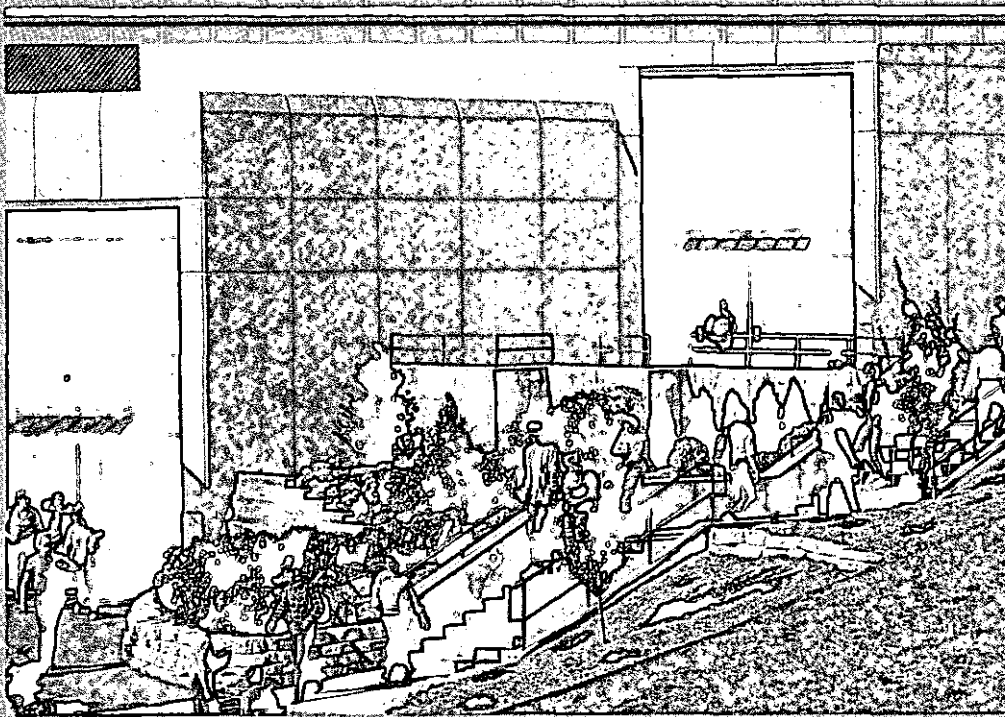


81-89

# EAST CENTRAL COLLEGE



# Course Descriptions

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Four types of courses are available at East Central: transfer, occupational, developmental, and special interest.

Transfer courses provide college degree credits that are transferable to senior colleges and universities.

Occupational courses are career-oriented courses that provide college degree credits which in most cases are not transferable.

Developmental courses are designed to help a student improve basic education skills. These courses do not apply toward the Associate of Arts degree and are usually not transferable. They do, however, apply to most Associate of Applied Science programs.

Special interest courses, offered for personal improvement and community enrichment, are usually non-credit courses and are offered as special needs arise on a space available basis. These courses are not listed in the current catalog.

Each student should check with an adviser or counselor to be sure there is no misunderstanding as to which courses are applicable toward transfer and/or a degree.

The College reserves the privilege of withdrawing any course for which there is not sufficient enrollment.

## **Transfer or University Parallel Courses**

East Central College offers excellent opportunities to students who wish to complete requirements for the first two years of a baccalaureate degree program. The transfer program in liberal arts and professional fields contains courses which parallel the first two years of study at four-year colleges and universities and meets the requirements for the Associate of Arts degree. Descriptions of transfer courses will be found on pages 72 through 98.

## **Occupational Courses**

East Central provides occupational related curricula in many different areas. Since this is a rapidly changing field of education, new curricula are added as the needs of the junior college area change. Descriptions of occupational courses will be found on pages 100 through 134.

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## Agriculture

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### AG 1013 3 hours

#### Animal Science I

A study of the principles of animal production including animal products, anatomy and carcass evaluation, genetics, and reproduction.

*Prerequisite: none*

### AG 1022 2 hours

#### Animal Science II

A continuation of AG 1013 with the addition of topics on nutrition and animal diseases.

*Prerequisite: none*

*Note:* A reciprocity arrangement with the University of Missouri-Columbia allows for six additional hours to be selected from the following list of courses:

### AG 1043 3 hours

#### Farm Management

(See Agriculture, p. 101)

### AG 1013 3 hours

#### Crop Science

(See Agriculture, p. 102)

### AG 2093 3 hours

#### Pasture & Forage Management

(See Agriculture, p. 102)

### BI 2003 3 hours

#### Genetics

(See Biology, p. 75)

### HR 2053 3 hours

#### Soil Science

(See Horticulture, p. 124)

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## Anthropology

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### AN 1003 3 hours

#### Introduction to Cultural Anthropology

An introductory course in cultural anthropology emphasizing the use of the cultural perspective in gaining

understanding in the areas of social structure, political systems, economic systems, religious systems, and human communication.

*Prerequisite: none*

### AN 1103 3 hours

#### Introduction to Physical Anthropology and Archaeology

An introduction to the study of physical anthropology and archaeology, with special emphasis on the connection between cultural and human development, human variability, major concepts in archaeological analysis, and some practical experience in archaeological method.

*Prerequisite: none*

### AN 1203 3 hours

#### General Anthropology

A survey course providing an introduction to the basic concepts of archaeology, cultural anthropology, and physical anthropology.

*Prerequisite: none*

### AN 2701,2,3 1-3 hours

#### Directed Studies (Honors) in Anthropology

Course content and hours arranged by instructor.

*Prerequisite: consent of instructor*

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## Art

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### AR 1003 3 hours

#### Crafts

A course designed to allow the student to explore a number of different craft areas such as: mosaics, basketry, printmaking, etc. Individual projects will be developed in those areas in which the student has special interests. The course is especially well suited to teachers, parents, and other non-art majors who are interested in developing creative hobbies.

*Prerequisite: none*

### AR 1103 3 hours

#### Design I

A study of the basic elements of design, what they are, how they function individually, and how they relate to what is observed by the viewer. The application of elements is stimulated by a wide variety of projects stressing the development of ideas, and technical skills as related to the presentation of two dimensional problems.

*Prerequisite: none*

**AR 1113****3 hours****Design II**

An advanced exploration of the basic elements of design as related to three dimensional problem solving. Emphasis is on development of greater technical (finished art) skills. Problem solving is stimulated by assignments stressing creative ability with a high degree of difficulty.

*Prerequisite:* AR 1103 or consent of instructor

**AR 1203****3 hours****Art Appreciation I**

A general survey of the artistic activities of man from prehistoric to modern times. Slides and 16mm films are used in conjunction with the course.

*Prerequisite:* none

**AR 1213****3 hours****Art Appreciation II**

A survey of art history from 1900 to the present, with some studio applications. Selected art movements and techniques will be discussed.

*Prerequisite:* none

**AR 1223****3 hours****Art Appreciation**

An introduction to art through various media and techniques such as design, drawing, printmaking, color, shading, sculpture, and space relationship. Media used include ink, cray-pas, plaster, and acrylics. This is a survey course and not recommended for art majors. Slides and 16 mm film are used in conjunction with the course.

*Prerequisite:* none

**AR 1303****3 hours****Drawing I**

An introduction to drawing as an approach to space and form through a variety of methods, both traditional and contemporary. Emphasis will be placed upon analytical perception as well as familiarization with and control of drawing material. Introduction to perspective and light and dark shades; some texture and other media will be used for creative drawings.

*Prerequisite:* AR 1103 or consent of instructor

**AR 1313****3 hours****Drawing II**

A course in the drawing of the human figure in charcoal, crayon, ink, and other media. Included are representational, abstract, and non-objective drawings; space and volume relations; movement and direction of planes in space; development of visual units of design and their integration in the whole organization.

*Prerequisite:* AR 1303 or consent of instructor

**AR 1403****3 hours****Painting I**

An introduction to the materials and techniques of oil and acrylic painting, intended to develop technical and expressive abilities. Forms, colors, line, texture, and organization of painting will be studied, plus practical application of framing techniques.

*Prerequisite:* AR 1303, 1313, or consent of instructor

**AR 1413****3 hours****Painting II**

A course in the theory and practice of painting using oil and acrylics. Development of form through color and appropriate emphasis on texture is studied, along with objective appearance conditioned to meet the requirements of a controlled composition and aesthetic concept. While working with a variety of media, the student will be encouraged to emphasize individual expression.

*Prerequisite:* AR 1403

**AR 1503****3 hours****Figure Drawing I**

An introduction to drawing from the human figure, analysis of structure, and proportion of basic forms.

*Prerequisite:* consent of instructor

**AR 1513****3 hours****Figure Drawing II**

A continuation of AR 1503. The course emphasizes the use of various drawing media; and the analysis of the structure of the human figure through anatomy.

*Prerequisite:* AR 1503 or consent of instructor

**AR 1603****3 hours****Lettering & Layout I**

An analysis of alphabets, proportion, spacing and classifications. Emphasis will be placed upon layout procedures, typography, relationships of advertising elements and layout rendering in a variety of media.

*Prerequisite:* consent of instructor

**AR 1613****3 hours****Lettering & Layout II**

A continuation of AR 1603. Emphasis is placed upon the creative design of advertising layouts using drawings, photographs, lettering and type. Typography, lettering, composition and relationship to advertising elements will be covered.

*Prerequisite:* AR 1603 or consent of instructor

**AR 1703****3 hours****Art History I**

A historical study of art, tracing its development from

prehistoric times to the eighteenth century. Emphasis is on the study of the growth and development of art forms and movements, leading to an understanding of the relationship of art to the historical periods.

*Prerequisite:* none

### **AR 1713 3 hours**

#### **Art History II**

An advanced art history course. Students will gain more experience in identification and study of 18th, 19th, and 20th century American and European artists and their works.

*Prerequisite:* none

### **AR 2003 3 hours**

#### **Watercolor I**

A study of watercolor painting with emphasis on color, composition, and pictorial expression with experimentation in varied methods of watercolor painting. Studies will include washes and brush control.

*Prerequisite:* AR 1103 or consent of instructor

### **AR 2013 3 hours**

#### **Watercolor II**

A continuation of the study of watercolor painting with emphasis on color, composition, and pictorial expression with experimentation in varied methods of watercolor painting. Studies will include washes and brush control.

*Prerequisite:* AR 2003 or consent of instructor

### **AR 2023 3 hours**

#### **Art for Children**

A study of the types of art activities related to various groups in the elementary school, including experience with art materials used in the classroom.

*Prerequisite:* none

### **AR 2103 3 hours**

#### **Printmaking I**

An introduction to printmaking. Lecture and laboratory exercises deal with history and techniques of printmaking, including the making of prints from material such as wood blocks, cardboard, and linoleum by using surface printing techniques.

*Prerequisite:* AR 1223 or consent of instructor

### **AR 2113 3 hours**

#### **Printmaking II**

A continuation of AR 2103. Laboratory exercises deal with the techniques of lithography, silkscreen, and dry point as a fine printing medium. Emphasis is on individual exploration with materials.

*Prerequisite:* AR 1223, 2103, or consent of instructor

### **AR 2203**

**3 hours**

#### **Photography I**

A course dealing with the basics and principles of photography, primarily black and white, including the mechanical and visual aspect for beginning photographers. Darkroom skills of black and white film developing and printing are taught.

*Prerequisite:* none

### **AR 2213**

**3 hours**

#### **Photography II**

A course approaching photography primarily from the creative visual aspect. The course is meant to increase the photographer's awareness and sensitivity, and at the same time, refine basic mechanical skills.

*Prerequisite:* AR 2203 or consent of instructor

### **AR 2303**

**3 hours**

#### **Ceramics I**

A course in hand construction, throwing on the potter's wheel, glazing, and decorating processes of ceramics.

*Prerequisite:* none

### **AR 2313**

**3 hours**

#### **Ceramics II**

An advanced study of the principles of ceramics with emphasis on handbuilt techniques. As the student progresses, there will be study on the kick wheel and extensive experimentation with glazes and oxides.

*Prerequisite:* AR 2303 or consent of instructor

### **AR 2403**

**3 hours**

#### **Sculpture I**

An introduction to sculpture through the use of various media: cardboard sculpture, plaster sculpture, and wood or stone sculpture. Some drawing, model making, and research of sculptors and sculpture techniques is required.

*Prerequisite:* none

### **AR 2413**

**3 hours**

#### **Sculpture II**

An examination and analysis of traditional and contemporary sculpture. Sculptural design as related to material and techniques such as clay, wood, stone, plaster, and metal are explored.

*Prerequisite:* AR 2403 or consent of instructor

### **AR 2701,2,3 1-3 hours**

#### **Directed Studies (Honors) in Art**

Directed studies in art provides two alternatives. An exceptional art student may: (1) study or develop independently a specific prearranged topic or project within the field of art, or (2) develop experience in procedures, processes, and actual presentations of gallery displays.

*Prerequisite:* consent of instructor

## Biological Science

### BI 1003 3 hours Nutrition

A study of the essential nutrients and their value in various food groups, their functions in the body, and how to determine the food needs of the individual.

*Prerequisite: none*

### BI 1103 3 hours Ecology of Wildlife and Man

A study of principles of ecology as they apply to such problems as pollution and wildlife, park, urban, and resource management. Historical and political implications will be examined. Methods of coping with problems will be evaluated. Three hours lecture per week.

*Prerequisite: none*

### BI 1112 2 hours Medical Terminology

A course in biomedical terminology. The student learns to pronounce, spell, and interpret the meaning of word parts and how they fit together in modern biomedical terminology. The student studies some 1,500 words and learns the basics for expanding his or her own biomedical vocabulary. Two hours lecture per week.

*Prerequisite: none*

### BI 1202 2 hours Health

A general course designed to develop proper attitudes and practices which will contribute to the fine art of living. Health problems which require community action are given consideration. The course is intended for the elementary education major and those not majoring in biology.

*Prerequisite: none*

### BI 1203 3 hours Introduction to Life Science

A study of fundamental biological concepts, with emphasis on human biology. Topics include: the cell, the chemistry of life, the structure and function of human organ systems, genetics, ecology, and a survey of the diversity and classification of living organisms. This course is designed to meet the science requirement for occupational students. Not open to students in the transfer division except by written consent of the Dean of Instruction.

*Prerequisite: none*

### BI 1303 (lec), 1312 (lab) 5 hours General Biology

An introductory course involving fundamental biological principles of both plant and animal life. This course is designed to be used as a general education course and is not open to students with credit in botany or zoology or students planning to major in the biological sciences. Three hours of lecture and two two-hour laboratory periods per week.

*Prerequisite: none*

### BI 1403 (lec), 1411 (lab) 4 hours General Invertebrate Zoology

A study of the structure and function of invertebrates with special attention paid to the phylogenetic origins of taxonomic groups and the integration of their structural systems. Three one-hour lecture recitation periods and one three-hour laboratory period per week. This course is recommended for students majoring in the life sciences and related fields.

*Prerequisite: none*

### BI 1503 (lec), 1511 (lab) 4 hours General Vertebrate Zoology

A study of the structure and function of vertebrates with special attention paid to the phylogenetic origins of taxonomic groups and the integration of their structural systems. Three one-hour lecture recitation periods and one three-hour laboratory period per week. This course is recommended for students majoring in the life sciences and related fields.

*Prerequisite: None*

### BI 1603 (lec), 1612 (lab) 5 hours General Botany

An introduction to the plant kingdom, structure, physiology, life histories, economic importance, and the evolution of plants. Laboratory will include experimentation and observation to verify and enhance classroom lecture and recitation. Three one-hour lecture recitation periods and two two-hour laboratory periods per week.

*Prerequisite: BI 1303 & 1312, 1403 & 1411, 1503 & 1511, or consent of instructor*

### BI 2003 3 hours Genetics

A study of the principles of heredity and biological evolution as applied to plants and animals.

*Prerequisite: BI 1303 & 1312, 1403 & 1411, 1503 & 1511, 1603 & 1612, or consent of instructor*

### BI 2102 (lec), 2112 (lab) 4 hours Human Anatomy and Physiology I

Part one of a two-semester course where gross micro

and macroscopic anatomy and the function of the respective structures are studied. The normal state and the abnormal state of the human body are studied. The first semester includes the study of integument, skeletal, muscular, and nervous systems. Two lectures and two two-hour laboratory periods per week.

*Prerequisite:* BI 1303 & 1312, 1403 & 1411, or 1503 & 1511. College courses in math and chemistry are useful.

**BI 2202 (lec), 2203 (lab) 5 hours**  
**Human Anatomy and Physiology II**

Part two of a two-semester study. Systems studied are digestive, respiratory, circulatory, and urogenital. Sequencing of courses I and II is not important. The student may take Human Anatomy and Physiology II first. Two lectures and three two-hour laboratory periods per week.

*Prerequisite:* BI 1303 & 1312, 1403 & 1411, or 1503 & 1511. College courses in math and chemistry are useful.

**BI 2302 (lec), 2303 (lab) 5 hours**  
**Comparative Anatomy**

A study of the comparative anatomy of vertebrate animals, including both embryological development and adult structure. Dissection includes a representative from each major vertebrate class. Includes classification of vertebrates, embryology, skeleton, muscles, coelom, digestive and respiratory systems, circulatory system, urogenital system, and nervous system. Two lectures and six hours laboratory per week.

*Prerequisite:* BI 1403 & 1411, 1503 & 1511, or consent of instructor

**BI 2402 (lec), 2412 (lab) 4 hours**  
**Microbiology**

An introduction to microorganisms, their morphology, physiology, classification, and importance. Two hours lecture and four hours laboratory per week.

*Prerequisite:* BI 1303 & 1312, 1403 & 1411, 1503 & 1511, or 1603 & 1612

**BI 2503 (lec), 2512 (lab) 5 hours**  
**General Ecology**

A course which involves the mathematical and descriptive principles of ecosystem structure, trophic dynamics, population regulation, and evolutionary ecology. Three lectures and two two-hour laboratory periods per week.

*Prerequisite:* BI 1303 & 1312, 1403 & 1411, 1503 & 1511, or 1603 & 1612

**BI 2701,2,3 1-3 hours**  
**Directed Studies (Honors) in Biology**

A biology internship which provides two alternatives. A student may: (1) investigate or study independently a

specific prearranged topic within the field of biological science, or (2) assist primarily in the laboratory or lecture when peer groupings are being utilized.

*Prerequisite:* consent of instructor

**BI 2802 2 hours**  
**Practicum in Biology**

Biology practicum provides two types of learning experiences: (1) assisting students in laboratory sessions of life science courses, or (2) participating in a weekly biology topics seminar. One seminar period and four hours laboratory assisting per week.

*Prerequisite:* Successful completion of course in which student will assist or consent of instructor

**BI 2903 3 hours**  
**Directed Studies in Alpine Ecology**

This course involves the descriptive principles of ecosystem structure, trophic dynamics, population regulation, and evolutionary ecology as applied to life zones of the Rocky Mountains. The course is taught at Colorado State University's Pingree Park campus.

*Prerequisite:* BI 1303 & 1312, 1403 & 1411, 1503 & 1511, 1603 & 1612, or consent of instructor

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## Business

Business program transfer requirements vary among senior colleges and universities. Some additional courses may be included for transfer and some business courses may not transfer directly toward graduation. Students should consult a business transfer adviser prior to enrollment.

