing, and related pictorial drawings.

Prerequisite—Machine Drafting I, 4.221.

Machine Drafting III 4.223 0 5 2

This is a continuation of Machine Drafting II. Lettering, line quality, and drafting techniques will continue to be stressed. Areas of study will include revolutions, assembly and production drawings, and an introduction to engineering graphics.

Prerequisite—Machine Drafting II, 4.222.

Machinery Repair and Reconditioning 4.851 3 6 5

This course is a study and application of theories and methods of machine tool repair. The student will utilize laboratory time for reconditioning and repair practices. Included in the course are such areas as: the hand scraper; spotting tools; levels and leveling; gibs; grooves; frosting techniques; slides and ways; power transmission; construction studies; etc.

Prerequisite: Fifth Term standing or approval of dept. head.

Machine Shop Automation 4.824 2 0 2

A study of theory and practices of automation. Mechanical, numerical card and tape controls will be studied. History, theories, trends and applications of automated machines will be given attention. Field trips will be scheduled to supplement classroom activities.

		Lec.	Lab.	Term Units
Machine Shop Practices	4.841	3	6	5

This course stresses the working conditions of a typical machine shop. Students will be assigned projects that will require the related technical information and shop skills previously acquired. Instruction will include advanced theory application and extended machine operations. Speed and accuracy will be considered of paramount importance.

Machine Shop Practices	4.843	3	6	5
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A continuation of the emphasis on industrial working conditions. Advanced projects requiring the utilization of previously acquired skill and knowledge. Theory classes will be devoted to problem solving and further applications of machine shop theories. Laboratory hours will be spent in machine tool operations with speed and accuracy of prime importance.

Machine Shop Problems	4.820	3	0	3
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An applied mathematics course. Typical machine shop problems are solved with the aid of mathematics. Sections covered include powers and roots of numbers; segments of circles; transportation of various formulæ; practical trigonometry; geometrical figures; practical application of logarithms; figuring tapers; tolerances and allowances; and gearing problems.

Machine Shop Project Drafting	4.823	0	4	2
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This course combines machine shop knowledge with drafting procedures. Students will design selected projects for fabrication in the shop. The development of working drawings and the use of these drawings in manufacturing industries are studied. The development of perspective views and isometric projection is also included.

Machine Tool Operations	4.801	2	3	3
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A basic machine shop course for technicians. Class time is devoted to theories of: measuring tools and measurement; cutting speeds and feeds of various materials; bench tools and use; function and design of machine tools; decimal equivalents, etc. Laboratory time is provided to acquaint the student with basic operations such as: straight turning; shoulder turning; facing and shoulder facing; boring; reaming; shaping; flat surfaces; drill press work and milling machine fundamentals.

Machine Tool Processes	4.802	2	3	3
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A basic machine tool operations course. Introducing the student to the principles involved in the operation of the basic machine tools, engine lathe, shaper, drill press, grinder, and milling machine.

		Lec.	Lab.	Term Units
Machine Tool Operations	4.803	2	3	3

A continuation of the Machine Operation series. Class hours are spent on subjects such as: cutting tools and use; thread forms; tapers, grinding wheel structure; simple indexing, etc. Laboratory time will be devoted to operations on lathe, shaper, milling machine, drill press and grinder. The operations included will be threading; taper turning, serrating and slotting; slab and face milling, spot facing, counterboring and offhand grinding.

Machine Tool Processes	4.804	2	3	3
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A continuation of the basic course Machine Tool Operations 4.802 involving typical setup and machining operations.

Prerequisite: Machine Tool Operations 4.802.

Machine Tool Operations	4.805	2	3	3
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The course will cover such subjects as compound indexing, machine grinding (surface and cylindrical) gears and gearing; multi lead screws; fits; splines and splining, etc. Shop practices include advanced machine tool operations such as: surface grinding, cylindrical grinding; jig boring; angular and contour milling; advanced shaper work and other areas.

Manufacturing Processes	6.606	2	3	3
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This course is designed to provide a background of knowledge covering the various manufacturing materials and fundamental types of manufacturing methods as employed in cold working processes. Through lecture, demonstrations and practical applications, the student is given opportunity to become familiar with the various types of machine tools, tooling, measuring, and inspection procedures. Automation is introduced and information is presented to acquaint the student with modern practice of numerical control for machine tools.

Manufacturing Process	6.608	2	3	3
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This course is designed to provide a background of knowledge covering the various manufacturing materials and fundamental types of manufacturing methods as employed in hot working processes. Through lecture, demonstration, and practical applications, the student becomes familiar with various types of welding processes and their applications. Certain special machine operations such as ultrasonic electrical discharge, electro-arc, and chemical milling are studied.

Prerequisite: Manufacturing Processes 6.606 or approval of dept. head.

Manufacturing Processes	6.610	2	3	3
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This course is designed to provide a background of knowl-

edge covering the various casting and foundry practices. Through lectures, demonstration and discussion the student becomes familiar with the production of simple molds, cores and castings and in basic heat treatment, inspection and testing using both destructive and non-destructive methods.

Mapping and Computing 6.131 0 4 2

Advanced map plotting, earthwork computation, field surveying from maps; legal description; subdivision planning and simulated problems of construction are used.

Prerequisite: Fourth Term standing or approval of dept. head.

Mapping and Computing 6.133 1 3 2

A study of surveying laws, public land survey procedures, professional surveyor practices, earth work computations and map projections. The student will lay out a highway section, prepare a zone, change map, retrace a government survey, compute earth quantities from a topographic map. Students will perform related operations such as verification of ownership and conformance with zoning laws or similar projects.

Prerequisite: Mapping and Computing 6.131 or equivalent.

Mapping and Computing I 6.350 1 5 3

This course is designed to introduce the student to the basic principles of map layout and methods of platting. The material is presented in such a manner so as to lead the student to a more complete understanding of the techniques of map drafting.

Mapping and Computing II 6.351 1 5 3

This course is designed to advance the student into more difficult problems in mapping and subdivision design with consideration given to Federal, State, and local laws and codes governing the surveyor and the division of lands, public and private. The student will be trained in the theories used to determine true meridian and time for accurate location of points on the earth's surface.

Mapping and Computing III 6.352 1 5 3

This course is designed to acquaint the student with the methods and instruments involved in topographic mapping and surveying with emphasis on a higher degree of accuracy and mapping problems. The material is presented in such a manner so as to lead the student to a complete understanding of topographic mapping and survey.

Mapping and Platting 4.131 1 7 3

Principles of map platting using field survey data. Office

procedure: basic earthwork computation, legal description, and subdivision planning. Simulated problems are used for application of principles.

Prerequisite: Fourth Term standing or approval of dept. head

Materials of Construction 6.108 2 0 2

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.

Prerequisite: Approval of dept. head.