## Accounting

**AC 1023 3 hours**  
**Accounting I**

A study of basic principles and procedures of business accounting, including debits and credits, journals and ledgers, accruals, deferrals, depreciation, determination, voucher system, payroll, the balance sheet, and income statements.

*Prerequisite:* high school bookkeeping, AC 1003, or consent of instructor

**AC 1043 3 hours**  
**Accounting II**

A continuation of the study of accounting principles, including cash and investments, receivables, inventory, fixed assets, liabilities, manufacturing operations, partnerships, corporations, and the analysis of financial data concerning these items.

*Prerequisite:* AC 1023

**AC 2043 3 hours****Intermediate Accounting I**

A review of the concepts and principles underlying accounting and their application in the accounting process. Valuation procedures and problems are considered for each class of assets on the balance sheet, along with their related effect upon income measurement.

*Prerequisite:* AC 1043

**AC 2063 3 hours****Intermediate Accounting II**

A continuation of Intermediate Accounting I. Valuation procedures and problems are considered for each class of liabilities and the equity section of the balance sheet along with their related effect upon income measurement. Various forms of financial statement analysis are also studied along with the opinions of the Accounting Principles Board.

*Prerequisite:* AC 2043 or consent of instructor

**AC 2093 3 hours****Managerial Accounting**

A course designed to teach future managers ways to use, analyze, and interpret accounting data once it is available to them. Emphasis is placed upon the analysis of data rather than the collecting and recording function. An interdisciplinary approach is provided through the mix of topics involving economics, finance, mathematics, and statistics.

*Prerequisite:* AC 1023

**Business Administration****BU 1003 3 hours****Introduction to Business**

A survey course designed to give the student a general knowledge of the modern business world, and a better basis for choosing concentrated business offerings.

*Prerequisite:* none

**BU 1013 3 hours****Principles of Marketing**

A course designed to introduce the student to the managerial area of marketing. Although consumer and institutional behavior patterns and the overall role of marketing in the economy are covered, the major emphasis will be on the types of problems confronting those involved in marketing management.

*Prerequisite:* none

**BU 1053 3 hours****Fundamentals of Management**

A study in evaluation and comparison of private and public personnel practices and techniques of recruiting,

selecting, transferring, promoting, classifying, and training workers.

*Prerequisite:* none

**BU 2013,4 3-4 hours****Survey Calculus**

A study of the techniques of differential and integral calculus. The focus of the course is on *functions* and the *applications* of the calculus to the life, social, and managerial sciences, with particular emphasis on the latter. Trigonometry is not used.

*Prerequisite:* MT 1403, 1505, 2003, or 2004

**BU 2033 3 hours****Business Law**

A study of those areas of the law which affect most businesses; sales and credit, contracts, insurance, agency and employment, commercial paper, personal property, and bailments.

*Prerequisite:* none

**BU 2103 3 hours****Basic Business Statistics**

An introductory course dealing with the methods of collecting, organizing, presenting, and analyzing data related to business. The course deals with measures of central tendency and dispersion, elementary probability and probability distributions, statistical estimation and hypothesis testing, and linear correlation.

*Prerequisite:* MT 1403, 1505, 2003, 2004, or consent of instructor

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**Chemistry**

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**CH 1103 (lec), 1112 (lab) 5 hours****Introduction to Chemistry**

An introduction to the basic principles of chemistry, including inorganic, analytical, physical, and organic chemistry. Environmental and practical applications are emphasized with one lab session per week being used for small group discussions of current topics and one lab session for investigations involving experimental work. Three hours of lecture and two two-hour laboratory periods per week. This course is designed for the student with no background in chemistry.

*Prerequisite:* MT 1303 or consent of instructor

**CH 1203 (lec), 1211 (lab) 4 hours****Chemistry for the Health Sciences**

A course which emphasizes fundamental chemical principles and their application to the human organism. Classroom and laboratory work will include work with



solutions, electrolytes and body fluids, and pertinent organic and biochemical topics related to digestion and metabolism. Three hours lecture and a two-hour laboratory per week.

*Prerequisite:* A course in high school chemistry with a grade of "C" or CH 1103 & 1112 with a minimum grade of "C." A math placement score equivalent to enter MT 1403 or the completion of MT 1303 is also required.

### **CH 1303 (lec), 1312 (lab) 5 hours** **General Chemistry I**

A study of atomic and molecular structure, bonding, chemical equations, stoichiometry, gases, solutions, and an introduction to organic chemistry. Three one-hour lecture periods and two two-hour laboratory periods per week, emphasizing quantitative techniques.

*Prerequisite:* A satisfactory score on the ACT and either CH 1103 & 1112 or high school chemistry

### **CH 1403 (lec), 1412 (lab) 5 hours** **General Chemistry II**

A continuation of CH 1303 & 1312, including the study of chemical equilibria, acid-base chemistry, complex ions, thermodynamics, oxidation-reduction reactions, and qualitative analysis. Three one-hour lecture and recitation periods and two two-hour laboratory periods per week.

*Prerequisite:* CH 1303 & 1312

### **CH 2102 (lec), 2112 or 2113 (lab) 4-5 hours** **Quantitative Analysis**

A study of the fundamental principles of quantitative analytical chemistry, including gravimetric, volumetric, and spectrophotometric determinations. Two hours lecture and two or three three-hour laboratory periods per week.

*Prerequisite:* CH 1403 & 1412

### **CH 2203 (lec), 2212 (lab) 5 hours** **Organic and Biological Chemistry**

A survey of major topics of organic and biological chemistry, including aliphatic and aromatic hydrocarbons, carbohydrates, lipids, amino acids, the vitamins, and steroids. The course relates chemical applications to human metabolism, agriculture, home economics, and medical technology programs. Four hours lecture and three hours laboratory per week.

*Prerequisite:* CH 1103 & 1112 or 1303 & 1312

### **CH 2303 (lec), 2312 (lab) 5 hours** **Organic Chemistry I**

A study of the basic principles of organic chemistry including acid-base theory, carbonium ions, stereochemistry, electrophilic aromatic substitution, spectro-

scopy, and reaction mechanisms. Three hours of lecture and two three-hour laboratory periods per week.

*Prerequisite:* CH 1403 & 1412 or consent of instructor

### **CH 2403 (lec), 2412 (lab) 5 hours** **Organic Chemistry II**

A continuation of CH 2303 & 2312, including application of basic principles to the study of the important classes of organic and biochemical compounds. Three hours of lecture and two three-hour laboratory periods per week.

*Prerequisite:* CH 2303 & 2312

*Prerequisite or Corequisite:* CH 1403 & 1412

### **CH 2701,2,3,4 1-4 hours** **Directed Studies (Honors) in Chemistry**

The student enrolled for directed studies has two alternatives: (1) investigate a specific topic within the field of chemistry, or (2) assist in the laboratory, stockroom, or with individualized instruction under the supervision of an instructor.

*Prerequisite:* consent of instructor

## **Communications, Media and Theatre**

### **CT 1003 3 hours** **Oral Communications**

A fundamentals of speech course providing an introduction to the study of oral communication. The course is designed to develop student improvement in the critical understanding of ideas about communication as well as the critical issues of our time, and subsequently to improve individual communications skills.

*Prerequisite:* none

### **CT 1103 3 hours** **Public Speaking**

An introduction to the basic element of public speaking. Assignments include the presentation of speeches, preparation of outlines, and the discussion of evaluation techniques.

*Prerequisite:* none

### **CT 1203 3 hours** **Oral Interpretation**

A study in the basic techniques of oral interpretation. The recreation of literature is stressed through acquiring the skills and techniques necessary to convey the intellectual, emotional, and aesthetic values of literature to an audience. The course will include study in the oral interpretation of prose, drama, and poetry.

*Prerequisite:* none

**CT 1303 3 hours****Theatre Appreciation**

An appreciation course designed to give a comprehensive introduction to theatre, including theatre history and contributions made by directors, actors, designers, technicians, and playwrights to modern dramatic productions.

*Prerequisite: none*

**CT 1403 3 hours****Beginning Acting**

A course designed to introduce the student to the basics of acting.

*Prerequisite: none*

**CT 1603 3 hours****Television Production I**

A basic course establishing the television production process as a system, in which many elements interact to produce television programming. Students will receive hands on experience with all of the elements: cameras, switchers, lighting equipment, character generators, VCR's, film islands, etc.

*Prerequisite: none*

**CT 1703 3 hours****Intro To Mass Communication**

Through lectures, discussions and audio-visual presentations, the class will examine the history, organization, role and current status of newspapers, magazines, broadcasting, film, cable, public relations, advertising and corporate communications.

*Prerequisite: none*

**CT 1803 3 hours****Basic Radio**

An experience-oriented course in radio production and performance with emphasis on career and entry level skills in announcing and the operation of the broadcast and production control rooms. Includes an overview of programming and promotional strategies, commercial scripting and sales, radio news reporting and current broadcasting technology.

*Prerequisite: none*

**CT 2001 2 hours****Stage Make-up**

A course in materials and methods of application of make-up artistry for cosmetic and character effects on stage.

*Prerequisite: none*

**CT 2002 2 hours****Stagecraft**

A study of fundamentals of properties and scenic construction, stressing terminology and practical production experience.

*Prerequisite: none*

**CT 2102 2 hours****Voice and Diction**

A study of respiration, phonation, resonance, articulation, and diction for the stage.

*Prerequisite: none*

**CT 2203 3 hours****Advanced Public Speaking**

An in-depth study into the persuasive elements of communication including audience analysis and motivational techniques.

*Prerequisite: CT 1103*

**CT 2303 3 hours****Argumentation and Debate**

A study of the principles of analysis, evidence, reasoning, briefing, refutation, case construction, preparing and evaluating arguments. Practical experience with different types of debate are included as part of the course.

*Prerequisite: none*

**CT 2403 3 hours****Acting I**

An extensive study in the theories and techniques of acting.

*Prerequisite: none*

**CT 2503 3 hours****Acting II**

An intensified study of characterization centering around the study of characters in production and the adaptation of acting techniques to various styles.

*Prerequisite: CT 2403 or consent of instructor*

**CT 2603 3 hours****Forensics**

A course in intercollegiate debate and speech competition.

*Prerequisite: consent of instructor*

**CT 2701,2,3 1-3 hours****Directed Studies in Communication/Media/Theatre Arts**

The student enrolled for directed studies has two alternatives: (1) investigate a specific topic within the field of communication/media/theatre arts, or (2) assist with tutorial instruction under the supervision of an instructor.

*Prerequisite: consent of instructor*

**CT 2801,2,3 1-3 hours****Communication/Media/Radio/Television/Theatre Practicum**

A course designed to give interested students the opportunity to work in a controlled environment. The

course provides experience and training in communications, media, radio, television or theatre arts under the direct supervision of an instructor.

*Prerequisite:* consent of instructor

### **CT 2901,2,3**

**1-3 hours**

#### **Acting Practicum**

A course designed to give interested students the opportunity to work in a controlled theatrical environment. The course provides experience and training in the art of acting under the direct supervision of a theatre instructor.

*Prerequisite:* consent of instructor

## **Computer Information Systems**

### **CS 1013**

**3 hours**

#### **Introduction to Computers and Information Systems**

An analysis of computer systems, their present uses and future roles in society, business, and public organizations. Topics emphasized include computer algorithms, computer organization (both hardware and software), data structures, program design and elementary programming in high level languages using microcomputers. IBM microcomputers are used to complete lab work in the course.

*Prerequisite:* none

### **CS 1023**

**3 hours**

#### **Computer Fundamentals and Operations**

A course to familiarize students with the general hardware of modern computer systems and to explain the relationship between computer hardware concepts and operating system software organization. Topics include: data and storage representations including binary arithmetic, Boolean algebra applications, operating system concepts, computer system components, device characteristics (including data base structure), and operations principles and documentation.

*Prerequisite:* CS 1013 and/or previous programming experience

### **CS 1033**

**3 hours**

#### **Problem Solving Techniques**

A basic course in logical program-solving methods employed in today's computer systems. Emphasis is placed upon developing the student's skills to logically apply the concepts to the problem solutions. Emphasis is placed upon maintaining an overall structure and discipline in logical design. General conceptual areas covered include: problem definition, problem analysis, solution development, and documentation.

*Corequisite:* CS 1013

*Prerequisite:* none

### **CS 1043**

**3 hours**

#### **BASIC Programming**

A course in the BASIC language, designed to expand the student's knowledge, understanding, and skill development in solving problems using BASIC on a microcomputer system. Topics covered in the course include: BASIC fundamentals, editing capabilities in BASIC on a microcomputer, character string functions, table processing, subroutines and functions, disk processing techniques, and system and utility commands.

*Prerequisite:* CS 1013 or elementary experience with the BASIC language

### **CS 1053**

**3 hours**

#### **RPG II Programming**

A beginning course in business programming using the problem-oriented language, Report Program Generator II. The capabilities and limitations of RPG II and the structure and design of this report writer will be examined. The preparation and integration of RPG II's specification forms and its sundry features will be studied and applied to the solution of various business reporting requirements.

*Prerequisite:* CS 1013

### **CS 2013**

**3 hours**

#### **COBOL Programming I**

A beginning course in computer programming techniques and structure using the COBOL language. The course emphasizes expansion of the student's knowledge and understanding of programming concepts and methodologies (i.e., structured design and structured COBOL programming). It also stresses development of the student's skills in applying these methods and concepts during the process of designing and coding COBOL programs. The tools and facilities of the language are also explored and utilized. General areas covered by the course include: structured design and programming, design and coding walk-throughs using the team concept, and basic and special features of the COBOL language, including sequential disk files, sorting, tables and arrays, and report writing.

*Corequisite:* CS 1033

*Prerequisite:* CS 1013

### **CS 2023**

**3 hours**

#### **COBOL Programming II**

An advanced course in the COBOL language, emphasizing completion of the student's knowledge, understanding, and skill-development in solving problems in the COBOL language. Structured design/programming concepts/methods that are available in COBOL are stressed and implemented in program design/composition. Topics covered include: program optimization, input

data editing, sequential file processing and methodology, random file processing, and multi-file methods. Disk processing methodology is stressed throughout the course.

*Prerequisite:* CS 2013

### **CS 2053 3 hours** **FORTRAN 77 Programming**

A basic course in computer programming techniques and structure using the FORTRAN 77 language which is oriented primarily toward mathematical, scientific, or engineering problem solutions. Emphasis is placed upon expanding the student's knowledge, understanding, and awareness of fundamental problem-solving concepts and upon developing, in each student, basic skills in applying these concepts to problem solution using the tools, techniques, and features of the FORTRAN 77 language.

*Prerequisite:* MT 1303 or consent of instructor

### **CS 2063 3 hours** **Advanced RPG II Programming**

An advanced course in the RPG II language, emphasizing completion of the student's knowledge and understanding in solving business problems in RPG II. Topics covered include random file processing and multi-file methods. IBM S/34 Data File Utility procedures and Source Entry procedures will be explored.

*Prerequisite:* CS 1053

### **CS 2113 3 hours** **Assembly Language Programming**

A basic course in symbolic computer programming at the machine level. This course emphasizes the development of the student's abilities in the minutely detailed process of writing, debugging, and testing Assembly language programs.

*Prerequisite:* CS 1023 and prior experience with programming a high-level computer language.

### **CS 2123 3 hours** **Pascal Programming**

An intermediate level course in computer programming and problem solving techniques, using the general-purpose Pascal language. Emphasis is placed upon expanding the student's knowledge and understanding of the state-of-the-art problem solving concepts and methods, and upon developing skills in applying these concepts to problems solved by usage of the block-structured language, Pascal. General conceptual areas covered in the course include: structured programming and problem solving, algorithm design and development, basic Pascal data types and program structure, computational structure, logical and I/O structures, flow of control structures, advanced data types, functions

and procedures, UCSD extensions to standard Pascal, and Turtle graphics.

*Prerequisite:* CS 1013 and one computer language course

### **CS 2661, 2672, 2683 1-3 hours** **Directed Studies in Computer Information Systems**

Course content and hours arranged by instructor.

*Prerequisite:* consent of instructor

## **Economics**

### **EC 2103 3 hours** **Principles of Macroeconomics**

An introduction to the total level of economic activity—the rate of production and income. Topics include inflation, unemployment, government spending and fiscal policy, income policy, the banking system and monetary policy, and international economics.

*Prerequisite:* none

### **EC 2203 3 hours** **Principles of Microeconomics**

An introduction to how prices are determined. Topics include how prices are set in markets of varying degrees of competition; how income is distributed; wages and salaries; rent, interest, and profits; unions; environmental problems; wealth and poverty in the U.S.A.; and non-market economic systems.

*Prerequisite:* none

### **EC 2701,2,3,4 1-4 hours** **Directed Studies in Economics**

Course content and hours arranged by instructor.

*Prerequisite:* consent of instructor

## **Education**

### **ED 1001 1 hour** **Student Development**

A course to be taken by full-time students to provide a general orientation to higher education, introduce East Central's educational services, and teach them responsibility. Students have access to a coordinator and staff who will help guide them through personal goals development, preparation for academic coursework, career guidance, program planning, and the achievement of life learning skills.

*Prerequisite:* none

**ED 1011,2,3** **1-3 hours**  
**Career Planning**

A course designed to involve students in (1) orientation to college, (2) self-study and understanding, (3) occupational exploration, and (4) educational and career planning. As set forth in this work text, career exploration and planning involves self-study, knowing vocational requirements and trends, and understanding different lifestyles. Students will learn how to make decisions regarding themselves and their relationship to the world of work.

*Prerequisite: none*

**ED 1022,3** **2-3 hours**  
**Perspectives in Education**

An introduction to the many facets of American education designed to give students accurate information about education and to provide them with opportunities to determine their interest and aptitude for pursuing an educational profession.

*Prerequisite: none*

**ED 1031,2,3** **1-3 hours**  
**Field Experience**

A supervised field experience in an actual classroom setting.

*Prerequisite: consent of elementary or secondary education adviser*

**BI 1202** **2 hours**  
**Health**

A general course designed to develop proper attitudes and practices which will contribute to the fine art of living. Health problems which require community action are given consideration. The course is intended for the elementary education major and those not majoring in biology.

*Prerequisite: none*

**AR 2023** **3 hours**  
**Art for Children**

A study of the types of art activities related to various age groups in the elementary school, including experience with art materials used in the classroom.

*Prerequisite: none*

**EN 2033** **3 hours**  
**Literature for Children**

A study of children's literature from pre-school to sixth grade to acquaint the student with the best forms of literature for children and to develop standards of judgment in the selection of reading materials for children. Recommended for elementary education majors.

*Prerequisite: EN 1223*

**MU 2043** **3 hours**  
**Music for Children**

A basic study of music, including notation, scales, intervals, chords, and rhythms; intended for the elementary education major. The course includes an activities approach to classroom music through the ideas of Orff and Kodaly.

*Prerequisite: MU 1003*

**PE 2052** **2 hours**  
**Physical Education for Children**

A course designed for physical education majors, for the learning of activities and games to be taught on the elementary level. The course involves eight weeks of teaching in the elementary grades.