Mechanical Drafting 4.109 0 4 2

An advanced course emphasizing mechanical design. It includes sketching, cam and gear layout, isometric drawings, welding drawings, tolerances and allowances, and tool jig drawings. Simplified drawing techniques will be covered and general shop procedures will be discussed. Emphasis will be placed on the industrial requirements of drawings.

Prerequisite: Third Term standing or approval of dept. head.

Mechanical Systems 4.171 3 3 4

A course designed to familiarize the students with the transfer of power methods, used by industry and industrial products, with relation to the basic laws of physics. Particular emphasis is placed on the general types of mechanical equipment used, the purpose of the components and the maintenance requirements of the equipment.

Prerequisites: Practical Physics I, Mathematics III concurrently, or approval of department head.

Mechanisms 6.612 3 3 4

A course dealing with the analysis of the motion characteristics of mechanism of existing design and the applications of this study in the design of a mechanism to provide desired motion characteristics. In the motion study, absolute and relative velocities, accelerations and the use of instant centers are discussed. Centroids are studied as they apply to mechanism. The use of belts and linkages are illustrated by problems. Cam layout is taken up in detail and appropriate problems are solved.

Prerequisites: Tech Math 6.266, Physics 6.370 or approval of department head.

Mechanisms 6.613 3 3 4

Second in a series of two courses dealing with basic mechanisms. This course deals with an analysis of the characteristics

of gearing. The design and application of various gearing employed in modern industry are included. Practical problems are used in the study of gearing. Attention is also given to such mechanics as ratchets, pantographs, valves, clutches and universal joints.

Prerequisite: Mechanisms 6.612.

Medical Assisting, Advanced Procedures

5.606 2 16 4

This course is a continuation of medical assisting and includes emergency care in a medical office or clinic and a laboratory orientation. It will provide the basic theoretical knowledge of the most frequently used laboratory, physiotherapy and x-ray procedures, with emphasis on proper preparation of the patient and properly collected or prepared specimens. Knowledge of the purpose and technique of a procedure is necessary for proper preparation and after care of the patient. This also will include clinical experience working with the physician in all areas of clinical assisting in the medical office.

Medical Assisting, Basic Procedures 5.602 2 6 4

This course is designed to provide basic training in the various types of technical work performed by medical office, clinic, and hospital personnel, including receptionist duties and assisting the physician with examinations and treatments. Emphasis will be placed on proper psychological and physical preparation of the patient for the physician's examination and the accurate determination of such data as temperature and pulse rate. It will include laboratory work in techniques of sterilization, tray set-ups, use of instruments, care and maintenance of equipment.

Medical Office Management 5.607 3 0 3

This course is designed to prepare the medical assistant to handle finances and records with accuracy and efficiency and to provide an understanding of accounting, credits, and collections that will facilitate working with accountants, auditors, and collection agencies in maintenance of good records. It will include a study of typical recording activities and systems in medical offices.

Medical Office Procedures 5.604 2 6 4

This course consists of instruction in techniques of telephoning, receiving patients, appointment making, filing, medical insurance forms, medical office transcriptions, and correspondence.

Medical Science 5.605 2 0 2

This course is designed to acquaint the student with various

medical diseases, surgical and orthopedic conditions. Also it will include an overall study of specialists—diplomates, allergists, gynecologists, obstetricians, neurologists, psychiatrists, ophthalmologists, and others, and practice in assisting the specialists.

Metallic Inert Gas Welding 4.248 1 3 2

A course designed to develop a basic familiarity and basic skills in semi-automatic welding. A study of the principles involved in the equipment, materials, and procedures will be combined with demonstrations and supervised practice using standard industrial equipment. Solid and flux cored electrode wires will be used in typical industrial applications.

Metallurgy 6.602 2 2 3

This course covers principles relating to ferrous metals; their formation and production; properties of metals; uses of metals; hardening and temperings and hardness testing. Laboratory time is provided for demonstrations and experiments to aid classroom studies.

Metallurgy 6.604 2 2 3

A continuation of Metallurgy I with introduction of non-ferrous metals. Formation, uses, production, heat treating and hardness testing. Laboratory time is provided for demonstrations and experiments to aid class room studies.

Prerequisite: Metallurgy 6.602.

Metal Fabrication and Finishing 4.174 2 4 3

A course designed to develop the concept of the production sequence of a completed part or machine from the fabrication and assembly processes to and including heat treating and final finishing. The student will perform the procedure step by step in proper sequence, utilizing knowledges acquired in previous courses.

Prerequisites: Drafting, Machine Tool Practices, Welding Practices, Industrial Materials and Processes.

Metals Application Treatment and Testing 4.106 2 3 3

A survey course in metallurgy covering the common materials of fabrication, metals coding systems, characteristics, methods of refining and alloying, and methods of treating. The goal of the course is to acquaint the student with the various types and the working of metals used by industry.

Microwaves 6.242 2 3 3

A theory and laboratory course designed as an introduction

to microwaves. Covers UHF transmission lines, the application of quarter-wave lines, matching stubs, and standing wave measurements. Transmission of microwave energy through wave guides is analyzed and the TE and TM modes of transmission are studied. Various types of waveguide plumbing including choke joints, directional couplers, flap-attenuators, guide partitions, and flexible waveguides are studied.

Prerequisite: Sixth Term standing or approval of dept. head.

Milling Machine Practices	4.835	2	4	3
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A course in fundamental milling machine work, studies of construction, types, attachments, and operation of milling machines. Laboratory time is provided for demonstrations and for individual student operation of equipment.

Network Analysis	6.230	2	0	2
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A course to build up a foundation in the techniques and concepts for mastering problems in analysis for design and maintenance of electronic equipment.

Nutrition for Health Occupations	5.430	2	0	2
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A study of normal nutrition, emphasizing the major nutrients and their application of daily diets accounting for variations due to factors of age and other normal changes throughout life. It includes principles and practice in food preparation, food service, and family food planning.

Office Machines	2.521	1	3	2
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This course covers the principles and functional applications of office machines used in the mathematical accounting field, such as adding machines, calculators, comptometers, and book-keeping posting machines.

Oscillator Circuits and Design	6.225	2	6	4
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A continuation of vacuum tube and transistor analysis. Involves the study of single-phase rectifier circuits and filters with calculation of the ripple-factor. Introduces the fundamental feedback equation and covers positive and negative feedback. Various types of feedback oscillators including the Hartley and the Colpitts are analyzed. Covers negative-resistance oscillators, miscellaneous sine-wave oscillators, non-sinusoidal oscillators, including various multivibrator circuits. The principles of AM and FM modulation and detection are studied and the theory and application of the cathoderay oscilloscope is included.

Prerequisites: Vacuum Tube and Transistor Analysis 6.223 and Technical Math. 6.261.

		Lec.	Lab.	Term Units
Oxyacetylene Welding I	4.161	1	3	2

A course in fundamentals on oxyacetylene welding, introducing brazing and cutting processes.

Prerequisite: Welding 4.150.

Photo Interpretation and Mapping	4.112	3	4	4
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Principles of preparing maps and charts from aerial photographs by ground surveying and stereoscopic methods using standard computational forms.

Prerequisite: Sixth Term standing or approval of dept. head.

Physical Science of Fire	5.103	3	2	4
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Characteristics and behavior of fire; fundamentals of physical laws and chemical reactions occurring in fire and fire suppression; analysis of factors contributing to fire—its cause, rate of burning, heat generation and travel, by-products of combustion and to its confinement, control, and extinguishment.

Pictorial Drafting	4.149	0	3	1
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A concentrated study of the development of pictorial wiring diagrams for instructional, demonstration, or sales purposes. Use of drafting template and instrumental drawings will be emphasized.

Prerequisite: Sixth Term standing or approval of dept. head.

Plane Surveying	6.101	1	6	3
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A beginning course in surveying techniques designed to give the student an understanding of the fundamentals of chaining and leveling, care and adjustment of surveying instruments and office procedures. Provision is made by appropriate field work for practical application of the techniques learned.

Plane Surveying	6.103R	1	6	3
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A continuation of Plane Surveying 6.101 designed to familiarize the student with the engineer's transit and its uses and an introduction to stadia surveying and leveling.

Prerequisites: Plane Surveying 6.101 and Tech Math 6.261 or equivalent.

Power Systems	4.172	3	4	4
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A course designed to familiarize the student with the operation, maintenance and minor repair of 2 cycle and 4 cycle gasoline and diesel engines and to provide for learning the proper procedures in making minor service adjustments and repairs on these units. Through laboratory and classroom experiences

the student will gain knowledge of the theory of operation and will have an opportunity to study the component parts of these engines.

Prerequisite: Practical Physics III concurrently, or approval of department head.

Practical Hydrology 6.535 3 0 3

A study of hydrology including Introduction to Geology, ground waters, stream flow or runoff, variations in runoff or stream discharge, floods and flood flows, and applications of hydrology.

Prerequisite: Fifth term standing or approval of dept. head.

Production Planning and Practices 4.104 3 2 4

This course will introduce elements of production control and planning such as: machine routing, steps of fabrication, efficient shop layout, materials handling, storage problems, and production records.

Prerequisite: Second year standing or approval of dept. head.

Production Practices I 4.283 0 0 8

This experience will depend upon the particular industry involved. Typical production experience on selected types of jobs will be evaluated for credit in the second year.

Production Practices II 4.284 0 0 8

This is a continuation of Production Practices I. This experience will depend upon the particular industry involved. Typical production experience on selected types of jobs will be evaluated for credit in the second year.

Production Practices III 4.285 0 0 8

This is a continuation of Production Practices II. This experience will depend upon the particular industry involved. Typical production experience on selected types of jobs will be evaluated for credit in the second year.

Project Drafting 4.119 1 9 4

This course emphasized working conditions of the industrial drafting room. Students will be assigned projects that will include one or more drawings requiring all of the skills previously acquired. Instruction will include the methods for detail layout, reading specifications, common materials of fabrication, checking and back checking drawings, and material takeoffs. Discussion will cover the administration of the drafting room, issuing draw-

ings and revisions. Speed and accuracy will be considered of paramount importance.

Prerequisite: Drafting 4.105 which may be taken concurrently.

Project Drafting 4.121 0 8 3

A continuation of the emphasis on industrial working conditions. Students will be assigned projects (requiring use of all previously learned skills and principles) that will familiarize them with many of the specialized fields of drafting. Instruction will include the basic methods for layout and detailing assemblies and sub-assemblies, reading specifications, common materials of fabrication, checking and back checking drawings, and materials takeoffs. Drafting room standards of various industries will be discussed. Speed and accuracy will be considered of paramount importance.

Prerequisite: Project Drafting 4.119 or equivalent.

Project Drafting 4.145 1 9 4

A project drafting course emphasizing actual working conditions and drawing requirements. Diversified drawing project assignments will require the application of all previously acquired skills. Instruction will include speed dimensioning (co-ordinate dimensioning) use of drawing index, drafting room administration, co-ordination of specifications and design, checking and back-checking methods, revisions, material take-offs, and different methods representing circuits and circuit components.

Prerequisite: Sixth Term standing or approval of dept. head.

Properties of Materials 6.341 1 3 2

A course designed to acquaint the student with the physical and mechanical properties of common engineering materials. Using a variety of testing methods, gathering and compiling data.

Property Surveying 6.511 1 3 2

An introduction to property surveying including description, study of rights, property transfer, location of metes and bounds, locating subdivisions and conveyances lacking senior rights; claims, sectionalized land, deeds, and duties of the surveyors are also covered. Laboratory work includes use of public records to trace titles, surveys and preparation of descriptions.

Prerequisite: Second Term standing or approval of dept. head.

Pump Operation and Practical Hydraulics 5.105 2 2 3

Principles of fire apparatus pumping operations; fire ground water supply; construction and operation of fire service pumps

and accessories; pump operation under emergency conditions; rule of thumb hydraulics.

		Term		
		Lec.	Lab.	Units
Radio Law	6.252	2	0	2

The principles of rules and regulations necessary to receive a Radio-Telephone 1st or 2nd Class License.

Radio Principles	4.262	2	0	2
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A study of the circuits and components which go to make up a radio. The principles of how and why they operate with studies of individual circuit problems in both vacuum tube and transistor radios.

Radio Principles Lab.	4.263	0	6	2
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A laboratory course covering the principles covered in the Radio Principles classes. The student will build up bread board models of the circuits for analysis and components will be changed to show the effects of these changes.

Radio Servicing	4.264	2	0	2
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The study of overall radio circuits and the problems of these circuits. Service techniques, procedures and case histories are studied. The radios are broken into basic types for study and each type analyzed as to their own peculiar characteristics.

Radio Servicing Lab.	4.265	0	6	2
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An application of the materials covered in the Radio Servicing theory class. Some circuits are bread boarded for analysis and the rest of the time is spent on actual receivers doing voltage measurements, resistance measurements, circuit tracing, alignment and general circuit analysis. Trouble is installed in the radios to simulate actual field conditions.

Radio Transmitters	6.250	3	3	4
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A practical analysis of transmitter operation and transmitter circuitry, accompanied by a laboratory session where practical application of theory and trouble shooting techniques are applied.

Records and Reports	2.517	1	3	2
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This is a specialized treatment of records and has as its purpose developing the students' ability to prepare the many kinds of management data needed to guide a business operation other than the financial data furnished by the bookkeeping system. Reports, legal records, insurance records, personnel records, equipment records, sales and production records, visual reports, and assembly of data receive emphasis.