*Prerequisite: none*

**TA 2013** **3 hours**  
**Teacher Aide Seminar**

A seminar designed to acquaint the prospective teacher aide with the responsibilities and requirements of the position and to discover how the teacher aide fits into the instruction team. The student prepares through the seminar to do an internship in one of the district schools. A college staff member moderates the seminar which serves to tie coursework and experience together.

*Prerequisite: none*

**TA 2021, 2032, 2043** **1-3 hours**  
**Teacher Aide Internship**

A supervised work experience in an actual education setting coordinated with the student's regular classwork to provide a realistic view of the duties of a teacher aide.

*Prerequisite: consent of instructor*

**ED 2701,2,3** **1-3 hours**  
**Directed Studies in Education**

The student enrolled for directed studies has two alternatives: (1) investigate a specific topic with the field of education, or (2) assist with tutorial instruction under the supervision of an instructor.

*Prerequisite: consent of instructor*

## Engineering

**EG 1103** **3 hours**  
**Engineering Drawing and Descriptive Geometry**

A study of the graphic analysis and solution of typical three dimensional space problems through the application of the principles of multi-view projections. Fundamental problems are related to points, lines, planes,

**Prerequisite:** Demonstrated proficiency on the ACT or EN 1003

**EN 1233 3 hours****English Composition I (Honors)**

An intensified composition course open only to students who demonstrate a high degree of proficiency in English demonstrated by placement test scores and writing samples. The student will be required to take EN 1233, EN 1343 and a literature course to fulfill the English requirement. (Any literature course taught at ECC is acceptable in fulfilling this requirement except EN 2033.) While emphasis in this course is on the development of ideas through the use of various rhetorical patterns, as is the case in EN 1223, the student is required to write a research paper and critical papers on literature. Grading standards are higher in Honors than in EN 1223.

*Prerequisite:* Demonstrated high proficiency on the ACT and on a writing sample

**EN 1301 1 hour****Study Skills III—Library Skills**

A programmed course designed to introduce students to the library, making it possible for them to use its resources effectively.

*Prerequisite:* none

**EN 1333 3 hours****English Composition II**

A second course in composition which provides practice in writing longer units of exposition than does EN 1223, and includes the writing of a research paper and critical papers on literature.

*Prerequisite:* EN 1223

**EN 1343 3 hours****English Composition II (Honors)**

A second intensified composition course open only to students who demonstrate a high degree of proficiency in English and have completed EN 1233.

*Prerequisite:* EN 1233

**EN 1403 3 hours****Technical Writing**

An introduction to the practical aspects of preparing reports. The emphasis is on the techniques of collecting and presenting scientific data by means of formal and informal reports. Also included are other elements of communication concerning science and industry.

*Prerequisite:* EN 1003 or 1223

**EN 1503 3 hours****Poetry**

A study of literature concentrating on the forms, techniques, and themes of poetry. Emphasis is placed upon analysis and interpretation.

*Prerequisite:* none

**EN 1603 3 hours****Fiction**

A study of literature concentrating on the forms, techniques and themes of prose fiction. The course includes the study of a novel, but the emphasis is placed upon the analysis of the short story.

*Prerequisite:* none

**EN 1703 3 hours****Drama**

A study of the forms, techniques, and themes of drama through reading and discussing plays destined for the theater. Film and television drama may also be considered.

*Prerequisite:* none

**EN 1803 3 hours****Art of the Novel**

A course in which English and American novels, selected to give a fair sampling of 18th, 19th, and 20th century writers, are read, with emphasis placed upon how to read the novel. The course is an introduction to the pleasures of the novel and not just a survey.

*Prerequisite:* none

**EN 1903 3 hours****Classical Mythology**

A study of the ancient mythology and religion of the Greeks and others as shown in literature past and present.

*Prerequisite:* none

**EN 2002 2 hours****Vocabulary**

A programmed course that teaches vocabulary by letting students hear and see the words in use, thereby enabling them to improve their reading, writing, and speaking.

*Prerequisite:* none

**EN 2033 3 hours****Literature for Children**

A study of the children's literature from pre-school to sixth grade to acquaint the student with the best forms of literature for children and to develop standards of judgment in the selection of reading materials for children. Recommended for elementary education majors.

*Prerequisite:* EN 1223

**EN 2102 2 hours****Speed Reading**

A programmed course in reading improvement stressing comprehension and vocabulary development while emphasizing speed. The student uses pacing machines to

build speed and answers questions to measure comprehension of material read at particular speeds.

*Prerequisite:* 35 percentile in speed and comprehension on the Nelson-Denny Reading Test

**EN 2103 3 hours**  
**English Literature I**

A survey of English literature from the Anglo-Saxon period through the Age of Reason.

*Prerequisite:* none

**EN 2113 3 hours**  
**English Literature II**

A survey of English literature from the romantic period to the present.

*Prerequisite:* none

**EN 2203 3 hours**  
**American Literature I**

A survey of American literature from the colonial period up to the Civil War.

*Prerequisite:* none

**EN 2213 3 hours**  
**American Literature II**

A survey of American literature from the Civil War to the present.

*Prerequisite:* none

**EN 2303 3 hours**  
**Mexican/American Literature**

A study of selected readings in Mexican/American writings, particularly drama, prose, poetry, and essays. All readings are in English.

*Prerequisite:* none

**EN 2313 3 hours**  
**Creative Writing**

A course in imaginative writing involving student production of poems, stories, and plays.

*Prerequisite:* EN 1223 or consent of instructor

**EN 2403 3 hours**  
**Literature of Fantasy**

A study of the development of fantasy as a literary form, with emphasis on J.R.R. Tolkien. The course aims at defining fantasy in a basic way, and then showing, through an analysis of the works, the pleasures particular to the genre.

*Prerequisite:* none

**EN 2503 3 hours**  
**Literature of Science Fiction**

A study of the development of science fiction, especially in the 20th century. The emphasis is on reading the

works themselves, for themselves, but an attempt is made to show the development of the form toward literary maturity.

*Prerequisite:* none

**EN 2603 3 hours**  
**Shakespeare on Stage**

A course in which selected Shakespearian plays are studied in conjunction with KETC's telecast of the plays. Spring semester only.

*Prerequisite:* none

**EN 2701,2,3,4 1-4 hours**  
**Directed Studies in English**

An intensive study of some specific topic in English to be determined by the instructor and student.

*Prerequisite:* Consent of instructor and a grade point average of 3.00 or better in the department.

## Foreign Languages

### French

**FR 1004 4 hours**  
**Intro to French I**

An experience in French language designed for students with limited or no background in foreign languages. The course stresses the same basic skills as the language majors course, but at a slower pace. Those basic skills are listening, comprehension, speaking, reading and composition. This course is not designed for college language majors or minors except as a compensatory prerequisite to French 1104.

*Prerequisite:* none

**FR 1014 4 hours**  
**Intro to French II**

This course is a continuation of FR 1004.

*Prerequisite:* FR 1004

**FR 1104 4 hours**  
**Elementary French I**

An introductory French course stressing basic language skills: listening comprehension, speaking, reading, and composition. Additional audio-lingual laboratory practice is included.

*Prerequisite:* none

**FR 1204 4 hours**  
**Elementary French II**

A continuation of FR 1104.

*Prerequisite:* FR 1104



**FR 2104 4 hours****French Readings**

A study of selected readings in prose and poetry along with grammar review, vocabulary building, and additional audio-lingual practice.

*Prerequisite: FR 1204 or consent of instructor*

**FR 2701,2,3 1-3 hours****Directed Studies in French**

An intensive study of some specific topic in French to be determined by instructor and student.

*Prerequisite: consent of instructor*

**German****GR 1004 4 hours****Intro to German I**

An experience in German language designed for students with limited or no background in foreign languages. The course stresses the same basic skills as the language majors course, but at a slower pace. Those basic skills are listening, comprehension, speaking, reading and composition. This course is not designed for college language majors or minors, except as a compensatory prerequisite to German 1104.

*Prerequisite: none*

**GR 1014 4 hours****Intro to German II**

This course is a continuation of GR 1004.

*Prerequisite: GR 1004.*

**GR 1104 4 hours****Elementary German I**

An introductory German course stressing basic language skills: listening comprehension, speaking, reading, and composition. Additional audio-lingual laboratory practice is included.

*Prerequisite: none*

**GR 1204 4 hours****Elementary German II**

A continuation of GR 1104.

*Prerequisite: GR 1104*

**GR 2102 2 hours****German Readings (Part 1)**

A study of selected readings in prose and poetry along with grammar review, vocabulary building, and additional audio-lingual practice.

*Prerequisite: GR 1204*

**GR 2104 4 hours****German Readings**

A study of selected readings in prose and poetry along

with grammar review, vocabulary building, and additional audio-lingual practice. Also available in 2-hour courses, GR 2102 and GR 2112

*Prerequisite: GR 1204 or consent of instructor*

**GR 2112 2 hours****German Readings (Part 2)**

This course is a continuation of GR 2102.

*Prerequisite: GR 2102*

**GR 2701,2,3 1-3 hours****Directed Studies in German**

An intensive study of some specific topic in German to be determined by instructor and student.

*Prerequisite: consent of instructor*

**Spanish****SP 1004 4 hours****Intro to Spanish I**

An experience in Spanish language designed for students with limited or no background in foreign languages. The course stresses the same basic skills as the language majors course, but at a slower pace. Those basic skills are listening, comprehension, speaking, reading and composition. This course is not designed for college language majors or minors, except as a compensatory prerequisite to Spanish 1104.

*Prerequisite: none*

**SP 1014 4 hours****Intro to Spanish II**

This course is a continuation of SP 1004.

*Prerequisite: SP 1004*

**SP 1104 4 hours****Elementary Spanish I**

An introductory Spanish course stressing basic language skills: listening comprehension, speaking, reading, and composition. Additional audio-lingual laboratory practice is included.

*Prerequisite: none*

**SP 1204 4 hours****Elementary Spanish II**

A continuation of SP 1104.

*Prerequisite: SP 1104*

**SP 2104 4 hours****Spanish Readings I**

A study of selected readings in Mexican drama and the short story.

*Prerequisite: SP 1204 or consent of instructor*

**SP 2204****4 hours****Spanish Readings II**

A study of selected readings in prose along with grammar review, vocabulary building, and additional audio-lingual practice.

*Prerequisite:* SP 1204 or consent of instructor

**SP 2213****3 hours****Spanish Composition & Conversation**

A review of Spanish grammar with practice in composition and conversation.

*Prerequisite:* SP 1204 or consent of instructor

**SP 2303****3 hours****Mexican/American Literature**

A study of selected readings in Mexican/American writings, particularly drama, prose, poetry, and essay. Readings are in English.

*Prerequisite:* none

**SP 2701,2,3****1-3 hours****Directed Studies in Spanish**

An intensive study of some specific topic in Spanish to be determined by instructor and student.

*Prerequisite:* consent of instructor

**Geography****GE 1003****3 hours****World Geography**

An introductory study of the basic geographic and cultural regions of the world, including North and South America, Europe, Africa, and Asia with emphasis on the natural resources, political conditions, economy, population, religions, and cultural patterns of each area. Special units are included on Missouri geography and the technology of mapping.

*Prerequisite:* none

**Geology****GL 1103 (lec), 1112 (lab)****3 or 5 hours****Introduction to Physical Geology**

An introductory course in physical geology in which materials of the earth's crust, structures, and geologic features of the surface are studied. Field trips and the laboratory study of common minerals and rocks will be included.

*Prerequisite:* none

**History****HI 1103****3 hours****American History I**

A survey of the cultural, economic, institutional, political, and social forces and events which have shaped the United States from the "Age of Discovery" through the reconstruction period. American History 1103 complies with the provisions of Section 170.011 Rs Mo. requiring the study of state and federal constitutions.

*Prerequisite:* none

**HI 1203****3 hours****American History II**

A survey of the cultural, economic, institutional, political, and social forces and events which have shaped the United States from the reconstruction period to the present day.

*Prerequisite:* none

**HI 1303****3 hours****American History III: (Special Focus)**

An organized study of selected topics in American history.

*Prerequisite:* none

**HI 2103****3 hours****Foundations of World Civilization I (Europe to 1500)**

An interdisciplinary study of the development of Western culture from prehistoric man through the Renaissance, with special emphasis on social, economic, intellectual, religious, and political institutions. The course is designed for students of history and others who desire an elective in the social sciences.

*Prerequisite:* none

**HI 2203****3 hours****Foundations of World Civilization II (Europe since 1500)**

An interdisciplinary study of the development of Western institutions from the Renaissance and the Reformation to the present, with special emphasis on economic, intellectual, social, political, and religious movements. The course is designed for students of history and others who desire an elective in the social sciences.

*Prerequisite:* none

**HI 2303****3 hours****Foundations of World Civilization III (Latin America)**

An interdisciplinary topical study of the social, economic,

political, cultural, and intellectual conditions of modern Latin America from 1800 to the present. The course is designed for students of history and others who desire an elective course in the social sciences.

*Prerequisite: none*

**HI 2403 3 hours**  
**Foundations of World Civilization IV**  
**(Africa and Asia)**

An interdisciplinary study of Africa and Asia from 1800; including studies of the politics, culture, and people of both recent and contemporary Africa, China, Japan, India, and other selected nations of Asia. The course is designed for students of history and others who desire an elective course in the social sciences.

*Prerequisite: none*

**HI 2503 3 hours**  
**Foundations of World Civilization V: (Special Focus)**

An organized study of selected topics in world civilization.

*Prerequisite: none*

**HI 2701,2,3 1-3 hours**  
**Directed Studies (Honors) in History**

The student enrolled for directed studies has two alternatives: (1) investigate a specific topic within the field of history, or (2) assist with tutorial history instruction under the supervision of an instructor.

*Prerequisite: consent of instructor*

**HI 2802 (lec), 2803 (tour) 5 hours**  
**Heritage Studies**

The course involves focused studies of varying duration which include both lectures and historical site tours. History and culture are the primary emphasis of focused study.

*Prerequisite: none*

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## Horticulture

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**HR 1013 (lec), 1022 (lab) 5 hours**  
**Introduction to Horticulture**

An introductory course covering the flowering plants as well as the conifers. Various plant types (groups) are given value as to their growth and development. Students will be introduced to the biological aspects of plant life and to the environmental factors which affect plant growth, including light, temperature, moisture, soils, and the essential elements.

*Prerequisite: none*

**HR 1033 3 hours**  
**Plant Propagation**

An introduction to the common methods of commercial plant reproduction including seeds, cuttings, layering, grafting, and division. The course makes use of the greenhouse propagation facilities. Pruning labs are included. Hormonal relationships and growth-promoting substances are explored.

*Prerequisite: none*

**HR 2013 3 hours**  
**Woody Plants I**

A study of trees, shrubs, vines, and ground covers with regard to their identification, culture, growth habits, and landscape values. Major emphasis is given to the development of a functional use concept in planting design.

*Prerequisite: none*

**HR 2023 3 hours**  
**Landscape Design I**

A detailed study of the functional uses of ornamental plants. Landscape design is introduced with concern for design development, site analysis, plant graphics, and lettering. Principles of landscape design are applied to residential design problems.

*Prerequisite: none*

**HR 2033 3 hours**  
**Florist/Nursery Management**

A course which includes student involvement in wholesale-retail management activities. Segments of the course include floriculture, with floral design and retail flower shop management. In the area of nursery management, mid-management skills are developed along with techniques of nursery production. The third segment addresses the modern garden center operation. This practical course earmarks the trend toward a broadening approach to commercial horticulture.

A special fee of \$25 is charged.

*Prerequisite: none*

**HR 2043 3 hours**  
**Landscape Design II**

A study in landscape plan, landscape surfaces, plant materials, construction and maintenance, and implementation of landscape plans. The process of design is given particular emphasis.

*Prerequisite: HR 2023*

**HR 2053 3 hours**  
**Soil Science**

A study of interactions between water, air, organisms, and soil minerals important in plant growth and land

use. The course includes up-to-date studies of new soil mixes and plant nutrition. Field observations and soil testing labs complete the course.

*Prerequisite: sophomore standing*

### **HR 2063 3 hours**

#### **Woody Plants II**

A continuation of woody plant identification and landscape usage. Special concern is given to the cultural aspects of proper planting in functional landscape design.

*Prerequisite: HR 2013*

### **HR 2073 3 hours**

#### **Herbaceous Plants**

A study of the major plant groups: annuals and perennials (home-garden-landscape), bulbs, and groundcovers. A segment of the course pursues the increasingly popular interior plantscaping where interior design skills are developed along with the cultural management of these tropical plants. The entire course seeks to develop identification and functional uses of herbaceous plants.

*Prerequisite: none*

## **Humanities**

### **HU 1101 1 hour**

#### **Humanities Colloquium**

A survey course which introduces students to the performing arts through lectures, demonstrations, and participation in sanctioned events.

*Prerequisite: concurrent enrollment in a humanities course at ECC.*

### **HU 1103 3 hours**

#### **American Pop Culture**

A survey course which introduces students to the history of various popular art forms that have helped shape American society during its nineteenth and twentieth centuries. Primary emphasis is placed on the introduction of the electronic media: music, radio, film and television. Other topics include dance, fashion, cartoons and advertising.

*Prerequisite: none*

## **Journalism**

### **JR 1003 3 hours**

#### **Introduction to Journalism**

A survey of the journalism profession, including the history and study of various news media. Emphasis is

placed upon journalistic principles, writing, editing and makeup, including work on official student publications.

*Prerequisite: none, typing skills recommended*

### **JR 1103 3 hours**

#### **Journalism Productions**

An in-depth study and practical application of news-writing, editing, headline writing, and makeup skills. The course includes production experience on official student publications.

*Prerequisite: JR 1003, typing skills recommended.*

### **JR 2701,2, 3 1-3 hours**

#### **Directed Studies in Journalism**

The student enrolled for directed studies has two alternatives: (1) investigate a specific topic within the field of journalism, or (2) assist with tutorial journalism instruction under the supervision of an instructor.

*Prerequisite: consent of instructor*

### **JR 2801 1 hour**

#### **Journalism Practicum**

A course which offers students an opportunity to do writing for and assist in the production of official student publications under the instructor's guidance. It is designed for students who enjoy working on a campus newspaper and yearbook but cannot take the three-hour course.

*Prerequisite: consent of instructor*

## **Mathematics**

### **MT 0003 3 hours**

#### **Arithmetic Skills**

A self-paced arithmetic course designed for those students not ready to start in algebra.

*Prerequisite: none*

### **MT 1001 1 hour**

#### **Metric System**

An introduction to the use of metric quantities, designed for the person not familiar with the metric system of measurements. Metric units of length, mass, volume, and temperature will be presented, along with hands-on practice at approximating these quantities. Conversion of unit quantities from customary English to metric units is included.

*Prerequisite: none*

### **MT 1003 3 hours**

#### **Introductory Algebra I**

An introductory course in arithmetic and algebra designed for any student scoring less than 35 on the Level

## 90/Transfer Courses

I Math Placement Test. Introductory Algebra I consists of the first thirteen topics of the "Basic Mathematics" textbook and a final exam over the first thirteen topics. Topics covered include whole numbers, fractions, decimals, percentages, exponents, directed numbers, solving linear equations, and applications of arithmetic and algebra.