		Lec.	Lab.	Term Units
Rescue Practices	5.114	0	6	2
Use of rescue tools; common rescue carries; search and rescue procedures; handling nets and lines; care of victim, excavation emergencies; evacuations, electrical.				
Roads and Highway Drafting	4.129	1	6	3
Advanced course in drafting including profiles, grades, beds, routes, cross-sections and details of bridge constructions, and hard-and-dirt-surfaced roads. Emphasis is placed on drafting requirements for roads built by government agencies and private companies.				
Prerequisite: Fourth Term standing or approval of dept. head.				
Roentgenology I	5.406	2	0	2
A course teaching the history and discovery of X-ray. Acquainting the student with the X-ray equipment. Stressing safety and protective measures.				
Roentgenology II	5.408	0	4	2
This course consists of practice in placement of film, cone angulation, machine manipulation, and film processing to develop proficiency in taking X-rays.				
Route Surveying I	6.507	1	6	3
This course is designed to acquaint the student with modes of transportation and the individual problems involved. The material is presented in such a manner so the student will become familiar with the methods and requirements of the various types of transportation.				
Scales and Graphs	4.139	0	6	2
An advanced course covering the techniques of design and layout of meter scales and graphs. Instruction includes methods of calculating the layouts for square root, logarithmic, semi-logarithmic, meter scales, etc. Layout and drawing techniques for co-ordinate, logarithmic, and polar graphs are also covered. Skills in inking procedures, use of the French curves and adjustable splines will be developed.				
Prerequisite: Fourth Term standing or approval of dept. head.				
Semi-Conductors	6.234	2	0	2
This course covers the physical principles underlying the behavior of semi-conductors, transistors, and other solid state devices, as well as their application to various electronic circuits. The physics pertinent to transistors and semi-conductors is discussed as are their characteristics and the ways in which they				

operate. The use of transistors in various amplifiers, oscillators, and switching circuits is covered with emphasis on developing concepts and knowledge basic to transistor and semi-conductor theory and practice.

Prerequisite: Approval of dept. head.

Servo Systems	6.236	1	3	2
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Presents the principles of servo and data transmission systems with emphasis on fundamentals. Covers control systems and servo-mechanisms, elementary forms of control systems, servo systems, synchros, servo elements, electronic and magnetic amplifiers, direct current servomotors, performance improvers method for servos and measurement, and examples of servos and servo systems.

Prerequisite: Industrial Electronics 6.218R.

Shaper Practices	4.825	2	3	3
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This is a course devoted to the introduction, care, and function of the metal-working shaper. The various parts and attachments, feeds, speeds, and adjustments, and tooling will be discussed. Laboratory time is provided for supervised operation of the shaper.

Prerequisite: Curriculum entrance requirements.

Sheet Metal Drafting	4.230	0	8	3
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A course in sheet metal drafting procedures, developments, and layouts, using a variety of development methods.

Soil Mechanics	6.124	2	3	3
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A study of index of properties of soil, hydraulic and mechanical properties, soil drainage and plastic equilibrium. Laboratory experiments and projects cover each phase of study.

Prerequisite: Second year standing or approval of dept. head.

Soil Mechanics	6.526	3	0	3
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Soil exploration, earth pressure and stability of slopes, foundations and causes of settlement are covered with the use of demonstrations and other training aids wherever practical.

Prerequisite: Sixth Term standing or approval of dept. head.

Strength of Materials	6.105	2	3	3
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A study of the stresses and strains that occur in bodies when subjected to tensile, compressive and shearing forces, including the common theory of beams. The distribution and magnitude of stresses are examined in welded and riveted joints, thin wall

cylinders, torsional members and beams. Practice problems emphasize the materials studied.

Prerequisites: Applied Mechanics 6.109 and Tech Math 6.266 or equivalent.

Strength of Materials II	6.128	2	3	3
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A study of the design and deflection of beams and a study of the combination of forces and their effects upon various structural members. This course includes a study of failure of structural connection and laboratory tests of materials.

Prerequisites: Strength of Materials 6.105 or equivalent.

Structural Analysis and Design	6.130	1	3	2
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The course deals with the determination of stresses induced by loads on structures of wood, steel, concrete, selections of appropriate structural members and suitable connections; loading conditions causing compression, tension, shear, torsion, and bending; practical design procedures, relating to various structural members, beams, girders, columns and footings.

Prerequisites: Applied Mechanics 6.109; Strength of Materials 6.105.

Structural Drafting	4.111	0	4	2
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An advanced course emphasizing civil and structural drafting procedures. It includes the function and design of: the general plan, stress diagrams, shop drawings, foundation or masonry plans, erection diagrams, falsework plans, and sheet metal layout. Also, bill of materials, rivet lists, drawing indexes, design considerations, and strength of joints will be covered. The student will become acquainted with structural shapes: bridges, dam, and earthwork constructions.

Prerequisite: Sixth Term standing or approval of dept. head.

Surveying Computations	6.500	1	6	3
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A study of trigonometric and geometric formulas, logarithms, mechanical computers and integrating instruments, area computations, traverse calculations, leveling, plotting surveys. Field trips and problems will be used as needed.

Prerequisite: Third Term standing or approval of dept. head.

Technical Illustrations	4.127	0	4	2
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This course will introduce the techniques required for modern technical illustrations and drawings such as those found in catalogues, published presentations or exploded drawings. Both free-hand drawing and template drawing will be covered. Balance,

surface rendering, kinds of drawing implements, pencils, brush and techniques of light and shadow will be discussed.

Prerequisite: Second year standing or approval of dept. head.

Technical Illustrations I	4.228	0	8	3
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This course will cover the various methods of pictorial drawing. Exploded view drawings will be stressed and pencil and ink shading will be used. Both free-hand and template drawing will be covered.

Prerequisite: Second year standing.

Technical Illustrations II	4.229	0	8	3
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This course is a continuation of Technical Illustrations I. The illustration of more complex equipment along with color rendering will be covered in this course. The use of colored pencil, pastel and air brush will be applied to a variety of illustrations.

Prerequisite: Technical Illustrations I, 4.228.

Television Principles	4.266	3	0	3
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An introduction to the principles of television theory and circuits. A study of underlying principles of television transmission, the makeup of the television signal, and the receiver circuits. Each receiver circuit is individually analyzed as to the principle of operation and possible trouble causes.

Television Principles Lab.	4.267	0	8	3
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A laboratory course applying the principles of the Television Principles theory class. Receiver circuits are traced and analyzed. Trouble shooting procedures are practiced, time is spent on reading and interpreting schematics. Closed circuit TV will be used to demonstrate signal origination.