*Prerequisite: none*

### **MT 1013** **3 hours** **Introductory Algebra II**

A beginning course in arithmetic and algebra. Introductory Algebra II consists of all twenty-two topics of the "Basic Mathematics" textbook and a final exam over the twenty-two topics. Credit for Introductory Algebra II can also be received by passing a final exam over the first thirteen topics, a test on each topic, 14-22, and a final exam over all twenty-two topics. Direct entrance into Introductory Algebra II may be achieved by making a passing score on the Introductory Algebra I final. Topics covered include exponents, solving linear polynomials, factoring polynomials, solving linear equations, word problems, graphing, multiplying polynomials, factoring polynomials, fractions containing variables, radicals, and quadratic equations.

*Prerequisite: A grade of "C" or better in MT 1003 or a satisfactory score on the math placement test*

### **MT 1103** **3 hours** **Real Number System**

A course designed for students who are potential elementary teachers. Topics are presented in such a manner that they can be mastered by the student without previous training in set theory. Topics covered include the following: sets, logic, number bases, systems of numeration, system of whole numbers, system of integers, system of rational numbers, development of the real number system, field properties, algorithms for whole numbers, and terminology of mathematics.

*Prerequisite: MT 1003 or satisfactory score on the math placement test*

### **MT 1113** **3 hours** **Metric and Non-Metric**

A course designed to make the potential elementary teacher familiar with all topics which are taught in the math curriculum in grades K-10 and the modern approach of teaching these topics. Topics covered include the following: review of topics covered in MT 1103, logic, number theory, decimals and real numbers, nonmetric geometry, metric geometry, statistics and probability.

*Prerequisite: MT 1103 or consent of instructor*

### **MT 1203** **3 hours** **Contemporary College Mathematics**

A course designed to give the student an appreciation of mathematics and an understanding of the role of mathematics in today's society. Contemporary College Math will satisfy the math requirement at most four-year colleges but is not recommended for math or science majors. Topics covered include: history of mathematics, math in the humanities and social sciences, consumer math, logic, set theory, the computer, algebra, geometry, trigonometry, probability, statistics, linear programming, and calculus.

*Prerequisite: Two years of high school algebra and a satisfactory score on the math placement test or MT 1013*

### **MT 1213** **3 hours** **Electronics Algebra-Trig**

The major emphasis of the course is solving first and second degree equations and using trigonometry to solve right triangle and vector problems. Other topics covered include: powers of 10, units and dimensions, algebraic fractions, graphs, exponents, radicals, and logarithms.

*Prerequisite: High school algebra or consent of instructor*

### **MT 1243** **3 hours** **Electronics Calculus**

The major emphasis of the course will be an understanding of differentials and integrals of various functions; maxima and minima; and differentiating and integrating circuits.

*Prerequisite: MT 1213 or consent of instructor*

### **MT 1303** **3 hours** **Intermediate Algebra**

A preparatory course covering the fundamental principles of algebra designed to prepare the student to take College Algebra and in the case of certain degrees to satisfy the mathematics requirement. It is recommended for those students who have one or two years of high school algebra. Topics covered include the following: sets, factoring, linear and quadratic equations, fractions, and fractional equations, exponents and radicals, simple analytical geometry, and systems of equations.

*Prerequisite: MT 1013 or satisfactory score on the math placement test*

### **MT 1402** **2 hours** **Trigonometry**

A study of trigonometric functions and their applications. Topics covered include the following: angles, length of arc, tables of trigonometric functions, law of cosines, law of sines, identities, trigonometric equa-

tions, inverse functions, complex numbers, logarithms, and polar coordinates.

*Prerequisite:* MT 1303

*Prerequisite or Corequisite:* MT 1403

### **MT 1403** **3 hours** **College Algebra**

A course designed to meet the needs of the student in a transfer program. Topics covered include the following: sets, exponents, theory of equations, inequalities, complex number systems, systems of equations, permutations, combinations, probability, radicals, sequences, graphing, and statistics.

*Prerequisite:* MT 1303 or satisfactory score on the math placement test

### **MT 1505** **5 hours** **Pre-Calculus Mathematics**

A unified study of College Algebra and Trigonometry. Topics include sets, exponents, solutions of equations, inequalities, theory of equations, systems of equations, graphing, radicals, complex numbers, matrices and determinants, analytical geometry, solutions of right triangles, identities, solutions of oblique triangles, inverse functions, logarithms, and polar coordinates.

*Prerequisite:* MT 1303 or satisfactory score on the math placement test

### **MT 1605** **5 hours** **Analytic Geometry and Calculus I**

A first course in a sequence of courses including analytic geometry, differential calculus, and integral calculus. This series is recommended for majors in engineering, the physical sciences, and mathematics. Topics include the following: properties of real numbers, introduction to analytic geometry, functions, limits, continuity, the derivative, differential of algebraic functions, applications of the derivative, antidifferentiations, and the definite integral.

*Prerequisite:* MT 1402 and 1403, 1505, or a satisfactory score on the MMPT

### **MT 2003,4** **3-4 hours** **Finite Mathematics**

A study of set theory, counting and probability theory, matrices algebra and linear programming, stochastic processes, Markov chains, and game theory. Special emphasis will be given to business applications of the techniques of finite math.

*Prerequisite:* MT 1403, 1505, or consent of instructor

### **MT 2013,4** **3-4 hours** **Survey Calculus**

A study of the techniques of differential and integral

calculus. The focus of the course is on *functions* and the *applications* of the calculus to the life and social sciences. Trigonometry is not used.

*Prerequisite:* MT 1403, 1505, 2003 or 2004

### **MT 2103** **3 hours** **Statistics**

An introductory course in statistics with emphasis on the collection, presentation, and analysis of data; measures of location and dispersion; introductory probability and statistical inference; correlation and linear regression.

*Prerequisite:* MT 1303

### **MT 2105** **5 hours** **Analytic Geometry and Calculus II**

A continuation of MT 1603 including the following topics: applications of the definite integral, logarithmic and exponential functions, trigonometric functions, techniques of integration, approximate integration, polar coordinates, conic sections, vectors, and parametric equations.

*Prerequisite:* MT 1605

### **MT 2205** **5 hours** **Analytic Geometry and Calculus III**

A continuation of MT 2105 including the following topics: hyperbolic functions, indeterminate forms, improper integrals, vectors in three-dimensional space, solid analytic geometry, differential calculus of functions of several variables, multiple integration, and infinite series.

*Prerequisite:* MT 2105

*Note:* The Analytic Geometry and Calculus series is also available in three-hour sections in the evening division as follows:

### **MT 1903** **3 hours** **Analytic Geometry & Calculus I**

### **MT 2113** **3 hours** **Analytic Geometry & Calculus II**

### **MT 2203** **3 hours** **Analytic Geometry & Calculus III**

### **MT 2403** **3 hours** **Analytic Geometry & Calculus IV**

### **MT 2503** **3 hours** **Analytic Geometry & Calculus V**

**MT 2303 3 hours****Differential Equations**

A study of separable variables, homogeneous equations, exact equations, integrating factors, linear differential equations, Laplace transform, and applications.

*Prerequisite:* MT 2205

**MT 2701,2,3,4 1-4 hours****Directed Studies (Honors) in Mathematics**

The student enrolled for directed studies has two alternatives: (1) investigate a specific topic within the field of mathematics, or (2) assist with tutorial mathematics instruction under the supervision of an instructor.

*Prerequisite:* consent of instructor

**Music****MU 0342 2 hours****Applied Piano—Secondary (Level O)**

Private lessons in piano. Enrollment restricted to pre-college age students.

*Prerequisite:* none

**MU 0402 2 hours****Applied Organ (Level O)**

Private lessons in pipe organ. Enrollment restricted to pre-college age students, with consent of the instructor.

*Prerequisite:* none

**MU 0502 2 hours****Applied Instrument (Level O)**

Private lessons in string, woodwind, brass, percussion, or guitar. Enrollment restricted to pre-college age students, with consent of the instructor.

*Prerequisite:* none

**MU 1001, 1011, 2001, 2011 1 hour****Choral Ensemble**

A performance course open to all students, with consent of instructor, who have had previous choral experience.

*Prerequisite:* none

**MU 1003 3 hours****Fundamentals of Music**

A basic study of music, including notation, scales, intervals, chords, and rhythms; intended to provide basic music reading, writing, and performing skills.

Open to all students

*Prerequisite:* none

**MU 1021, 2041 1 hour****East Central Choral Association**

A performance course open to all students and community members, with consent of instructor, who have had previous choral experience.

*Prerequisite:* none

**MU 1041 1 hour****ECC Community Orchestra**

A performance course open to all students and community members, with consent of instructor, who have had previous instrumental experience.

*Prerequisite:* none

**MU 1051, 2051 1 hour****College Wind Ensemble**

A performance course open to all students and community members, with consent of instructor, who have had previous instrumental experience.

*Prerequisite:* none

**MU 1101, 2101 1 hour****ECC Singers**

A varied experience choral ensemble performing in the Madrigal Dinners, Chamber Music Concert Tour, Pops Concert, and Masterworks Concert. Open through audition to all students with previous musical experience.

*Prerequisite:* none

**MU 1111, 2111 1 hour****Jazz Band**

A studio band which prepares and presents concerts, while dealing primarily with music of the jazz idiom. Open by consent of the director to all college students and community members who are qualified instrumentalists.

*Prerequisite:* none

**MU 1202 2 hours****Applied Voice (Level O)**

Pre-college level private lessons in voice. Enrollment open for pre-college age students, college non-music majors, or beginning students in voice who are college music majors.

*Prerequisite:* none

**MU 1212 2 hours****Voice Class (Level I)**

A group lesson experience for the beginning voice student. Required of all first semester voice students. Open to all students.

*Prerequisite:* none

**MU 1222, 2202, 2212 2 hours****Applied Voice****(Levels II, III, IV)**

Private lessons in voice. Enrollment restricted to advanced voice students. Proper placement will be determined by the instructor.

*Prerequisite: completion of previous level.*

**MU 1302, 1312, 1322, 1332 2 hours****Piano Class I, II, III, IV**

A group lesson experience for the beginning piano student. Open to all students regardless of major.

*Prerequisite: none for Piano Class I; completion of previous level for Piano Class II, III, IV*

**MU 1342, 1352, 1362, 1372 2 hours****Applied Piano—Secondary****(Levels I, II, III, IV)**

Private lessons in piano. Open to all students with previous piano training, with consent of the instructor. Proper placement will be determined by the instructor.

*Prerequisite: MU 1332 or equivalent.*

**MU 1402, 1412, 2402, 2412 2 hours****Applied Organ (Levels I, II, III, IV)**

Private lessons in organ. Open to any college student, with consent of the instructor. Proper placement will be determined by the instructor.

*Prerequisite: none for Level I, completion of previous level for II, III, IV*

**MU 1452 2 hours****Woodwind Class**

A group lesson experience for the beginning woodwind student. Required of all music education majors. Open to all students on a space available basis.

*Prerequisite: none*

**MU 1482 2 hours****Brass Class**

A group lesson experience for the beginning brass student. Required of all music education majors. Open to all students on a space available basis.

*Prerequisite: none*

**MU 1502, 1512, 2502, 2512 2 hours****Applied Instrument (Levels I, II, III, IV)**

Private lessons in string, woodwind, brass, percussion, or guitar. Open to any college student, with consent of the instructor. Proper placement will be determined by the instructor.

*Prerequisite: none for Level I, completion of previous level for II, III, IV.*

**MU 1602 2 hours****String Class I—Violin/Viola**

A group lesson experience for the beginning string student. Required of all music education majors. Open to all students on a space available basis.

*Prerequisite: none*

**MU 1603 3 hours****Music Appreciation**

A historical survey of the development of music, intended to provide a background for the understanding and application of music. Recommended for non-music majors.

*Prerequisite: none*

**MU 1612 2 hours****String Class II—Cello/String Bass**

A group lesson experience for the beginning string student. Required of all music education majors. Open to all students on a space available basis.

*Prerequisite: none*

**MU 1614 (Lec), 1621 (Lab) 5 hours****Music Theory I**

A beginning course in music theory, study of intervals, triads, four-part diatonic harmony, connection of triads, and their inversions. Sight singing, diction, and elements of music; aural recognition of all diatonic intervals; melodic phrases; and rhythms are studied. Includes two hours laboratory per week.

*Prerequisite: none*

**MU 1704 (Lec), 1711 (Lab) 5 hours****Music Theory II**

A second course in music theory, extending into areas of seventh chords and non-harmonic tones. Includes two hours laboratory per week.

*Prerequisites: MU 1614 & 1621*

**MU 1803 3 hours****Music Literature**

A study of music through aural and visual perception. Music studied will include examples of the major musical forms used by composers from the Middle Ages into the 20th Century. In addition to listening assignments covered in class, supplementary assignments will be made. Required of all music majors/minors. Open to all students.

*Prerequisite: none*

**MU 1902 2 hours****Foreign Languages for Singing I**

A independent study course introducing the International Phonetic Alphabet and studying Italian and Latin



## 94/Transfer Courses

diction. Emphasis is placed upon oratorical rather than conversational pronunciation.

*Prerequisite: none*

### **MU 1912** **2 hours** **Foreign Languages for Singing II**

An independent study course introducing German and French diction. Emphasis is placed upon oratorical rather than conversational pronunciation.

*Prerequisite: MU 1902 or consent of instructor*

### **MU 2043** **3 hours** **Music for Children**

A basic study of music, including notation, scales, intervals, chords, and rhythms; intended for the elementary education major. Includes an activities approach to classroom music through the Orff and Kodaly methods. Includes student presentations.

*Prerequisite: MU 1003*

### **MU 2104, 2121** **5 hours** **Music Theory III**

A third course in music theory. A study of chromatic harmony including secondary dominants, modulation, and altered chords. Two hours laboratory per week.

*Prerequisite: MU 1704 & 1711*

### **MU 2204, 2211** **5 hours** **Music Theory IV**

A continuation of MU 2104 & 2121 to more complex areas of chromatic, borrowed, and altered chords; and finally to the appearance of complex modern techniques. Includes two hours laboratory per week.

*Prerequisites: MU 2104 & 2121*

### **MU 2701, 2, 3, 4** **1-4 hours** **Directed Studies in Music**

The student enrolled for directed studies will investigate a specific topic within the field of music. Enrollment usually restricted to junior level music major courses.

*Prerequisite: consent of instructor*

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## **Philosophy/Religion**

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### **PR 1003** **3 hours** **Introduction to Philosophy**

A course which introduces the student to some of the major areas of philosophic inquiry concerning human experiences and the nature of the reality through the reading and discussion of representative selections from contemporary and classical writings.

*Prerequisite: none*

### **PR 1103** **3 hours** **Introduction to Logic**

A study of techniques for distinguishing between adequate and inadequate arguments. The course will introduce several techniques that may be used to evaluate arguments. Primary emphasis will be on learning to use the techniques of propositional and monadic predicate calculi in evaluation arguments.

*Prerequisite: none*

### **PR 1203** **3 hours** **History of Modern Philosophy**

A study of the historical development in the awareness and solutions to western philosophic problems from modern times to the present. The course is based upon the teachings of the great philosophers, with emphasis upon their importance for us today.

*Prerequisite: none*

### **PR 1303** **3 hours** **Living World Religions**

An introductory survey course of the major Eastern and Western religions of the world today, with emphasis on the similarities and differences in their basic teachings and practices, historical backgrounds, and lives of their founders.

*Prerequisite: none*

### **PR 2103** **3 hours** **Contemporary Ethical Problems**

A course concerned with moral action—deciding whether acts are good or bad, right or wrong. It begins with a study of why people act the way they do and considers different approaches to moral conduct. Discussions center on such modern problems as mercy killing, abortion, capital punishment, and sexual, medical, and business ethics.

*Prerequisite: none*

### **PR 2403** **3 hours** **Biblical Literature I: Old Testament**

A critical-historical survey of the Old Testament as literature. Emphasis is placed upon the different modern approaches to Biblical understanding and criticism, especially as it applies to the Exodus Event in the history of Israel through the Division of the Kingdom. The course is designed to help the student appreciate the Bible as great literature from a critical point of view.

*Prerequisite: none*

### **PR 2503** **3 hours** **Biblical Literature II: Old Testament**

A critical-historical survey of the Old Testament as literature. Emphasis is placed upon the different modern approaches to Biblical understanding and criticism,

especially as it applies to the Biblical writings after the Division of the Kingdom until the end of the Old Testament period. The course is designed to help the student appreciate the Bible as great literature from a critical point of view.

*Prerequisite: none*

**PR 2603 3 hours**  
**Biblical Literature III: New Testament**

A critical-historical survey of the New Testament as literature. Special emphasis is placed upon the different modern approaches to Biblical understanding and criticism, and upon the different literary types of writings found in the New Testament itself, especially the Gospels and Letters of Paul. The course is designed to help the student appreciate the Bible as great literature from a critical point of view.

*Prerequisite: none*

**PR 2701,2,3 1-3 hours**  
**Topics in Philosophy/Religion**

An intensive study of various topics in philosophy, individual philosophers, or philosophical schools. The study will include extensive reading, discussion, and an in-depth paper.

*Prerequisite: none*

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## Physical Education

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**PE 1001,2 1-2 hours**  
**Coed Physical Activity**

Various beginning and intermediate level physical activity courses may be selected from the following group. Each one-hour activity course meets the equivalent of two hours per week. Refer to the schedule of classes for courses offered in a particular semester.

*Prerequisite: none*

Aerobic Dance	Jazz Dance
Archery	Karate
Backpacking	Physical Fitness
Ballet	Racquet Sports
Ballroom Dance	Racquetball
Baseball	Skating
Basketball	Skeet and Trap Shooting
Bowling	Skiing
Canoeing	Soccer
Chinese Martial Arts	Softball
Fencing	Strength Training
Field Hockey	Tap Dance
Flag Football	Tennis
Folk and Square Dance	Volleyball
Golf	Wrestling
Gymnastics	Yoga

**PE 1001 1 hour**  
**Adaptive Physical Activity**

An individualized course designed to offer various physical activities to individuals with temporary or permanent physical disabilities or handicaps.

*Prerequisite: consent of instructor*

**PE 1001 1 hour**  
**Varsity Sports**

A course in individual skills, team strategy, and conditioning that is involved with preparing a team or individual for intercollegiate competition. Includes competition in the following sports: men's and women's basketball, softball, baseball, women's volleyball and men's soccer.

*Prerequisite: permission from coach of the sport involved*

**PE 1102 2 hours**  
**Officiating Sports**

A course designed to teach the techniques and rules of officiating. Students may choose courses in baseball, basketball, football, soccer or volleyball officiating.

*Prerequisite: none*

**PE 1202 2 hours**  
**History and Principles of Physical Education**

A consideration of the principles of the basic theories of physical education. The course is designed for physical education majors and minors.

*Prerequisite: none*

**PE 1302 2 hours**  
**Introduction to Recreation**

An introductory look at the field of recreation. Includes study in the history, development, & principles of recreation. The course is designed for physical education and recreation majors and minors.