Television Servicing	4.268	3	0	3
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A study of the overall television receiver and the problems of the television receiver circuits. Service techniques, service procedure and case histories are studied. The theory of color TV and its allied circuits and the adjustment of the color receivers are studied.

Television Servicing Lab.	4.269	0	8	3
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Circuits of the television receivers are analyzed, both within the receivers and with the use of bread boards. Some of the bread board models will be substituted within the receiver for the like section of the receiver. Voltage readings, oscilloscope

patterns, resistance readings and other testing procedures are used and results analyzed. Troubles are installed in TV receivers and practice gained in analyzing, determining, and correcting troubles. Black and white sets are given complete audio and video alignment including tuners. Color TV receivers are worked on and the color controls set up.

Timber and Steel Construction	6.125	3	3	4
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A study of steel and wood fasteners and connections, timber beams and columns. Structural members will be analyzed for design features. Field trips will be used to visualize application. Laboratory time will be used for testing.

Prerequisite: Structural Analysis and Design 6.130 or equivalent.

Tool and Fixture Design & Application 4.847		2	4	3
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An overview of design and machining of tool fixtures and jigs. Applications of drill jigs, special work holding devices, indexing work holders, templates for form turning and other applications. Class time is devoted to design and theory of design with laboratory time spent on the fabrication and machining of special fixtures for production runs.

Topographical Surveying	6.517	1	6	3
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A course in preparation of topographical maps including filling in detail and plotting and finishing maps. Topographical surveying problems are included. Laboratory work includes making surveys and preparation of maps from notes gathered.

Prerequisite: Fourth Term standing or approval of dept. head.

Traffic Engineering	6.553	3	0	3
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A study of traffic engineering and controls. Such topics as traffic characteristics, controls, illumination, regulation, design, surveys, route analysis, and planning are covered.

Prerequisite: Sixth Term standing or approval of dept. head.

Transistors and Circuits Theory	4.259	3	6	5
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This course is to consist of: Electron theory, operation of the transistor, transistor characteristics, amplifiers, oscillators, radio and television circuits, new developments of transistors and servicing of transistor circuits. The laboratory section of this course is used to apply the theories and materials covered in the theory section of the course.

Tungsten Inert Gas Welding	4.247	1	3	2
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A course designed to develop a familiarity and basic skills

in "heliarc" welding, covering the equipment, materials, and principles involved in their use. Demonstration and supervised practice on typical fabrication and repair situations occurring in industry will be included, using standard industrial equipment and materials.

Typing I	2.501	2	4	3
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This is a course in fundamentals of typewriting for developing command of keyboard. Emphasis will be placed on accuracy, placement of typed material, and development of speed on straight copy, numbers, and office forms.

Typing	2.633	1	4	3
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This is a beginning course in typing for those with no previous typing instruction. It covers the parts and construction of the more common makes of typewriters, learning of the keyboard, the basic techniques of the touch system. The student should develop rhythm in his movements and attain a typing speed of 20 to 30 words per minute. Provision will be made for those students having previous typing training to build up their speed and accuracy as well as review composition arrangement.

Typing	2.634	1	3	2
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This is a continuation of Typing 2.633 with emphasis on increasing speed and accuracy. The student will also receive training in the various business papers encountered in a business office.

Use of Instruments I	4.260	2	0	2
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The study of various instruments used in the servicing of radio, hifi, television and other equipment. The principles and the usage of the instruments are studied as they apply to the field of servicing. Both regular and short cut methods of usage will be discussed and demonstrated. The materials of the course will closely follow the needs of the servicing courses and applications may be made in the service labs.

Use of Instruments II	4.261	2	0	2
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A continuation of the Use of Instruments with more advanced instruments and methods.

Vacuum Tubes and Circuits Lab.	4.258	0	6	2
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This course consists of: The principles of construction of the vacuum tube, identification of tube elements, working with the theories taught in the theory classes, also basic trouble shooting procedures. The bread board building of the amplifiers, power supplies and oscillator circuits studied in the theory classes.

		Lec.	Lab.	Term Units
Vacuum Tubes and Circuits Theory	4.257	5	0	5

The theory of vacuum tubes and their applications to circuits. A study of the principles of operation of the various types of vacuum tubes, their symbols, and usage. The use of tube characteristics in practical work and the construction and use of load line. The study of basic amplifiers, power supplies, and oscillator circuits. The math necessary for this course will be taught as part of the course.

Vacuum Tube and Transistor Analysis	6.223	3	3	4
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An introductory course to the analysis of the electrical characteristics of vacuum tubes and transistors. Includes a review of electron physics with emphasis on electron emission and fundamental transistor theory. Covers two element electron devices including hot and cold-cathode vacuum and gas diodes and semiconductor diodes; three element vacuum tubes and transistors; multi-grid tubes including tetrodes, pentodes, and beam-power tubes; special transistors and diodes. Includes a review of auxiliary electronic components including potentiometers, transformers, and relays, and a review of several electronic circuits involving series and parallel resonance, bandwidth and coupled-circuit theory. Also covers elementary filter design, harmonic analysis, network theorems, and four-terminal networks.

Prerequisite: Third Term standing or approval of dept. head.

Water Distribution Systems	5.107	3	0	3
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Main systems: hydrants—size, gridding, distribution; residential and commercial districts; fire flow requirements; pumping stations; high pressure systems; storage tanks and cisterns; mobile supplies.

Wave Generation and Shaping	6.234R	2	3	3
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A class and laboratory course designed as an introduction to pulse techniques. Begins with an introduction to pulses, giving their historical development, typical applications, nomenclature, importance of pulse shapes, and responses of frequency-selective circuits to pulses. Includes the theory and operation of limiter and clipper circuits, differentiating and integrating circuits, and D-C restoration. Various multivibrator circuits, synchronization circuits, and applications of multivibrators are studied. Also covers blocking oscillators of several types, their principle of operation, and application.

Prerequisite: Fourth Term standing or approval of dept. head.

Welding	4.150	1	3	2
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This course may be taken in two terms of 1 class and 3 laboratory hours per week as Welding 4.150 (2 Term Units) and

Welding 4.151 (2 Term Units). Set-up and operation of oxy-acetylene and electric arc welding equipment. Demonstrations and practice in welding, brazing, and soldering ferrous and non-ferrous metals and their alloys. Various types of welds are made and tested. Technical information is correlated with actual practice to provide the student with an understanding of the composition of the various metals and methods of fabrication used in construction, maintenance, and repair industries.

Welding **4.151** **1** **3** **2**

This course may be taken in two terms of 1 class and 3 laboratory hours per week as Welding 4.150 (2 Term Units) and Welding 4.151 (2 Term Units). Set-up and operation of oxy-acetylene and electric arc welding equipment. Demonstrations and practice in welding, brazing, and soldering ferrous and non-ferrous metals and their alloys. Various types of welds are made and tested. Technical information is correlated with actual practice to provide the student with an understanding of the composition of the various metals and methods of fabrication used in construction, maintenance, and repair industries.