*Prerequisite: none*

**PE 1402 2 hours**  
**Introduction to Physical Education**

An introductory professional course for the physical education major. Designed to provide the opportunity to explore the history, scope, values, and philosophy of physical education, professional responsibilities and career opportunities.

*Prerequisite: none*

**PE 2052 2 hours**  
**P.E. for Children**

A course designed for physical education or elementary education majors for the introduction of activities and games to be taught on the elementary level.

*Prerequisite: none*

**PE 2202 2 hours****Care & Prevention of Athletic Injuries**

A study of the treatment of wounds, shock, poisoning, fractures, unconsciousness, stoppage of breathing, and the care and prevention of athletic injuries. Designed for physical education majors.

*Prerequisite: none*

**PE 2302 2 hours****Coaching Baseball**

A course in organization and management of a competitive baseball program to include individual techniques, team play, rules, and problems involved with coaching baseball.

*Prerequisite: none*

**PE 2402 2 hours****Coaching Basketball**

A course in organization and management of a competitive basketball program. Systems of offense and defense are studied. Topics include a study of rules, training schedules and a discussion of problems arising during training and the regular playing season.

*Prerequisite: none*

**PE 2502 2 hours****Coaching Volleyball**

A course in organization and management of a school volleyball program to include individual techniques, team play, rules, and problems in coaching volleyball.

*Prerequisite: none*

**PE 2701,2,3 1-3 hours****Directed Studies in Physical Education**

A course involving independent study (usually by physical education majors) in the various aspects of the physical education curriculum. This could include: (1) specialized study in one area of physical education, (2) assisting with instruction or administration of class, (3) assisting with operation of varsity sports, or (4) assisting with organization or administration of intramural sports.

*Prerequisite: consent of instructor*

**PH 1103 (lec), 1112 (lab) 5 hours****Introductory Physics**

A study of mechanics, heat, sound, light, electricity, and physical properties of matter. A non-calculus course which features problem solving and laboratory work. Three hours lecture and two lab periods per week.

*Prerequisite: DF 1083, MT 1303, or satisfactory score on the ACT*

**PH 1703 (lec), 1712 (lab) 5 hours****College Physics I**

A study of mechanics, properties of matter, and thermodynamics. Not recommended for math, physical science, or engineering students.

*Prerequisite: MT 1402 and 1403, 1505, or equivalent*

**PH 1803 (lec), 1812 (lab) 5 hours****College Physics II**

A continuation of PH 1703 & 1712, including a study of electricity, magnetism, light, and atomic physics. Not recommended for math, physical science, or engineering students.

*Prerequisite: PH 1703 & 1712*

**PH 2103 (lec), 2112 (lab) 5 hours****General Physics I**

A study of the mechanics of solids, liquids, and gases and of heat and sound. A course intended for the student who plans to major in mathematics, the physical sciences, or engineering. Three hours lecture and two two-hour laboratory periods per week.

*Corequisite: MT 2105*

**PH 2203 (lec), 2212 (lab) 5 hours****General Physics II**

A study of electricity, magnetism, light, and modern physics. Three hours lecture and two two-hour laboratory periods per week.

*Prerequisite: PH 2103 and 2112*

*Corequisite or Prerequisite: MT 2205*

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## Physics

**PH 1003 (lec), 1012 (lab) 3 or 5 hours****Physical Science**

A study of the basic concepts of matter and energy and their application in environmental and energy issues in modern society. Recommended for non-science majors.

*Prerequisite: none*

**PH 2701,2,3 1-3 hours****Directed Studies (Honors) in Physics**

The student enrolled for directed studies has two alternatives: (1) investigate a specific topic within the field of physics, or (2) assist in the laboratory, stockroom, or with individualized instruction under the supervision of an instructor.

*Prerequisite: consent of instructor*

## Political Science

### PS 1103 3 hours Introduction to Political Science

A course which introduces the student to the theory and content of politics: specifically a comparative study of democratic and non-democratic governments. Basic concepts and approaches to the study of political activity are discussed. PS 1103 complies with the provisions of Section 170.011 Rs Mo. requiring the study of state and federal constitutions.

*Prerequisite: none*

### PS 1203 3 hours American Government I: National and State

An introduction to the basic principles and structures of American national, state, and local governments. Emphasis will be placed upon the federal system; constitutional development and interpretation; civil liberties; political parties; the executive, legislative, and judicial branches; and federal administrative agencies. PS 1203 complies with the provisions of Section 170.011 Rs Mo. requiring the study of state and federal constitutions.

*Prerequisite: none*

### PS 1303 3 hours American State and Local Government

An introduction to the basic principles and structures of American, state, and local government with emphasis on Missouri. State government structure and politics and state-local relationships will be considered as will county, municipal, special district, and school district governments. The political and administrative problems of metropolitan areas will be given special attention. The course meets Missouri component of Section 170.011 Rs Mo. requiring the study of state and federal constitutions.

*Prerequisite: none*

### PS 2103 3 hours International Relations

A study of the major factors underlying international relations: climate and geography, national concepts and institutions, and the development of foreign policy. Today's problems of developing nations, East vs. West, and nuclear potentials are considered.

*Prerequisite: none*

### PS 2203 3 hours Introduction to Public Administration

A study of the analysis of concepts and functions of administrative organizations. Included is a study of internal dynamics of governmental agencies: management, supervision, financial control, personnel super-

vision, and democratic accountability.

*Prerequisite: none*

### PS 2701,2,3 1-3 hours Directed Studies (Honors) in Political Science

The student enrolled for directed studies has two alternatives: (1) investigate a specific topic in the field of political science, or (2) assist with tutorial political science instruction under the supervision of an instructor.

*Prerequisite: consent of instructor*

## Psychology

### PY 1103 3 hours General Psychology

A course designed to provide the student with a broad, general introduction to the field of psychology. It is a study of behavior designed to present an account of the significant concepts and findings of contemporary psychology. The course should provide a clear description of the bodies of knowledge in the core areas of psychology.

*Prerequisite: none*

### PY 1203 3 hours Experimental Psychology

A study of the various processes by which behavioral researchers discover facts about the behavior of individuals. The emphasis is on methodology rather than statistical concepts, tests, or content areas. This course should locate experimental psychology within the context of psychological research in general. A number of indispensable concepts will be introduced and defined which should form a foundation for future study.

*Prerequisite: PY 1103*

### PY 2103 3 hours Personal and Social Adjustment

A study of the everyday task of coping with ourselves, our environment, and the people we encounter. Emphasis will be placed upon coping with problems, obstacles, and depressions.

*Prerequisite: none*

### PY 2203 3 hours Child Psychology

A study of development from conception to adolescence emphasizing both current and historical approaches to research and theory, genetic and environmental influences on development, and the sequence and timing of physical, mental, and personality development throughout the years of childhood.

*Prerequisite: PY 1103 or consent of instructor*

**PY 2403 3 hours**

**Human Development**

A course designed to provide the student with a broad, general introduction to human development. The entire life span will be covered including those concepts and principles basic to an understanding of human development. Development will be studied using an integrated approach from the biological, psychological, sociological, and cultural perspectives.

*Prerequisite: none*

**PY 2503 3 hours**

**Adolescent Psychology**

A broad, general introduction to human development and, specifically, adolescent development. Adolescence will be viewed in the entire life cycle and in the social, cultural, political, and historical contexts. An integrated approach involving biological, psychological, and cultural perspectives will be used.

*Prerequisite: PY 1103 or consent of instructor*

**PY 2701,2,3 1-3 hours**

**Directed Studies in Psychology**

Course content and hours arranged by instructor.

*Prerequisite: consent of instructor*

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## Sociology

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**SO 1103 3 hours**

**General Sociology**

An introductory course in the field of sociology with special emphasis on the scientific study of social relations, social organizations, social institutions, and social dynamics.

*Prerequisite: none*

**SO 1203 3 hours**

**American Social Problems**

A study of select social problems, including consideration of proposed lines of action in dealing with them. Problem areas include population, the affluent society, poverty, urban renewal, delinquency and crime, automation, the aging, ethnic and racial relations, and the role of the United States in the relationship to the underdeveloped areas of the world.

*Prerequisite: none*

**SO 2103 3 hours**

**Human Relations**

An introduction to the applied principles of sociology and psychology as they relate to human interaction in small groups. Major emphasis is placed on analysis of the interaction process with a view toward additional understanding of individual and group behavior and the problems attendant to leadership.

*Prerequisite: none*

**SO 2203 3 hours**

**Marriage and the Family**

A study of the family, society, and the individual. The course includes background on American family patterns; premarital behavior; marriage and variations in family forms; and problems of the family today. Special emphasis is given to marriage and the family as a kind of human relationship.

*Prerequisite: consent of instructor*

**SO 2303 3 hours**

**Introduction to Social Work**

A study of the philosophy, historical development and perspectives of social work.

*Prerequisite: SO 1103*

**SO 2701,2,3 1-3 hours**

**Directed Studies (Honors) in Sociology**

Course content and hours arranged by instructor.

*Prerequisite: consent of instructor*

## Accounting

### AC 1003 3 hours

#### Applied Accounting

A course designed to meet the needs of two types of students: (1) the vocational student who did not receive a B or better grade in high school bookkeeping within the past four years and who needs an accounting course to complete a degree or certificate program; and (2) the student with a need for developmental work in accounting prior to enrollment in Accounting I.

*Prerequisite: none*

### AC 1023 3 hours

#### Accounting I

A study of basic principles and procedures of business accounting, including debits and credits, journals and ledgers, accruals, deferrals, depreciation, determination, voucher system, payroll, the balance sheet, and income statements.

*Prerequisite: high school bookkeeping, AC 1003, or consent of instructor*

### AC 1031 1 hour

#### Accounting I Lab

A laboratory period for Accounting I students to work on assignments under the supervision of an instructor, to take examinations, and to study the results of examinations. To be taken concurrently with Accounting I.

*Prerequisite: none*

### AC 1043 3 hours

#### Accounting II

A continuation of the study of accounting principles, including cash and investments, receivables, inventory, fixed assets, liabilities, manufacturing operations, partnerships, corporations, and the analysis of financial data concerning these items.

*Prerequisite: AC 1023*

### AC 1051 1 hour

#### Accounting II Lab

A laboratory period for Accounting II students to work on assignments under the supervision of an instructor, to take examinations, and to study the results of examinations. To be taken concurrently with Accounting II.

*Prerequisite: AC 1023*

### AC 2013 3 hours

#### Computer Assisted Accounting

A study of accounting as it applies to computers. The course includes the use of spreadsheet templates to solve financial accounting problems and study "what

if" situations and the use of a commercial general ledger package to process accounting information.

*Prerequisite: AC 1043 and keyboarding or typewriting skills*

### AC 2021 1 hour

#### Accounting Practicum

A course designed to give students practical working experience through the complete accounting cycle by the use of a commercial general ledger applied to a practice set.

*Prerequisite: AC 1023*

### AC 2043 3 hours

#### Intermediate Accounting I

A review of the concepts and principles underlying accounting and their application in the accounting process. Valuation procedures and problems are considered for each class of assets on the balance sheet along with their related effect upon income measurement.

*Prerequisite: AC 1043*

### AC 2053 3 hours

#### Tax Accounting

A comprehensive study of the federal tax structure and the application of the principles involved to specific individual and business tax problems.

*Prerequisite: AC 1043 or consent of instructor*

### AC 2063 3 hours

#### Intermediate Accounting II

A continuation of Intermediate Accounting I. Valuation procedures and problems are considered for each class of liabilities and the equity section of the balance sheet along with their related effect upon income measurement. Various forms of financial statement analysis are also studied along with the opinions of the Accounting Principles Board.

*Prerequisite: AC 2043 or consent of instructor*

### AC 2073 3 hours

#### Cost Accounting

A study of the job order, process, and standard cost systems and the flow of costs in the accounting for materials, labor, and overhead in the manufacturing process.

*Prerequisite: AC 1023 or consent of instructor*

### AC 2083 3 hours

#### Payroll Accounting

A course structured to develop an appreciation and understanding of personnel and payroll records required for the operation of a payroll system. Includes a study of the Fair Labor Standards Act, basic payroll

accounting systems and procedures, the Social Security Act as it relates to payroll, and an introduction to the various types of automated equipment and data processing systems common to payroll accounting.

*Prerequisite: AC 1003 or consent of instructor*

### **AC 2093 3 hours** **Managerial Accounting**

A course designed to teach future managers ways to use, analyze, and interpret accounting data once it is available to them. Emphasis is placed upon the analysis of data rather than the collecting and recording function. An interdisciplinary approach is provided through the mix of topics involving economics, finance, mathematics, and statistics.

*Prerequisite: AC 1013*

### **AC 2103 3 hours** **Advanced Tax Accounting**

A continuation of the study of federal income tax. Consideration will be given to the special treatment received by the various business entities, including a study of partnerships, corporations, estates, and trusts. Study will focus on the impact of taxation on business planning and decision making.

*Prerequisite: AC 2043*

### **AC 2113 3 hours** **Auditing**

A course which features auditing theory, procedures, and practices, including verification of records, evaluation and analysis of accounts, and presentation of conditions. Students will be required to complete a fairly comprehensive set of illustrative audit work papers and prepare an audit based thereon.

*Prerequisite: AC 2063*

### **AC 2123 3 hours** **Accounting Internship**

A supervised work experience (at least nine hours per week) in an actual accounting situation. Supervision will be by accounting personnel in business or industry with coordination of the work experience to classroom instruction by the instructor.

*Prerequisite: consent of instructor or AC 1043*

### **AC 2132 2 hours** **Individual Income Tax**

A course designed to cover practical applications of the Federal Tax System as it relates to the individual tax payer. The 1040 and the short forms will be covered along with supporting schedules involving the most frequent types of reporting situations.

*Prerequisite: none*

### **AC 2661, 2672, 2683 1-3 hours** **Directed Studies in Accounting**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite: consent of instructor*

### **AC 2991 1 hour** **Directed Studies—Accounting Placement**

A course designed to assist accounting students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

## **Agriculture**

### **AG 1013 3 hours** **Animal Science I**

A study of the principles of animal production including animal products, anatomy and carcass evaluation, genetics, and reproduction.

*Prerequisite: none*

### **AG 1022 2 hours** **Animal Science II**

A continuation of AG 1013 with the addition of topics on nutrition and animal diseases.

*Corequisite: AG 1013*

### **AG 1033 3 hours** **Principles of Agriculture Economics**

A study of the principles of production, supply, and demand as applied to economic problems of agriculture and related industries. Also includes emphasis on decisions in management, marketing, foreign trade, and policy for economic growth.

*Prerequisite: none*

### **AG 1043 3 hours** **Farm Management**

A course outlining the economic and management principles involved in operating agricultural businesses. Attention is given to problems of labor, management, mechanization, rental arrangements, contract farming, and credit financing.

*Prerequisite: AG 1033*

### **AG 1053 3 hours** **Animal Feeds and Nutrition**

A study of feed composition and utilization, ration formulation, feed evaluation and identification, and practical problems.

*Prerequisite: CH 2203 and 2212*

**AG 1063 3 hours**

**Livestock Selection and Evaluation**

A study of the selection of breeding stock of beef cattle, swine, and sheep; including production records, reproductive efficiency, and visual appraisal.

*Prerequisite: none*

**AG 2013 3 hours**

**Crop Science**

A study of crop and soil sciences, the principles of agronomy, and the production and utilization of major crops.

*Prerequisite: none*

**AG 2023 3 hours**

**Agricultural Pesticides and Chemicals**

A course designed to acquaint students with the uses and application of agricultural chemicals, insecticides, fungicides, herbicides, nematocides, rodenticides, and others.

*Prerequisite: none*

**AG 2033 3 hours**

**Marketing Farm Commodities**

A study of the perishable products that create problems for processors, retailers, and farmers; and the efficiency system and business operations necessary for farm products.

*Prerequisite: AG 1033*

**AG 2041 1 hour**

**Introduction to Agricultural Occupations**

An introduction to the many fields of agribusiness including the opportunities for employment. Emphasis is also placed on desirable characteristics of employees.

*Prerequisite: none*

**AG 2058 8 hours**

**Occupational Internship**

Students work in an agriculture-related business for an eight-week period to develop experience and skills. Class will meet for one hour on alternating weeks to discuss problems and beneficial experiences.

*Prerequisite: AG 2041*

**AG 2062 2 hours**

**Advanced Livestock Judging**

A study of how to place animals by visual appraisal, including giving oral reasons to justify the placings. Includes competition in judging contests.

*Prerequisite: AG 1063*

**AG 2073 3 hours**

**Beef, Sheep, and Swine Production**

A study of the principles of breeding, feeding, housing care, and management of beef, sheep, and swine livestock enterprises. Considerable time is spent on disease protection and health care.

*Prerequisite: AG 1013 and AG 1022 or consent of instructor*

**AG 2083 3 hours**

**Farm Water Management**

A study of water management practices in maintaining soil productivity, farm surveying, design, and layout of ponds and pond dams.

*Prerequisite: none*

**AG 2093 3 hours**

**Pasture and Forage Management**

A course which presents a complete multidisciplinary approach to forage management. It offers material on forage plant species and their cultivars. It also considers the various ways in which these plants are conserved and the chemical and physical characteristics which constitute forage quality.

*Prerequisite: AG 2013 or consent of instructor*

**AG 2103 3 hours**

**Grain Crops**

A course designed to stimulate the student's thinking concerning information needed in planning for a successful crops production program. All aspects of the program are considered (from planning the production program through delivery to the market place). Major grain crops included are soybeans, corn, wheat, rice, sorghum, barley, rye, triticale, and oats.

*Prerequisite: AG 2013 or consent of instructor*

**AG 2113 3 hours**

**Computers for Farmers**

A course designed to familiarize students with computer applications for farm management/decision making and record keeping. Students will do budgeting and use some electronic spreadsheets in agricultural applications.

*Prerequisite: none*

**AG 2123 3 hours**

**Farm Machinery Maintenance**

A course dealing with preventive maintenance and adjustment of farm machinery. Major emphasis will be placed upon combines, hay equipment, sprayer calibration, planter and drill adjustment, and tillage equipment adjustment and maintenance.

*Prerequisite: none*



**AG 2661, 2672, 2683 1-3 hours****Directed Studies in Agriculture**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite: consent of instructor*

**AG 2991 1 hour****Directed Studies—Agriculture Placement**

A course designed to assist agriculture students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

## Air Conditioning and Refrigeration Technology

**AI 1001 1 hour****Electrical Diagrams**

A course designed to familiarize the student with the various factors involved in electrical diagrams. The student will acquire a working knowledge of electrical circuits using schematic and pictorial diagrams. The schematics will include different loads and various switches utilizing electrical symbols.

*Prerequisite: none.*

**AI 1013 3 hours****Theory of Refrigeration and Materials**

A study of the theory of refrigeration, along with the use and safety of refrigeration hand tools and commonly used materials.

*Prerequisite: none*

**AI 1023 3 hours****Applied Electrical Fundamentals**

A course which starts with the basic fundamentals and processes of electrical wiring for refrigeration components and motors. After students acquire a working knowledge of electrical circuits, they apply this to laboratory tests on testing boards and refrigeration equipment.