Welding for Certification **4.166** **2** **6** **4**

This course is designed to turn out certified welders. Extensive practice on simulated tests required for certification in pipe welding is followed by the test and certification by the state if the student qualifies. A study of welding procedures, previously covered, as they apply to heavy gauge welding will be included.

Prerequisites: Third term standing and successful completion of basic and intermediate welding courses. Certification test fee must be paid at registration.

Welding for Production and Economy **4.165** **2** **2** **3**

A study and practice of production welding methods, electrode consumption, method selection. Adaption of jigs and fixtures to the weld process.

Prerequisites: Sixth Term standing and completion of basic and advanced welding courses.

Wood Anatomy and Structure **6.280** **2** **3** **3**

This course presents a review of the physical features of wood, the taxonomy, and the methods used to identify the common Northwest woods.

Wood Industry Economics **4.286** **3** **0** **3**

A course designed to acquaint the student with the position

of the wood industry in the economic structure; factors involved and production costs, marketing and sales.

Wood Physics	6.281	3	3	4
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This course supplies knowledge of the principles of general mechanics, stresses, tests, theory of flexure moisture and strength. The mechanical properties of wood.

Prerequisite: Physics 4.300 Math Analysis.

Wood Preservation and Pre-Finishing	6.282	2	3	3
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This course is designed to acquaint the student with the problems and control of wood-destroying agencies; the kinds of preservatives and their application; the methods of prefinishing forest products.

Practical Nursing Courses

Clinical Rotations

This time is spent in the affiliated hospitals and institutions for the purpose of developing skills in regard to maternal and child health, medical and surgical nursing, and psychiatric nursing. Affiliated hospitals and institutions are Salem Memorial Hospital, Salem General Hospital, Oregon State Tuberculosis Hospital, Oregon State Hospital, and Marion County Health Dept.

Normal Health Growth and Development	7	0	7
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A course to familiarize the student with the growth and development, structure and function of the human body; the classification, requirements, and preparation of food both for healthy and ill persons; specific nursing care for the "Senior Citizens"; and the role and function of the LPN (Licensed Practical Nurse) in the rehabilitation of the patient.

Nursing Care in Conditions of Illness	8	1	9
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A unit of study to assist the student to acquire knowledge and understanding of the basic principles associated with the nursing care of the patient with common medical and surgical conditions; the mother during normal and abnormal phases of pregnancy; labor and delivery as well as care of the newborn; and child care in relation to prevention of illness and special conditions of children; and the person with psychiatric conditions as seen in the community general or mental hospital.

	Lec.	Lab.	Term Units
Nursing Skills	9	2	11

A study of the basic and advanced nursing procedures and skills necessary for the LPN to perform good, individual nursing care of the patient in the home, hospital or emergency situation. This course will include time spent on disaster nursing, first aid, fundamentals of nursing, advanced nursing procedures and simple medications.

Personal and Vocational Relationships	10	0	10
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This is a combination of both nursing and vocational courses designed to orient the student to the role of the student practical nurse and LPN with special emphasis on appearance, attitude, communications, legal aspects of nursing, mental hygiene, professional organizations and literature.

Forester Aide Courses

	Lec.	Lab.	Term Units
Forest Operations	3.612	2	4 3

A course to familiarize the student with the various forest operations and the products derived from forest lands. The course includes field trips to logging operations and local forest products industries.

Forest Mensuration	6.300	3	4 4
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This course is devoted to measuring the individual forest products and the standing tree in the forest. The student studies the various methods of timber cruising and puts this knowledge to work in actual field practice.

General Forestry I	3.600	2	0 2
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This course presents an orientation and over-all picture of forestry in the United States. It includes how forests and man are interdependent; the role of forests in the building of our country; the distribution and character of our forests; what a forest and forestry are; silvicultural systems; reforestation and the history of forest protection as related to fire, insects, animals and disease.

General Forestry II	3.601	2	0 2
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A continuation of General Forestry I covering an introduction to forest mensuration; forest harvesting; conversion of raw material to forest products; beneficial effects of our forest; public policy in U.S. Forestry; the practice of forestry by federal govern-

ment and its agencies, by the states and communities, and by private landowners.

General Forestry III	3.602	2	5	3
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A study of basic forestry procedures associated with fire protection, log scaling, surveying and mapping. Fire protection includes presuppression, detection and suppression activities and problem solution. Log scaling includes scaling practices and actual field scaling. Surveying and mapping includes control for photomapping and average computations of forest types and other land areas designations.

Tools and Equipment I	3.605	1	2	2
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This course covers principles relating to the proper use of hand tools and power tools; sharpening edged tools; first aid and safety in the woods. Hand tools studied will include hammers, saws, files, planes, brace and bit, square, wrenches, axes, pulaskis, hazel hoes, shovels, and pack pumps. Power tools include drills, chain saws, portable fire pumps and brush cutting "disk-type" saws.

Tools and Equipment II	3.606	1	2	2
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This course is a continuation of Tools and Equipment I. The principles of felling, bucking and limbing with the power saw are covered and put into actual field practice. The types of recreation structures, materials used in their construction, and their location are studied. Various structures are constructed including picnic tables, fireplace forms and foot bridges.

Tree Identification I	3.610	1	2	2
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This course presents a review of basic botany necessary for tree identification including taxonomy, flower and plant parts with emphasis on fruit, bark and twig characteristics. This first course deals with the common commercial coniferous species of the Pacific Northwest with emphasis on those species native to Oregon.

Tree Identification II	3.611	1	2	2
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This is a continuation of Tree Identification I with emphasis on the native hardwoods of Oregon. The common forest shrubs are included in this course.

Structural Drawing and Specifications	4.120	0	4	2
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This course emphasizes structural drawing techniques. Development of simple structures, bridges, foundations, etc. Development of bills of materials and an understanding of simple specifications pertaining to such structures.

Clerk-Stenographer Courses

		Hours Class	Lab.	Term Units
Applied English Principles	2.601	3		1.5

This course is intended to follow English Fundamentals and will include continuation of the review of grammar, study of vocabulary building, spelling, and punctuation. Business Writing will be stressed.

Business Correspondence	2.602	3		1.5
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This term will cover a review of grammar and punctuation. Vocabulary building and spelling will receive emphasis. The majority of the emphasis of the course, however, will be on the writing of various types of business correspondence.

English Fundamentals	2.600	3		1.5
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English Fundamentals is a course aimed at building the student's vocabulary, spelling ability, usage of words, and provides a thorough review of the principles of grammar while applying them in sentences.