*Prerequisite: none*

**AI 1033 3 hours****Systems and Components**

An introductory course covering basic theory, and applied applications of electricity pertaining to industrial and commercial systems, motors, and components comprising these systems. Students will gain technical knowledge and develop skills required in the areas of installation, maintenance, and diagnosis of problems.

*Prerequisite: AI 1113 or consent of instructor*

**AI 1043 3 hours****Refrigerants**

A study of the various types of refrigerants and their characteristics, skills in handling refrigerants, pressure-temperature relationships, refrigerant oils, noncondensable gases, and their applications.

*Prerequisite: none*

**AI 1053 3 hours****Domestic Refrigeration**

A study of application and knowledge of the fundamentals of refrigeration and electricity by means of troubleshooting and repairing domestic refrigerators and freezers.

*Prerequisite: none*

**AI 1063 3 hours****Commercial Refrigeration**

A study of the selection, installation, servicing, diagnosing, and repair of commercial equipment. The student will gain knowledge and experience in food preservation and processing equipment by using the types of equipment found in supermarkets, restaurants, and other commercial installations.

*Prerequisite: AI 1013, 1023, 1033, 1043, and 1053*

**AI 1073 3 hours****Theory of Air Conditioning and Psychrometrics**

A course which outlines the fundamental concepts of air conditioning and psychrometrics. Psychrometry is used to find and establish the conditions of air which will be the most comfortable for a specific situation.

*Prerequisite: AI 1013, 1023, 1033, 1043, and 1053*

**AI 1082 2 hours****Applied Air Distribution**

A course designed to familiarize the student with the various factors involved in the distribution of air in an air conditioning system.

*Prerequisite: AI 1013, 1023, 1033, 1043, and 1053*

**AI 1094 4 hours****Air Conditioning Equipment and Installation**

A study of the proper selection, installation of, and adjustments to various systems of air conditioning equipment, with special emphasis on human comfort. Consumerism and/or customer-service technician relationships are discussed.

*Prerequisite: AI 1013, 1023, 1033, 1043, and 1053*

**AI 1103 3 hours**  
**Testing, Diagnosis, and Troubleshooting**

A detailed study of the application of the technical knowledge and skills of air conditioning and refrigeration. The student will learn to utilize systematic analysis procedures for speed as well as accuracy in diagnosing and troubleshooting equipment.

*Prerequisite:* AI 1013, 1023, 1033, 1043, and 1053

**AI 1123 3 hours**  
**Applied Sheet Metal I**

A course designed to provide a practical working knowledge and to develop skills required in the use of sheet metal in residential duct systems. After students become familiar with the tools and equipment and the set of safety standards used, they will apply this knowledge to practical application. This will include applying patterns, fabricating sheet metal, soldering, and drawing simple patterns.

*Prerequisite:* none

**AI 1133 3 hours**  
**Applied Sheet Metal II**

A course designed to provide a practical working knowledge and develop skills required in the use of sheet metal in residential duct systems. The breadth of this course is greater than Applied Sheet Metal I and allows for the in-depth application of plenums and duct work for heating and cooling systems in residential construction.

*Prerequisite:* AI 1123 or consent of instructor

**AI 1143 3 hours**  
**Heat Pump I**

An introductory course designed to cover the basic theory and applied application of the heat pump system. Students will gain a working knowledge and develop skills in the area of load calculations, (heat gain, heat loss) balance points of systems, installation and application, and methods of control of the equipment by different manufacturers. Servicing and troubleshooting the various heat pump systems will be dealt with.

*Prerequisite:* none

**AI 1153 3 hours**  
**Heat Pump II**

A detailed study of the applications and design of heat pumps. This course applies in-depth application of air distribution, performance, and system troubleshooting.

*Prerequisite:* AI 1143 or consent of instructor

**AI 1163 3 hours**  
**Oil Heat and Controls**

A course which provides advanced training and application pertaining to residential oil heating equipment.

Through practical application in the lab, students will gain experience and skills in the areas of installation, maintenance, and troubleshooting.

*Prerequisite:* completion of air conditioning and refrigeration program or consent of instructor

**AI 1173 3 hours**  
**LP, Electric Heat, and Controls**

A course which provides advanced training and application pertaining to liquid petroleum and electric residential heating equipment. Through practical application in the lab, students will gain experience and skills in the area of installation, maintenance, and troubleshooting.

*Prerequisite:* completion of air conditioning and refrigeration program or consent of instructor

**AI 1183 3 hours**  
**Understanding Solar Energy Systems**

A study of solar energy and its uses for heating and cooling buildings, heating of domestic hot water, and heating of water for swimming pools. Active solar energy systems and passive solar energy systems will be investigated and dealt with. Students will gain knowledge, skills, and experience in locating, collecting, storing, and distributing solar energy.

*Prerequisite:* none

**AI 1193 3 hours**  
**Introduction to Energy**

An introductory course on energy and the problems related to energy. The students will have opportunities to explore and experiment with possible solutions to the energy crisis. Students will also explore career opportunities as to the job openings available in this new and emerging field, and learn good conservation techniques.

*Prerequisite:* none

**AI 1203 3 hours**  
**Basic Electricity I**

An introductory course stressing basic electrical theory and applied practical wiring for residential systems. Students will gain technical knowledge and develop skills required in the areas of installation, maintenance, and diagnosis of problems.

*Prerequisite:* none

**AI 1213 3 hours**  
**Basic Electricity II**

An introductory course covering basic theory and applied application of electricity pertaining to industrial and commercial systems, motors, and components comprising these systems. Students will gain technical knowl-

edge and develop skills required in the areas of installation, maintenance, and diagnosis of problems.

*Prerequisite:* AT 1203 or consent of instructor

**AI 1661, 1672, 1683 1-3 hours**  
**Directed Studies in Air Conditioning & Refrigeration**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite:* consent of instructor

**AI 2991 1 hour**  
**Directed Studies—Air Conditioning and Refrigeration Technology Placement**

A course designed to assist air conditioning and refrigeration students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

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## Automotive Technology

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**AT 1015 15 hours**  
**Automotive Engines and Engine Systems**

A study of the automotive internal combustion engine and its support systems. This semester-length course covers component design and function, diagnosis and repair of basic engine features plus fuel, ignition, emission control systems, and tune up. This is done in the classroom and shop surroundings using proper repair and testing techniques as suggested by American and import automotive manufacturers. Special emphasis will be placed upon repairs such as removal, repair, and replacement of most of these items. The student will also participate in several car clinics held in locations throughout the college district.

*Requisite:* must have own hand tools

**AT 1115 15 hours**  
**Automotive Chassis Systems**

A comprehensive study of standard and automatic transmissions, brake systems, drivelines and differentials, steering and suspension, D.C. electrical systems (starter, battery, charging, and body wiring), and automotive air conditioning. This semester-length course covers component design and function, and the diagnosis and repair of these systems in a classroom and shop atmosphere. The student will diagnose and repair many of these systems using proper techniques and tools as suggested by American and import automotive manufacturers. Special emphasis will be placed upon providing practical experience by using operational vehicles

when possible. The student will also participate in several car clinics held in locations throughout the college district.

*Requisite:* must have own hand tools

**AT 1126 6 hours**  
**Engine Repair**

A detailed study of the gasoline-powered internal combustion engine. Emphasis is placed upon procedures for repair and replacement of engine parts and components, engine cooling systems, and valve train assemblies. Engine overhaul and machine procedures are discussed in detail, and lab work includes the correct disassembly, measuring, and reassembly of engine components.

*Offered evenings only.*

*Requisite:* must have own hand tools

**AT 1133 3 hours**  
**Fuel Systems**

A detailed study of the principles and theory of carburetion and fuel systems of the modern automobile. Includes lab work on overhauling, servicing, and adjusting fuel system components. Special emphasis is placed on fuel system design, manufacture, and servicing due to federal and state air pollution legislation.

*Offered evenings only.*

*Requisite:* must have own hand tools

**AT 1143 3 hours**  
**Ignition**

A study of automotive ignition systems. The course begins with the standard point type ignition and progresses to Chrysler, Ford, and GM electronic ignition systems. Lab and classroom work concentrates on troubleshooting and repairing system components.

*Offered evenings only.*

*Requisite:* must have own hand tools

**AT 1151 1 hour**  
**Tune-Up**

A detailed study of the relationships between the carburetion system, ignition system, and the mechanical parts of the engine. Lab work includes the use of the Marquette analyzer.

*Offered evenings only.*

*Prerequisite:* AT 1126, 1133 and 1143

*Requisite:* must have own hand tools

**AT 1165 5 hours**  
**Electrical Systems**

A study of automobile electrical systems. Beginning with a comprehensive study of direct-current theory, the module directs itself to application of the theory,

and an understanding of the automobile starting, charging, and body electrical systems. Classroom and lab work concentrates on troubleshooting and repairing auto electrical systems and components.

*Offered evenings only.*

*Requisite: must have own hand tools*

## **AT 1172 2 hours**

### **Emission Controls**

A study of automotive exhaust systems, and the various atmospheric pollution control systems installed on today's cars. The course includes diagnosis, testing, and repair of automotive emission control systems, as well as use of the infrared exhaust gas analyzer.

*Offered evenings only.*

*Prerequisite: AT 1126, 1133, and 1143*

*Requisite: must have own hand tools*

## **AT 1182 2 hours**

### **Standard Transmissions**

A study of three- and four-speed standard transmissions including clutches and clutch designs. Lab work concentrates on clutch replacement, shift linkage design and adjustments, and transmission disassembly and repair procedures. The theory of gear design and ratios is studied in detail.

*Offered evenings only.*

*Requisite: must have own hand tools*

## **AT 1192 2 hours**

### **Automatic Transmissions**

A detailed study of the theory, operation, and repair of automatic transmissions. The course begins with a complete study of planetary gear trains and their operation, hydraulic theory as applied to fluid couplings, and clutch theory and operation. Lab work concentrates on removal, disassembly, overhaul, and replacement of automatic transmission assemblies. Special emphasis is placed upon diagnosis of automatic transmission problems.

*Offered evenings only.*

*Requisite: must have own hand tools*

## **AT 1201 1 hour**

### **Air Conditioning**

A study of refrigeration and cooling theory, with concentration on the diagnosis and repair of common automotive air conditioning problems. Lab work includes the checking and charging of air conditioning systems, as well as leak-detection procedures and correction of common compressor problems.

*Offered evenings only.*

*Requisite: must have own hand tools*

## **AT 1212 2 hours**

### **Steering and Suspension**

A comprehensive study of coil and leaf-spring type suspension systems and the various configurations of each. Steering and shock absorber designs are also covered, along with the diagnosis and repair of common steering and suspension components.

*Offered evenings only.*

*Requisite: must have own hand tools*

## **AT 1222 2 hours**

### **Brakes**

A course which outlines hydraulic brake systems, both power-assisted and non-power assisted. Both disc and drum brake systems are covered in detail, along with brake repair procedures. Lab work includes brake servicing and replacement procedures, disc and drum reconditioning, and service to hydraulic master and wheel cylinder assemblies.

*Offered evenings only.*

*Requisite: must have own hand tools*

## **AT 1661, 1672, 1683 1-3 hours**

### **Directed Studies in Automotive Technology**

Directed Studies can provide a student with a wide range of experiences, from tool room operator to parts counter person. The student will also repair, clean, and adjust machines used in an automotive facility. This is a 2½ hour per day, 5 day a week class.

*Prerequisite: consent of instructor*

## **AT 2003 3 hours**

### **Computerized Engine Controls/GM & Chrysler**

A detailed study of fuel and ignition controls found on today's vehicles. Beginning with GM and its controls, CCC-EFI-PFI-SFI, to Chrysler, O<sub>2</sub> feedback-throttle body-PFI. Also an update in electronics.

*Prerequisite: consent of instructor*

## **AT 2991 1 hour**

### **Directed Studies—Automotive Technology Placement**

A course designed to assist auto technology students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

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## **Banking and Finance**

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## **BF 1013 3 hours**

### **Principles of Banking**

A descriptive orientation of bank operations including the various bank functions and an elementary descrip-

tion of their operation. The course is an overview of the banking field.

*Offered evenings only.*

*Prerequisite: none*

### **BF 1023**

**3 hours**

#### **Consumer Lending**

A study of the techniques of installment lending. Emphasis is on establishing credit, servicing a loan, collecting amounts due, and checking information. Each phase of the installment operation is scrutinized to be certain that the most efficient methods are employed. Other topics studied include inventory financing, special loan programs, business development and advertising, and the public relations aspects of installment lending.

*Offered evenings only.*

*Prerequisite: none*

### **BF 1033**

**3 hours**

#### **Law and Banking**

An introduction to basic American law, presenting the rules of law which underlie banking. Topics include jurisprudence, the court system and civil procedures, contracts, quasi-contracts, property, torts and crimes, agencies, partnerships, corporations, sales of personal property, commercial paper, bank deposits and collections, documents of title, and secured transactions. Emphasis is on the Uniform Commercial Code.

*Offered evenings only.*

*Prerequisite: none*

### **BF 1043**

**3 hours**

#### **Bank Data Processing**

A study of basic data processing concepts and terminology in a non-technical manner, designed to familiarize the student with basic data processing information with particular emphasis on banking applications.

*Prerequisite: none*

### **BF 2013**

**3 hours**

#### **Introduction to Commercial Lending**

A course which explains the role of the commercial lending function within the banking industry. Topics include the place of commercial banking within the U.S. economy; the analytical aspects of commercial lending — the customer, products, pricing, support, documentation, and analysis; consideration of funding risks; and the management of the commercial lending functions.

*Offered evenings only.*

*Prerequisite: BF 1013 recommended*

### **BF 2033**

**3 hours**

#### **Home Mortgage Lending**

A study of the picture of the mortgage market, the

acquisition of a mortgage portfolio, mortgage plans and procedures, mortgage loan processing and servicing, and the obligations of the mortgage loan officer.

*Offered evenings only.*

*Prerequisite: none*

### **BF 2043**

**3 hours**

#### **Bank Investments**

A course which provides students with a basic knowledge of the investment function of the bank. It is targeted to entry-level bank investment staff who want to improve their job performance or promotion potential and to non-investment staff at the supervisory, officer-trainee level or above, who want to obtain basic knowledge. Specific topics covered include a discussion of basic investment concepts (risk, liquidity, and yield), U.S. Treasury Department and federal agency issues, state and local government securities, general obligations, revenue bonds, money market investments, and securities markets. The role of successful investment management in achieving the bank's overall and financial objectives is discussed. The factors that affect and shape bank policy and strategy in a changing economic environment are also included for study.

*Offered evenings only.*

*Prerequisite: BF 1013 and strong bank experience.*

### **BF 2053**

**3 hours**

#### **Corporate Banking**

A study of methods of credit investigation and analysis, credit techniques, and specific credit problems relating to both regular and unusual types of loans. Directed to the executive level, the course includes factors influencing credit policy.

*Offered evenings only.*

*Prerequisite: none*

### **BF 2063**

**3 hours**

#### **Banking & Finance Internship**

An individualized program of study aimed at giving students an opportunity to balance their knowledge of a banking organization through experience in most functional areas of banking.

*Prerequisite: enrollment in Banking & Finance program and consent of instructor*

### **BF 2661, 2672, 2683**

**1-3 hours**

#### **Directed Studies in Banking & Finance**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite: consent of instructor*

**BF 2991** **1 hour**  
**Directed Studies—Banking and Finance Placement**

A course designed to assist banking and finance students in obtaining jobs suitable to their training and interests.

*Offered evenings only.*

*To be taken the last semester of study.*

## **Building Construction Technology**

**BC 1013J** **3 hours**  
**Blueprint Reading**

A study of the purpose and use of blueprints by the trade. Includes reading and interpreting blueprints.

*Prerequisite: none*

**BC 1014** **4 hours**  
**Blueprint Reading and Layout**

A course in reading and interpreting prints of the building, mechanical, and electrical trades. Includes preparation of a complete set of working drawings for a structure.

*Prerequisite: none*

**BC 1023** **3 hours**  
**Surveying and Layout**

A study of the theory involving basic surveying equipment, chaining, differential leveling, grade operations, layout of buildings, and building construction layout.

*Prerequisite: none*

**BC 1033** **3 hours**  
**Concrete**

A study of the basic theory and processes involving Portland cement, mixing cement, testing and designing concrete mixtures, curing concrete, tools for placing and finishing concrete, and estimating.

*Prerequisite: none*

**BC 1043** **3 hours**  
**Carpentry**

A study of basic theory and application of building construction fundamentals. Offered evenings only.

*Prerequisite: none*

**BC 1045** **5 hours**  
**Carpentry**

A study of basic theory and application of building

construction fundamentals including fabrication from architect's plans.

*Prerequisite: none*

**BC 1053J** **3 hours**  
**Electricity**

A study of the fundamentals of electricity and electrical safety.

*Prerequisite: none*

**BC 1055** **5 hours**  
**Electricity**

A study of basic A.C. and D.C. circuits with emphasis in commercial and residential applications.

*Prerequisite: none*

**BC 1064** **4 hours**  
**Plumbing**

A study of basic theory involving materials, tools and calculations, drainage and disposal systems, fittings, fixtures, and layout of systems.

*Prerequisite: none*

**BC 1073** **3 hours**  
**Welding**

A study of fundamental processes involving oxyacetylene and electric arc welding.

*Prerequisite: none*

**BC 1083** **3 hours**  
**Preventive Building Maintenance**

An introductory course in building, mechanical, and electrical maintenance.

*Prerequisite: none*

**BC 1093** **3 hours**  
**Sheetmetal and Preventive Building Maintenance**

A study of basic building, mechanical, and electrical maintenance. Includes applying patterned fabrication of sheet metal, soldering, and drawing simple patterns.

*Prerequisite: none*

**BC 1103** **3 hours**  
**Energy Efficient Buildings**

A study of energy conservation practices used in new and existing structures.

*Prerequisite: none*

**BC 1113** **3 hours**  
**Residential Construction Procedures**

A course dealing with building construction fundamentals including concrete, carpentry, plumbing, and electricity.

*Prerequisite: none*

**BC 1123 3 hours****Farm and Home Shop Construction**

A course designed to provide a working knowledge of construction and to develop many different shop skills. Emphasis will be placed upon planning, designing, and executing a project.

*Prerequisite: none*

**BC 1133 3 hours****Home Maintenance**

A study of basic theory and application in repairing, maintaining, and remodeling residential structures.

*Prerequisite: none*

**BC 1143 3 hours****Repair and Construction of Farm Machinery and Buildings**

A study of basic theory and application of farm building construction and equipment repairs.

*Prerequisite: none*

**BC 1153 3 hours****Blueprint Reading/Architectural Drawing**

A course in reading, drawing, and interpreting prints of the building, mechanical and electrical trades. Students must prepare a complete set of working drawings for a structure.

*Prerequisite: none*

**BC 1163J 3 hours****Construction Math**

A review of the basic math principles as applied to practical use in the trades. Includes ratios, decimals, percentages, volume, area, and measuring accuracy.

*Prerequisite: none*

**BC 1173J 3 hours****Architectural Drawing**

A study of the fundamental principles of residential design, methods of construction, building materials, and room arrangement. Students will prepare a complete set of residential plans which will meet all code requirements.

*Prerequisite: none*

**BC 1661, 1672, 1683 1-3 hours****Directed Studies in Building Construction Technology**

Course content and hours arranged by instructor.

*Prerequisite: consent of instructor*

**BC 1993J 3 hours****Building Maintenance Placement**

A course designed to assist students with job search activities such as resume writing, job application completion, interviewing techniques, and telephone inquiry skills.

*Prerequisite: none*

**BC 2991 1 hour****Directed Studies—Building Construction Technology Placement**

A course designed to assist building construction technology students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

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**Business Management**


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**BU 1003 3 hours****Introduction to Business**

A survey course designed to give the student a general knowledge of the modern business world, and a better basis for choosing concentrated business offerings.

*Prerequisite: none*

**BU 1013 3 hours****Principles of Marketing**

A course designed to introduce the student to the managerial area of marketing. Although consumer and institutional behavior patterns and the overall role of marketing in the economy are covered, the major emphasis will be concerned with the types of problems confronting those involved in marketing management.

*Prerequisite: none*

**BU 1023 3 hours****Salesmanship**

A study of proper sales techniques for presenting and selling merchandise to the consumer including methods of organization, training, and management of the sales force.

*Prerequisite: none*

**BU 1033 3 hours****Principles of Advertising**

A study of the aspects of advertising with emphasis on the development of a proper marketing mix, the planning of advertising strategy, the management of personnel, the control of advertising operations, advertising research, and development of display plans. Each student will be assigned an advertising project concerned with a marketing plan, advertising strategy, and an advertising budget.

*Prerequisite: none*

**BU 1043 3 hours**

**Principles of Finance**

A broad introduction to the operation, mechanics, and structure of the financial system within the United States. Special emphasis is given to financial instruments, markets, and institutions, the Federal Reserve System, and monetary policy. The course stresses the impact of monetary policy on the economy and on the operation of financial institutions. The course is intended to be the first course in finance.

*Prerequisite: EC 2103 is recommended.*

**BU 1053 3 hours**

**Fundamentals of Management**

A study in the evaluation and comparison of private and public personnel practices and the techniques of recruiting, selecting, transferring, promoting, classifying, and training workers.

*Prerequisite: none*

**BU 1063, 2023 3 hours**

**Business Management Internship**

Actual work experience in a business or industry with periodic discussions of the problems involved in applying classroom principles to the job.

*Prerequisite: Enrollment in business management program and consent of instructor*

**BU 2012 2 hours**

**Readings in Management**

A study of selected readings in group dynamics, communications, decision-making theory, managerialism, and its economic justification.

*Prerequisite: BU 1053*

**BU 2033 3 hours**

**Business Law**

A study of those areas of the law which affect most businesses: sales and credit, contracts, insurance, agency and employment, commercial paper, personal property, and bailments.

*Prerequisite: none*

**BU 2043 3 hours**

**Business Simulation and Problem Solving**

A computer assisted course in which the student encounters and attempts to solve the problems common to business owners and managers. The student is able to participate in operating an enterprise, as well as managing inventories, financial resources, and personnel. In addition to operating an ongoing concern, the student will also participate in a number of related business oriented decision making simulations, such as

mergers, the economics of marketing a product, and management decision making.

*Prerequisite: sophomore standing and BU 1013, 1053, and CS 1013*

**BU 2053 3 hours**

**Family Law**

A survey course with objectives of familiarizing the student with the basic concepts of law. The course includes the study of such areas as adoption, divorce, real estate transactions, credit transactions, basic familiarity with the criminal justice system, ownership of personal property, estates and trusts, and employer-employee relationships.

*Prerequisite: none*

**BU 2661, 2672, 2683 1-3 hours**

**Directed Studies in Business**

**Management**

Course content and hours arranged by instructor.

*Prerequisite: consent of instructor*

**BU 2991 1 hour**

**Directed Studies—Business Management Placement**

A course designed to assist business management students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

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## Computer Information Systems

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**CS 0001 1 hour**

**Introduction to Personal Computers-Apple**

An introductory course in personal computers to acquaint the student with the operation of a microcomputer system. Word processing, spreadsheet processing, file management and simulation programs are used by the student to develop an appreciation of the kinds of problems a computer can handle. All course activity is conducted in the microlab. Each student uses the microcomputer for approximately fifteen hours.

*Prerequisite: none*

**CS 0011 1 hour**

**Intro to Personal Computers/IBM**

A course designed to introduce the capabilities of an IBM/PC to the beginning student. The operating system, editor, word processing, file processing and spreadsheet processing will be introduced. All coursework will be done using the IBM/PC and appropriate software.

*Prerequisite: none*



**CS 0021****1 hour****Lotus 1-2-3 Spreadsheet**

A course designed to introduce the student to the LOTUS 1-2-3 Spreadsheet capabilities on the IBM/PC system. Through lectures, demonstrations, handouts and hands-on experiences the student learns to define formulas, use commands and develop worksheets. Some knowledge of a microcomputer and accounting principles is necessary.

*Prerequisite: none*

**CS 0031****1 hour****Lotus 1-2-3 Files and Graphs**

A course designed for students familiar with the spreadsheet capabilities of Lotus 1-2-3. Topics include managing data files, producing graphs, and developing simple macro's.

*Prerequisite: CS 1131 or consent of instructor*

**CS 0041****1 hour****Advanced Microcomputer Applications/IBM**

A course designed to introduce the student to an integrated approach to business procedures on the IBM/PC. Several popular software packages will be discussed and demonstrated. Extensive hands-on experience will allow the student to analyze and design a system to handle problems common to most businesses and to use several software packages to support the system they develop.

*Prerequisite: CS 0011.*

**CS 0051****1 hour****Advanced Microcomputer Applications/  
Apple**

A course designed to introduce the student to an integrated approach to business procedures on the Apple computer. Several popular software packages will be discussed and demonstrated. Extensive hands-on experience will allow the student to analyze and design a system to handle problems common to most businesses and to use several software packages to support the system they develop.

*Prerequisite: CS 0001*

**CS 0061****1 hour****Introduction to dBASE III**

A course designed to teach the use of a data base program. The development of specifications for files and records, sorting, retrieving records and updating records will be the main topics. Beginning programming techniques using dBASE III will also be taught. At least ten hours of the course will be devoted to using dBASE III on IBM personal computers.

*Prerequisite: CS 0011*

**CS 0071****1 hour****Using a Microcomputer for Data Entry**

A course to introduce the student to data entry skills on a microcomputer. Identifying the function and capabilities of the keyboard, maximizing the use of the keyboard and the development of data entry skills will be covered. The course emphasis will be on using the microcomputer and all students will use a microcomputer throughout the course as the primary learning tool.

*Prerequisite: none*

**CS 0081****1 hour****Advanced dBASE III**

This course is designed for individuals who are familiar with the basic commands of dBASE either through experience or the dBASE III course. Through discussion, demonstration and extensive hands-on use of dBASE, the student will learn how to develop programs in dBASE, how to create special input and output screens, and how to solve complex problems in dBASE.

*Prerequisite: CS 0061 or consent of instructor*

**CS 0091****1 hour****IBM DOS & Utility Programs**

A course designed to introduce the IBM Personal Computer user to the capabilities of the disk operating system and various utility programs to help the user in operating their microcomputer. Demonstration, discussion, lecture and extensive hands-on experience will be used to teach file management back-up and recovery procedures. Batch files and automatic start-up files will be covered as well as other public domain software appropriate to the class.

*Prerequisite: CS 0011*

**CS 1002****2 hours****Introduction to Computers and Information  
Systems-Special Interest**

A course for the special interest student who would like an overview of computers and information systems. Topics include computer systems, computer organization and their present and future roles in society. This course does not apply toward a degree program.

*Prerequisite: none*

**CS 1003****3 hours****Microcomputer Applications**

A course designed to introduce the student to a variety of ways to use microcomputers in business. Spreadsheet processing, data base management, word processing, forecasting development and the operating system of a microcomputer will be the focus of the course.

*Prerequisite: CS 1013 or consent of department chairperson*

**CS 1013** **3 hours**  
**Introduction to Computers and Information Systems**

An analysis of computer systems, their present uses and future roles in society, business, and public organizations. Topics emphasized include computer algorithms, computer organization (both hardware and software), data structures, program design and elementary programming in high level languages using microcomputers. IBM Microcomputers are used to complete lab work in the course.

*Prerequisite: none*

**CS 1023** **3 hours**  
**Computer Fundamentals and Operations**

A course to familiarize students with the general hardware of modern computer systems and to explain the relationship between computer hardware concepts and operating system software organization. Topics include: data and storage representations including binary arithmetic, Boolean algebra applications, operating system concepts, computer system components, device characteristics (including data base structure), and operations principles and documentation.

*Prerequisite: CS 1013 and/or previous programming experience*

**CS 1033** **3 hours**  
**Problem Solving Techniques**

A basic course in logical problem-solving methods employed in today's computer systems. Emphasis is placed upon developing the student's skills to logically apply the concepts to the problem solutions. Emphasis is placed upon maintaining an overall structure and discipline in logical design. General conceptual areas covered include: problem definition, problem analysis, solution development, and documentation.

*Corequisite: CS 1013*

*Prerequisite: none*

**CS 1043** **3 hours**  
**BASIC Programming**

A course in the BASIC language, designed to expand the student's knowledge, understanding, and skill development in solving problems using BASIC on a microcomputer system. Topics covered in the course include: BASIC fundamentals, editing capabilities in BASIC on a microcomputer, character string functions, table processing, subroutines and functions, extended I/O and formatting features, disk processing techniques, and system and utility commands.

*Prerequisite: CS 1013 or elementary experience with the BASIC language*

**CS 1053** **3 hours**  
**RPG II Programming**

A beginning course in business programming using the problem-oriented language, Report Program Generator II. The capabilities and limitations of RPG II and the structure and design of this report writer will be examined. The preparation and integration of RPG II's specification forms and its sundry features will be studied and applied to the solution of various business reporting requirements.

*Prerequisite: CS 1013*

**CS 2003** **3 hours**  
**Data Base Structures**

A course for majors and non-majors with the permission of the department chairperson. Data base structure definition and creation as well as development on microcomputers and minicomputers will be the major topics. Software appropriate to the hardware will be used to create, update and extract data from data bases on the IBM/PC and PRIME computers. Much of the course will involve hands-on experience, supplemented by lectures and demonstrations as appropriate.

*Prerequisite: CS 1023 or consent of department chairperson*

**CS 2013** **3 hours**  
**COBOL Programming I**

A beginning course in computer programming techniques and structure using the COBOL language. The course emphasizes expansion of the student's knowledge and understanding of programming concepts and methodologies (i.e., structured design and structured COBOL programming). It also stresses development of the student's skills in applying these methods and concepts during the process of designing and coding COBOL programs. The tools and facilities of the language are also explored and utilized. General areas covered by the course include: structured design and programming, design and coding walk-throughs using the team concept, and basic and special features of the COBOL language, including sequential disk files, sorting, tables and arrays, and report writing.

*Corequisite: CS 1033*

*Prerequisite: CS 1013*

**CS 2023** **3 hours**  
**COBOL Programming II**

An advanced course in the COBOL language, emphasizing completion of the student's knowledge, understanding, and skill-development in solving business problems in the COBOL language. Structured design/programming concepts/methods that are available in COBOL are stressed and implemented in program design/

composition. Topics covered include: program optimization, input data editing, sequential file processing and methodology, random file processing, and multi-file methods. Disk processing methodology is stressed throughout the course.

*Prerequisite:* CS 2013

### **CS 2033 3 hours** **Systems Development & Design I**

A course which studies basic approaches and techniques used in the analysis, design, and development of integrated business information systems. Typical business information problems will be examined via case studies. Topics covered are: general systems theory, management organization and systems, system functions/concepts, survey initiation and fact gathering, charting, systems analysis/design/implementation, evaluation and review, and feasibility studies.

*Prerequisite:* CS 1023, 1033, and one computer language course.

### **CS 2043 3 hours** **Systems Development & Design II**

An advanced course in systems analysis, design, development, and implementation using skills developed in CS 2033. An on-the-job environment will be created with students working in teams to design actual systems, generally business-oriented. Attempts will be made to design systems of various sizes and complexities, drawing upon the experiences of the students regarding languages and equipment used.

*Prerequisite:* CS 2033

### **CS 2053 3 hours** **FORTAN 77 Programming**

A basic course in computer programming techniques and structure using the FORTRAN 77 language which is oriented primarily toward mathematical, scientific, or engineering problem solutions. Emphasis is placed upon expanding the student's knowledge, understanding, and awareness of fundamental problem-solving concepts and upon developing, in each student, basic skills in applying these concepts to problem solutions using the tools, techniques, and features of the FORTRAN 77 language.

*Prerequisite:* MT 1303 or consent of instructor

### **CS 2063 3 hours** **Advanced RPG II Programming**

An advanced course in the RPG II language, emphasizing completion of the student's knowledge and understanding in solving business problems in RPG II. Topics covered include random file processing and multi-file methods. IBM S/34 Data File Utility procedures and Source Entry procedures will be explored.

*Prerequisite:* CS 1053

### **CS 2073 3 hours**

#### **Computer Information Systems Internship**

A supervised work experience in a data processing environment using the skills and related knowledge learned in previous courses. Coordination of work experience to classroom learning will be done by the instructor. Time will be arranged. A one hour seminar will be held each week to discuss work experiences.

*Prerequisite:* enrollment in the computer information systems program and consent of the instructor

### **CS 2113 3 hours**

#### **Assembly Language Programming**

A basic course in symbolic computer programming at the machine level. This course emphasizes the development of the student's abilities in the minutely detailed process of writing, debugging, and testing Assembly language programs.

*Prerequisite:* CS 1023 and prior experience with programming a high-level computer language

### **CS 2123 3 hours**

#### **Pascal Programming**

An intermediate level course in computer programming and problem solving techniques, using the general-purpose Pascal language. Emphasis is placed upon expanding the student's knowledge and understanding of state-of-the-art problem solving concepts and methods, and upon developing skills in applying these concepts to problems solved by usage of the block-structured language, Pascal. General conceptual areas covered in the course include: structured programming and problem solving, algorithm design and development, basic Pascal data types and program structure, computational structure, logical and I/O structures, flow of control structures, advanced data types, functions and procedures, UCSD extensions to standard Pascal, and Turtle graphics.

*Prerequisite:* CS 1013 and one computer language course

### **CS 2661, 2672, 2683 1-3 hours**

#### **Directed Studies in Computer Information Systems**

Course content and hours arranged by instructor.

*Prerequisite:* consent of instructor

### **CS 2991 1 hour**

#### **Directed Studies—Computer Information Systems Placement**

A course designed to assist computer information systems students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

## Criminal Justice

### CJ 1013 3 hours

#### Introduction to Criminal Justice

An introduction to the criminal justice system in America. This course stresses the interrelatedness of the three components — police, courts, and corrections. Included is a study of current national problems within the system with an examination of proposed changes. The course provides historical and philosophical insights into the system of criminal justice.

*Offered evenings only.*

*Prerequisite: none*

### CJ 1023 3 hours

#### Criminal Law and Procedures

A study of criminal, common, and statutory law within the context of enforcement. Study includes substantive criminal law, its development, interpretation, and administration with emphasis on the criminal law and procedures in the state of Missouri.

*Offered evenings only.*

*Prerequisite: none*

### CJ 1033 3 hours

#### Rules of Criminal Evidence

A study of basic rules of evidence applicable to criminal and other related police duties. Emphasis is placed upon the question of admissibility of evidence and the practical application of procedural and substantive constitutional guarantees.

*Offered evenings only.*

*Prerequisite: none*

### CJ 1043 3 hours

#### Juvenile Procedures

A study of the organization, functions, and jurisdiction of juvenile agencies; the detention of juveniles; and the processing of neglected children. Topics include the intent, application, and procedures of the Missouri Juvenile Code: juvenile case disposition, crime prevention methods, and diversion programs.

*Offered evenings only.*

*Prerequisite: CJ 1013*

### CJ 2013 3 hours

#### Introduction to Corrections

This course provides a basic knowledge of the correctional process as it proceeds from the time of arrest and incarceration, through the criminal justice system, and into the correctional institution or alternative program. It includes a description of various treatment modalities and philosophies.

*Offered evenings only.*

*Prerequisite: CJ 1013*

### CJ 2023 3 hours

#### Criminal Investigation I

A study of the criminal act and its investigation, including specific crimes against the person and against property, the process of fact-gathering, testing of hypotheses, and the problem of proof.

*Offered evenings only.*

*Prerequisite: CJ 1023 and 1033*

### CJ 2033 3 hours

#### Criminal Investigation II

A study of the recognition, collection, identification, preservation, transportation, and development of criminal evidence. Narrative police report writing and the preparation of cases for prosecution are also covered.

*Offered evenings only.*

*Prerequisite: CJ 2023*

### CJ 2043 3 hours

#### Police Patrol and Services

A study of the foundations of police operations, providing patrol coverage and called-for services, the principle of conspicuous presence as a means of crime prevention, and preservation of the peace.

*Offered evenings only.*

*Prerequisite: CJ 1013*

### CJ 2053 3 hours

#### Police Supervision and Administration

A study of the organization and administration of various police systems, the specialized characteristics of individual police organizations and police personnel, the relationship of police to other public agencies, and the control and responsibility of police departments. The most popular and prevalent ideals, principles, and assumptions pertaining to police administration are presented utilizing a multi-disciplinary orientation to analyze these concepts.

*Offered evenings only.*

*Prerequisite: nine credits in criminal justice*

### CJ 2063 3 hours

#### Street Survival

A fundamental course in officer survival. Topics covered will include arrest techniques, officer-violator confrontations, felony car stops, and officer protection.

*Prerequisite: CJ 1013 or consent of instructor*

### CJ 2073 3 hours

#### Criminal Justice Practicum

A supervised work experience in a criminal justice setting. Work periods will be arranged. A seminar will be held to discuss work experiences and students will be required to prepare a paper at the end of the practicum.

*Prerequisite: consent of instructor*

**CJ 2661, 2672, 2683 1-3 hours****Directed Studies in Criminal Justice**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite: consent of instructor*

**CJ 2991 1 hour****Directed Studies—Criminal Justice Placement**

A course designed to assist criminal justice students in obtaining jobs suitable to their training and interests.

*Offered evenings only.*

*To be taken the last semester of study.*

**Data Entry****DE 1912J 12 hours****Microcomputers**

A course designed to introduce the student to a variety of business situations which can be handled through the use of a microcomputer. The student studies the relationship of computers to information processing and its effect on business. Hands-on instruction in general computer usage, word processing, spreadsheet processing and file management are included. Each area of computer processing is introduced through the use of examples from the business world.

*Prerequisite: none*

**DE 1917J 7 hours****CRIME Minicomputer**

A course designed to acquaint the student with a minicomputer system and its capabilities. The student learns by using a minicomputer system for data entry, validation and word processing. Logging into the system, using the printers and managing files are taught along with the basics of data entry and word processing.

*Prerequisite: none*

**DE 1993J 3 hours****Data Entry Placement**

A course designed to assist students with job search activities such as resume writing, job application completion, interviewing techniques, and telephone inquiry skills.