Introduction to Bookkeeping	2.616	2	2	1.5
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This course is actually a beginning bookkeeping course to acquaint the student with routine bookkeeping problems that develop in general office work. Emphasis is given on basic bookkeeping principles. Attention is given to statements, accounts, ledgers, journals, banking procedures, and general records.

Office Machines I (Add. Mach.)	2.612	1	2	1
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This course will present instruction in the application of office machines to bookkeeping and other office problems. The general functions of office machines and understanding their application in business and the acquiring of reasonable skills in their use is a major goal.

Office Machines II (Calculators)	2.612	1	2	1
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This is a continuation of Office Machines, Unit I. This unit of work will emphasize the operation of rotary calculators and the printing calculator, and the application of this skill to business problems.

Office Machines III (Dup., Copying)	2.612	1	2	1
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Attention will be given in this third unit of Office Machines to various types of duplicating and copying machines. Practice will be provided in planning the layouts and cutting stencils and masters for use in duplicating. The use of photographic and electronic copying machines will be studied.

Term
Lec. Lab. Units

Office Procedures I (Bus. Rel.) **2.609** **2** **2** **1.5**

This first course in office procedures is designed to introduce the student to different types of office job opportunities; to outline for her what is expected as to appearance, conduct, office relationships, etc.; to introduce her to simple office tools and their uses; and to introduce her to the duties of a receptionist and the care of a petty cash drawer.

Office Procedures II (Filing) **2.610** **2** **2** **1.5**

This second unit in office procedures will present to the student detailed instruction in filing, through lecture, reading and practical application.

Office Procedures III (Ser. Rep.) **2.611** **2** **2** **1.5**

This is a continuation of Office Procedures I and II. Emphasis will be on duties involved in handling of office supplies, handling of mail and other transmittal services, using telephone and telegraph facilities, using information sources, and preparing office records and reports. A brief study will be made of the various types of business systems. Office relations and job application will also be stressed.

Shorthand Principles Applied and Transcription **2.605** **5** **2** **2**

This course includes advanced vocabulary, phrase building, and word building principles. All of these are based on the basic shorthand principles learned in Shorthand I and II.

Shorthand Theory I and Transcription **2.603** **5** **2** **2**

This is a beginning in Gregg Simplified Shorthand. It is a study of simplified principles which should enable the student to take simple dictation and transcribe it in the early part of the course.

Shorthand Theory II and Transcription **2.604** **5** **2** **2**

This course is a continuation of Shorthand Theory I and Transcription. It deals with special forms, abbreviated forms, punctuation, and compound words, in connection with writing and transcribing exercises.

Typing I **2.606** **1** **4** **2**

This is a beginning course in typing for those with no previous typing instruction or a minimum of typing instruction. It covers the parts and construction of the more common makes of typewriters, learning of the keyboard, the basic techniques of the touch system. The student should develop rhythm in his movements and attain a typing speed of at least 20 words per minute.

		Lec.	Lab.	Term Units
Typing II	2.607	1	4	2

This is a continuation of typing with emphasis on increasing the typing speed to at least 30 words per minute while mastering various forms of business communications.

Typing III	2.608	1	4	2
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A course including corrective and acceleration drills to develop a minimum typing speed of 40 words per minute. The student will receive, in addition, training in the various business papers encountered in a business office.

Industrial Supervisory Program Courses

				Term Units
Basic Psychology for Supervisors	9.502			3

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

Cost Control for Supervisors	9.514			3
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How costs are determined in industry. Cost control and its functions. The supervisor's responsibility for costs. Factors in cost control: costs, materials, waste, salvage, quality control, quantity control, control of time.

Developing the Employees Through Training (Teacher Training)	9.504			3
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The supervisor's responsibility for developing employees through training. Orientation and induction. Vestibule and on-the-job techniques. Job instruction principles. Apprenticeship training. Technical training. Supervisory training and management development. Use of outside agencies. Advisory committees.

Elements of Supervision	9.500			1
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A basic introductory course covering in general terms the total responsibilities of a supervisor in industry such as organization, duties and responsibilities, human relations, grievances, training, rating, promotion, quality-quantity control, management-employee relations, etc.

Human Relations (Developing Supervisory Leadership)	9.506			3
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To show the practical application of basic psychology in

building better employer-employee relationships by studying human relations techniques.

Prerequisite: Basic Psychology for Supervisors.

Industrial Economics 1.506 3

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

Job Analysis for Wage Administration 9.520 3

The history of wages. Inequalities in rates of pay. Management and union movement toward a "fair wage" plan. The supervisor and job descriptions, job specifications, job evaluations, and job classifications. The wage plan laid down by the department of Labor. The Federal Employment Service. Wage administration and the line organization.

Labor-Management Relations 9.508 3

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

Management Controls and the Supervisor 9.524 3

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

**Methods Improvement for Supervisors
(Work Simplification) 9.512 3**

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

Oral Communications for Supervisors 9.503 3

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

Organization and Management 9.518 3

The supervisor's responsibility for planning, organizing, directing, controlling, and coordinating. Acquaints the supervisor

with these basic functions of an organization and his responsibility in carrying them out in accordance with the organization's plan. Establishing lines of authority, functions of departments or units, duties and responsibilities, policies and procedures, rules and regulations, etc.

Reading Improvement for Supervisors 9.507 3

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

Report Writing for Supervisors 9.505 3

Types of reports: statistical, financial, narrative, technical. Steps in preparing the report. Gathering and sorting information. Designing and organizing the report. Parts of the report. Techniques of writing. Format, style, and organization. Illustrating the report. Practice in writing and evaluating reports in the occupational field of the individual enrollees.

Prerequisite: Written Communications for Supervisors or equivalent.

Safety Training and Fire Prevention 9.522 3

Problems of accidents and fire in industry. Management and supervisory responsibility for fire and accident prevention. Accident reports and the supervisor. Good housekeeping and fire prevention. Machine guarding and personnel protective equipment. State Industrial Accident Code and fire regulations. The First Aid department and the line supervisor's responsibility. Job instruction and safety instruction. Company rules and enforcement. Use of safety committees. Your insurance carrier and the Insurance Rating Bureau, Advertising and promoting a good safety and fire prevention program.

Supervisor's Responsibility for Management of Personnel 9.516 3

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

Written Communications for Supervisors 9.501 3

Review of writing mechanics covering grammar, punctuation, sentence structure, and paragraph structure. Business letter-writing involving the principles, planning, and dictating of letters. Memorandum and bulletin writing with emphasis on format, content, structure, tone, and style. Manual writing covering format, content, and structure.

Homemaking Courses

		Total Hours
Active Sportswear	9.912	15
Selection, fitting, and construction of slacks and capris for women and girls.		
Basic Bishop Sewing	9.907	30
A professional approach to the sewing techniques used in construction of a coordinated two-piece cotton dress, fitted wool skirt, and jumper taught by demonstrations.		
Bishop Dressmaking	9.908	30
Basic Bishop Sewing is a prerequisite. Includes additional techniques used in "better" dresses. Correct fitting is stressed.		
Bishop Tailoring	9.909	30
The latest tailoring techniques will be learned as student constructs a suit, shorter or full length coat.		
Changing Roles of Today's Parents	9.918	16
This seminar series is designed to encourage persons to increase their understanding of the changing social and economic forces within our community which are influencing the patterns of living in our family groups. The family developmental cycle concept will be examined and used as a framework for thinking about how we communicate in our families. Different seminars for parents, engaged couples and teachers can be arranged. Exchanging of ideas will be encouraged. There will be field trips to family-serving agencies.		
Dressmaking	9.903	30
There is no prerequisite for this course which includes a variety of techniques used in the construction of different garments, with special problems of fitting.		
Family Mealtime Magic	9.913	30
Meal planning and management with emphasis on wise buying, careful planning, creative meal preparation for greater family satisfactions and enjoyment.		
Fashion and Fabric	9.919	30
Basic Bishop Sewing and Bishop Tailoring are prerequisites for this course which is designed to assist each individual in suitable pattern and style selection. An ensemble will be planned and constructed.		

		Total Hours
Home Maintenance for the Family	9.914	30
<p>Planned to assist the homemaker in saving time and money by simple repair and maintenance of small appliances and equipment. Emphasis on fire hazards and safety measures of the home.</p>		
Homemaking Money Savers	9.920	9
<p>Consideration of family finance with special attention to wise buying, credit and installment purchasing. There will be opportunity for setting up own spending plans.</p>		
Landscaping and Plant Materials for Home Grounds	9.801	30
<p>A study of the more common shrubs and trees used in Northwest gardens, with each student's "home grounds" as an individual project. Field trips and guest lecturers to be included.</p>		
Tailoring	9.904	30
<p>Designed to aid in the development of tailoring techniques as a wool suit or coat is constructed.</p>		
The House—Its Design and Construction	9.921	30
<p>This course is designed for couples and individuals interested in studying how good design of space can be accomplished by conscientious planning for family activities, needs, furnishings, budgets and site.</p>		
Wardrobe Coordination for the Entire Family	9.915	30
<p>Selection of becoming and appropriate lines, colors, and fabrics emphasizing the coordination of the wardrobe for different family members. Complimenting the dress with accessories, including remodeling and designing hats, purses, etc.</p>		
You Can Learn to Sew	9.901	30
<p>Planned for those with little or no experience in sewing. Construction of simple garment, using basic techniques.</p>		

Fireman Training Courses

- Communications** 9.115 20 Hrs.
Effective radio procedures, tone activated and telephone alerting systems, running cards, alarm systems, and communication command centers.
- Fire Apparatus Maintenance** 9.110 20 Hrs.
Inspection, service, maintenance and regular checking procedures necessary to maintaining fire apparatus in a "ready" condition.
- Fire Department Administration** 9.106 30 Hrs.
A course designed for chief administrators of fire departments and for command officers. Topics include: organization, personnel management, alarm and signal systems, insurance ratings and relationship with other departments.
Prerequisite: Approval of local Fire Training Coordinator.
- Fire District Organization** 9.107 30 Hrs.
The scope of authority of directors, election laws, legal framework and court decisions affecting districts, relative merits of contracting and mutual aid organization. This course is designed primarily for directors of rural fire protection districts and small municipalities.
Prerequisite: Approval of Fire Training Coordinator.
- Firefighting "A"** 9.101 30 Hrs.
A beginning course to acquaint the student with fire behavior, the organization of his department, how he should conduct himself in the department and responding to alarms and training to develop skills in the use of small tools, ropes, knots, hose lines and ladders.
- Firefighting "B"** 9.102 30 Hrs.
A continuation of Firefighting 9.101, designed to train the student in the use of portable fire extinguishers, in methods of overhaul and salvage, in the principles of fire control in natural cover crops, in forcible entry tactics and in ventilation and rescue procedures.
Prerequisite: Firefighting 9.101.
- Firefighting "C"** 9.103 30 Hrs.
A continuation of Firefighting 9.102. The study of fire streams, fire apparatus, pre-fire planning, flammable liquids and gasses, structure fire problems and practice evolutions. Emphasis is placed on demonstration, practice and drill.
Prerequisite: Firefighting 9.102.

Firefighting "D" 9.104 30 Hrs.

A continuation of Firefighting 9.103, intended to review for the student fire control tactics, then apply these principles to specific types of buildings and hazards. Included are: air crash and rescue, mills, factories and large structure fires, and motor vehicle fires.

Fire Investigation 9.112 30 Hrs.

A study of the burning characteristics of combustibles, burn patterns leading to the point of origin, incendiary indications and the preservation of evidence. A course for Fire Marshals, Inspectors and Chief Officers.

Fire Pump Construction and Operation 9.108 30 Hrs.

A basic course for instructors and pump operators presenting theory of pumps, water supply, principles of drafting and pumping from hydrant. Actual practice using local department's apparatus included.

Fire Scene Problems 9.113 20 Hrs.

Practical experience in handling actual building fires including the application of size-up, attack, extinguishment, ventilation, rescue, overhaul, salvage and other fire control techniques that may be applicable.

Flammable Liquids and L.P.G. 9.114 20 Hrs.

A comparison of the characteristics—flash point, explosive range, etc.—of the more common petroleum products followed by practice extinguishment or control.

Hydraulics and Water Measurement 9.109 34 Hrs.

A course for instructors, command officers and pump operators presenting fire pump hydraulics and measurement including velocity of flow, friction loss, engine and nozzle pressure, discharge, stream range, drafting water, pumping from hydrant and relaying, service testing and measuring water in mains and supply.

Prerequisite: Pump Construction and Operation 9.108.

Inspection and Codes 9.111 20 Hrs.

A survey of building exit, flammable liquid and other fire prevention codes followed by supervised building inspection field trips. Designed primarily for department inspectors.

Introduction and Orientation 9.100 30 Hrs.

The course is designed for newly formed fire departments. It consists of a familiarization of personnel with the available fire-fighting apparatus and tools. The objective is to give untrained

persons in the briefest time possible the necessary training to respond to fires. Content varies according to needs and equipment of the department.

Officer Training **9.105** **30 Hrs.**

A course for company officers outlining responsibilities to the department and to the men, leadership requirements, discipline, station maintenance, etc.

Peacetime Radiation Hazards **9.116** **20 Hrs.**

A study of the effect of the atomic age on the fire service, the handling of radioactive materials involved in fire, the use of monitoring equipment and personnel safety practices.

Special Hazards **9.117** **20 Hrs.**

A study of electrical, chemical, exotic metal and space age fuel fires.

Salem Technical Vocational Community College
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