*Prerequisite: none*

**Dental Assisting****DA 1015 5 hours****Chairside Assisting I**

An introduction to the profession of dentistry, including the use and care of dental equipment, functions of a

chairside assistant and common operative procedures. Activities include operating and cleaning dental equipment, performing four-handed sit-down instrument exchange, operating evacuator and air-syringe, operating an autoclave and preparing instruments for sterilization, taking alginate impressions for study models, placing topical anesthetic onto mucosa, handling of anesthetic syringes, charting procedures on a dental chart, assisting with placement and removal of rubber dam and cotton rolls, assisting with a class I and II amalgam procedure, and assisting with a class III, IV, and V composite procedure.

*Prerequisite: admission to Dental Assisting Program*

*Corequisite: DA 1034*

**DA 1025 5 hours****Chairside Assisting II**

The concepts taught in Chairside Assisting I will be applied to the speciality areas of dentistry, including theories of orthodontics, periodontics, endodontics, pedodontics, and oral surgery. Activities include setting-up armamentarium for basic procedures and assisting in each of the speciality areas in prerequisite order.

*Prerequisite: DA 1015*

**DA 1034 4 hours****Dental Science I**

A study of head and neck anatomy, oral embryology and histology and tooth morphology. Also included is the study of gross human anatomy of body systems and organization comprising normal human anatomy and physiology, as well as disorders and pathologies. Emphasis is on the relationship of the whole body as related to dentistry.

*Prerequisite: admission to Dental Assisting Program*

**DA 1042 2 hours****Dental Science II**

A study of oral pathology, microbiology, and pharmacology. Activities include identification of common disorders. Also includes dental office emergencies with emphasis on recognition of emergencies which may occur in a dental office and how to handle these emergencies. Activities include demonstration of ambubag and oxygen units, monitoring of nitrous oxide, CPR training, taking and recording blood pressure and temperature, and taking a medical history.

*Prerequisite: DA 1034*

**DA 1052 2 hours****Dental Materials I**

A study of the science of dental materials, their composition, structures and properties, uses in dentistry, and manipulation techniques. Topics include gypsums, impression materials, cements and bases, and restorative materials.

*Prerequisite: admission to Dental Assisting Program*

*Corequisite: DA 1062*

**DA 1062 2 hours****Dental Materials I Lab**

An introduction to lab procedures, identification of equipment and instruments, and instruction in safety procedures. Instruction in and manipulation of restorative materials, cements and bases, and impression materials used in the dental office is included. Other activities include pouring models in stone and plaster, trimming diagnostic models, and boxing impressions.  
*Prerequisite:* admission to Dental Assisting Program  
*Corequisite:* DA 1052

**DA 1072 2 hours****Dental Materials II**

A continued study of the science of dental materials to include waxes, abrasives, metals, and resins.  
*Prerequisite:* DA 1052  
*Corequisite:* DA 1082

**DA 1082 2 hours****Dental Materials II Lab**

Activities include taking waxbites, mounting casts on an articulator, constructing custom-made trays, fabricating and seating a temporary crown, constructing biterims and biteblocks, and repairing a broken denture. Demonstrations include taking impressions of crown or inlay preparation, pouring cast, mounting casts on articulator, wax-up, investment and casting of crown or inlay, and finishing and polishing.  
*Prerequisite:* DA 1062  
*Corequisite:* DA 1072

**DA 1091 1 hour****Dental Radiology I**

An introduction to radiographic procedures, basic terms and nomenclature, theory of production and effects of x-radiation, instruction in dental radiographic health, theory of bitewing and bi-section exposures, and identification of anatomical landmarks.  
*Prerequisite:* admission to Dental Assisting Program  
*Corequisite:* DA 1101

**DA 1101 1 hour****Dental Radiology I Lab**

Theory of darkroom and darkroom chemistry, processing and mounting techniques are covered. Exposing, processing, mounting, and evaluating bitewing and bi-section techniques for taking radiographs is also included. Special emphasis is placed upon the diagnostic quality of radiographs and maximum radiation protection.  
*Prerequisite:* admission to Dental Assisting Program  
*Corequisite:* DA 1091

**DA 1111 1 hour****Dental Radiology II**

This course outlines the theory of techniques for paralleling, edentulous, child, occlusal, third molar, and extra-oral exposures.  
*Prerequisite:* DA 1091  
*Corequisite:* DA 1121

**DA 1121 1 hour****Dental Radiology II Lab**

Continued emphasis is placed upon diagnostic quality of radiographs and maximum radiation protection. The course includes practice in exposing, processing, and mounting of the paralleling technique and edentulous and child radiographs. Exposing and processing occlusal and third molar radiographs are also covered, along with demonstration of extra-oral techniques.  
*Prerequisite:* DA 1101  
*Corequisite:* DA 1111

**DA 1131 1 hour****Dental Health**

A study of the principles of dental health education including preventive dentistry related to community health, diet, and nutrition. Activities include giving P.O.H. instructions for home care, giving fluoride treatments, patient motivation, doing a dietary analysis and diet evaluation.  
*Prerequisite:* admission to Dental Assisting Program

**DA 1143 3 hours****Clinical Practice I**

Eight hours per week assisting dental students at the Washington University School of Dental Medicine with rotation in the speciality areas.  
*Prerequisite:* none  
*Corequisite:* DA 1034

**DA 1155 5 hours****Clinical Practice II**

Students work in dental offices on a rotational basis to gain proficiency in chairside skills and front office procedures.  
*Prerequisite:* DA 1143

**DA 1162 2 hours****Dental Office Procedures**

A study of the principles of business management for the dental office including appointment control, filing, insurance forms, supply inventory, and collections and disbursements.  
*Prerequisite:* DA 1025

**DA 1661, 1672, 1683 1-3 hours****Directed Studies in Dental Assisting**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite: consent of instructor*

**DA 2991 1 hour****Directed Studies—Dental Assisting Placement**

A course designed to assist dental assisting students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

## Drafting and Design Technology

**DF 1001 1 hour****Blueprint Reading**

A course designed to give the student a working knowledge of standard drawing conventions and dimensioning practices. Areas covered include drafting and blueprint reading procedures, notes and title block information, and machining specifications.

*Prerequisite: none*

**DF 1013 3 hours****Engineering Drawing**

A course designed to give the student a working knowledge of fundamental drawing practices and the geometric relationships of points, lines, and planes in space. Areas covered include the techniques of lettering, sketching, drawing of mechanical parts, sectional and auxiliary views, conventional drafting practices, and introduction to computer aided drafting.

*Prerequisite: none*

**DF 1023 3 hours****Descriptive Geometry**

A study of the graphic analysis and solution of typical three-dimensional space problems through the application of the principles of multi-view projections. Fundamental problems are related to points, lines, planes, intersections, and development of plane and curved surfaces, revolutions, and vector geometry.

*Prerequisite or Corequisite: DF 1013*

**DF 1033 3 hours****Principles of Power**

A study of the principles of hydraulics and pneumatics fundamental to fluid power design. Other topics include principles of mechanical and electrical powered systems and power system schematics.

*Corequisite: DF 1043 or consent of instructor*

**DF 1043 3 hours****Technical Computations I**

A study of the treatment of measured data, significant figures, applications in geometry, basic algebra, and linear equations.

*Prerequisite: none*

**DF 1055 5 hours****Materials and Processes**

A survey of current engineering materials and the various processes used to shape them. Materials studied include a review of ferrous and nonferrous metals, plastics, rubbers, and ceramics. Emphasis is placed upon the advantages and limitations of the various casting, forging, machining, grinding, forming, molding, welding, heat treating, and powder metallurgy processes used to shape materials.

*Prerequisite: none*

**DF 1063 3 hours****Machine Drawing Lecture**

A course dealing with problem solving situations involving the development of drawings of castings, forgings, and machine parts. Drawings are produced using conventional drafting procedures and computer aided drafting.

*Prerequisite: DF 1013*

*Corequisite: DF 1072*

**DF 1072 2 hours****Machine Drawing Lab**

A course designed to aid the student in the production of working drawings of the machine components studied in DF 1063. Drawings are produced with a continued emphasis on conventional drafting practices, dimensioning, and computer aided drafting.

*Prerequisite: DF 1013*

*Corequisite: DF 1063*

**DF 1083 3 hours****Technical Computations II**

A study of numerical trigonometry of the right angle, analytic trigonometry, oblique triangles, functions and graphs, logarithms, and application of numerical trigonometry and vectors.

*Prerequisite: DF 1043*

**DF 2013 3 hours****Machine Design**

A course designed to bring together in practical applications the skill and knowledge developed in courses covering mechanics and drafting. Instruction provided permits logical organization of facts for economical solution of machine design problems. Emphasis is placed

upon standardization, the use of stock parts, and using manufacturers' catalogs. Drawings are produced using the drawing board and the computer aided drafting system.

*Prerequisite:* DF 1063

**DF 2023 3 hours**  
**Tool and Die Design**

A course designed to give the student a fundamental knowledge of the design of tools and fixtures used in manufacturing. Projects include design and drawing of jigs, fixtures, and blanking dies utilizing conventional drafting practices and computer aided drafting. Mass production methods are discussed so that this knowledge may be applied to the practical work of tool design.

*Prerequisite:* DF 1063

**DF 2033 3 hours**  
**Technical Physics Lecture**

A study of mechanics, heat, sound, light, electricity, and physical properties of matter. A noncalculus course which features problem solving. Three hours lecture per week.

*Prerequisite:* either DF 1083, MT 1303, or satisfactory score on the MMPT

*Corequisite:* DF 2042

**DF 2042 2 hours**  
**Technical Physics Lab**

A laboratory work period with emphasis on solving physics problems. This is a noncalculus course which features the development of logical problem solving techniques.

*Prerequisite:* either DF 1083, MT 1303, or satisfactory score on the MMPT

*Corequisite:* DF 2033

**DF 2053 3 hours**  
**Statics and Strength of Materials**

A study of statics and strength of materials as applied to structures, beam theory, beam design, and theory of column formulas. The course includes study of stress and strain experienced by machine parts and structural members. Emphasis is placed upon applications and problem solving.

*Prerequisite:* DF 1083 or consent of instructor

**DF 2063 3 hours**  
**Technical Writing**

An introduction to the practical aspects of preparing reports. Emphasis is on the techniques of collecting and presenting scientific data by means of formal and informal reports. Also included are other elements of communication concerning science and industry.

*Prerequisite:* EN 1003, 1223, or consent of instructor

**DF 2073 3 hours**  
**Architectural Drawing Lecture**

An introduction to the fundamental principles of residential design, building materials, methods of construction, design standards, room arrangements, and energy efficient design.

*Prerequisite:* DF 1013

*Corequisite:* DF 2082

**DF 2082 2 hours**  
**Architectural Drawing Lab**

A course designed to aid the student in the development of a complete set of residential plans using conventional drafting practices and the computer aided drafting system.

*Prerequisite:* DF 1013

*Corequisite:* DF 2073

**DF 2093 3 hours**  
**Civil Drawing**

A course encompassing the methods and conventions of the civil engineering field and its allied industries. Primary focus is on drawing and detailing civil projects such as land division and subdivision, municipal utility facilities, contours, and land cut and fill using the drawing board and computer aided drafting.

*Prerequisite:* DF 1013

**DF 2102 2 hours**  
**Structural Drawing Lecture**

A course which concentrates on detailing and delineating the structural systems encountered in architectural and civil construction. Systems included are those structures based on wood, steel, and concrete components.

*Prerequisite:* DF 1013 and 2053

*Corequisite:* DF 2111

**DF 2111 1 hour**  
**Structural Drawing Lab**

A course designed to aid the student in the production of shop and erection drawings of the structural systems discussed in DF 2102. Drawings are produced using conventional drafting practices and the computer aided drafting system.

*Prerequisite:* DF 1013 and 2053

*Corequisite:* DF 2102

**DF 2123 3 hours**  
**Technical Illustration**

A course to develop the understanding and skills to produce technical illustrations in the many forms required by industry. Included is an intensive study of the pictorial forms of isometric, diametric, oblique, and perspective drawing, and the methods and media used in creating illustrations.

*Prerequisite:* DF 1013



**DF 2132 3 hours****Modern Drafting Techniques**

An exploratory course which has major emphasis on photography, film processing, model building, and their industrial applications. Students participate in the development of projects utilizing the latest available industrial techniques.

*Prerequisite:* DF 1013

**DF 2143 3 hours****Introduction to CAD Applications I**

A course designed to acquaint the student with the basic fundamentals of computer aided drafting. Problems and solutions include construction of basic drawings, saving drawings, using a file system, modification of existing drawings, and plotting drawings using the computer plotter.

*Prerequisite:* DF 1013 and 1023 or consent of instructor

**DF 2153 3 hours****CAD Applications II**

A course designed to acquaint the student with advanced applications of computer aided drafting. Projects and solutions include the production of working drawings, layering concepts, and the construction and use of specialized symbol libraries.

*Prerequisite:* DF 2143

**DF 2661, 2672, 2683 1-3 hours****Directed Studies in Drafting and Design**

An in-depth investigation of a specific industrial problem or actual experience in related office practices.

*Prerequisite:* consent of instructor

**DF 2991 1 hour****Directed Studies—Drafting and Design Technology Placement**

A course designed to assist drafting students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

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**Electronics**


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**EL 1002J 2 hours****Resistive Circuits**

A study and analysis of the interaction between voltage, current, and pure resistance. The construction and experimentation of resistive circuits, along with the use of basic test equipment is stressed. Component recognition, symbols and diagrams, and soldering fundamentals will also be covered.

*Prerequisite:* none

**EL 1003 3 hours****Resistive Circuits Lecture**

A study of direct current circuit operations. Passive electronic devices are analyzed as to their physical and electrical properties. Interpretation of fundamental schematic symbols is developed.

*Prerequisite:* none

*Corequisite:* EL 1011, 1023

**EL 1011 1 hour****Resistive Circuits Lab**

Application of direct current fundamentals is studied by construction of resistive circuits. Practical skills associated with the use of modern test equipment, soldering, component identification and measuring techniques are stressed.

*Prerequisite:* none

*Corequisite:* EL 1003

**EL 1012J 2 hours****Single-Time Constant Circuits**

Study analysis of RC and RL circuits that have one and only one equivalent inductance in the RL circuits, and only one equivalent capacitance in the RC circuits. Mathematically, the equations for such circuits are first order differential equations.

*Prerequisite:* none

**EL 1023 3 hours****Single-Time Constant Circuits Lecture**

A study of alternating current and reactive components. Fundamental theory of alternating electrical and magnetic fields are developed and applied to dynamic circuit configurations. Interpretation of associated schematic diagrams is advanced.

*Prerequisite:* none

*Corequisite:* EL 1003, 1011, 1031

**EL 1031 1 hour****Single-Time Constant Circuits Lab**

Laboratory experience involves experimental testing of reactive devices. Reactive circuits are constructed and monitored by use of sinusoidal generators, pulse generators, oscilloscopes, and A.C. multimeter.

*Prerequisite:* none

*Corequisite:* EL 1003, 1011, 1023

**EL 1033J 3 hours****Fundamentals of Semiconductors**

A study of semiconductor physics; semiconductors as physical devices and circuit elements and semiconductors in rectifier, amplifier, and control configurations. Study of the formation and behavior of PNP, NPN, FET, and UJT transistors and thyristors; methods of biasing

and stabilizing transistors; and analysis of transistor circuit approximations.

*Prerequisite:* EL 1002, 1012

**EL 1046 6 hours**  
**Fundamentals of Semiconductors Lecture**

A study of the semiconductor devices and associated circuitry with modern applications. Operational theories of diodes, bipolar junction transistors, four layer devices, voltage regulator and operational amplifier integrated circuits in addition to opto-electronic devices are made known. Circuit applications include basic analog amplifiers, oscillators, timers, pulse circuits and power supplies.

*Prerequisite:* EL 1003, 1011, 1023, 1031

*Corequisite:* EL 1052

**EL 1052 2 hours**  
**Fundamentals of Semiconductors Lab**

Experiments with semiconductor devices are expanded to active circuit applications. Device performance and operational circuit parameters are studied in detail. Active circuit testing techniques and troubleshooting methods are provided.

*Prerequisite:* EL 1003, 1011, 1023, 1031

*Corequisite:* EL 1046

**EL 1104 4 hours**  
**Basic Electronics**

A study of the principles of direct and alternating current, motors and generators, and an introduction to semiconductor devices. Soldering and desoldering, operation of test equipment, and laboratory experimentation are included.

*Offered evenings only.*

*Prerequisite:* None

**EL 1114 4 hours**  
**Industrial Control I (Industrial Electricity)**

A study of basic D.C. and A.C. electricity and its application in the industrial environment. Electrical safety, D.C. and A.C. generation, transmission, and installation, along with A.C. motor theory will be covered.

*Offered evenings only.*

*Prerequisite:* consent of instructor

**EL 1124 4 hours**  
**Fundamentals of Solid-State Devices**

A course covering semiconductor devices and their application in modern electronics. The theoretical and practical aspects of diodes, transistors, thyristors, and integrated circuits are stressed. Laboratory experimentation comprises 50% of the course.

*Offered evenings only.*

*Prerequisite:* consent of instructor

**EL 1134 4 hours**  
**Digital Control Circuits**

A study of the concepts associated with modern industrial control systems. Digital fundamentals and basic microprocessor systems are covered. Includes topics such as numbering systems, logic circuits, microprocessor architecture, interfacing methods, and fundamentals of programmable control.

*Offered evenings only.*

*Prerequisite:* Consent of instructor

**EL 1991J 1 hour**  
**Electronics Placement**

A course designed to assist students with job search activities such as resume writing, job application completion, interviewing techniques, and telephone inquiry skills.

*Prerequisite:* none

**EL 2033J 3 hours**  
**Semiconductor Circuit Analysis**

A study of semiconductor amplifiers, methods of coupling, circuit analysis and troubleshooting; study of JFETS, MOSFETS, Zener diodes, differential amplifiers, OP amps, UJT, PUTS, SCR, Triac, Diac, photoconductive cells, photovoltaic cells, LED, and IC's.

*Prerequisite:* EL 1023J

**EL 2043J 3 hours**  
**Introduction to Digital Circuits**

A study of number systems, Boolean Algebra, basic codes used with digital circuits, principles of digital logic, logic circuits, flip-flops, and gating and counting circuits. Laboratory use of test equipment to analyze and evaluate various sequential and combinational digital circuits.

*Prerequisite:* EL 1033J

**EL 2054 4 hours**  
**Introduction to Digital Circuits Lecture**

A general study of digital electronics. Areas covered include numbering systems and codes, decision making logic elements, sequential and combination logic elements, memories, data conversion, and digital applications.

*Prerequisite:* EL 1046, 1052, or consent of instructor

*Corequisite:* EL 2061

**EL 2061 1 hour**  
**Introduction to Digital Circuits Lab**

Laboratory experimentation on actual TTL and CMOS devices. Digital integrated circuits, including logic gates, flip-flops, counters, decoders, multiplexers, timers and clocks will provide the basis for this study.

*Prerequisite:* EL 1046, 1052

*Corequisite:* EL 2054

**EL 2064J 4 hours****Intro to Microprocessors**

A theory-laboratory course which will enable the trainee to program a microprocessor and learn how to interface the microprocessor with other circuits and equipment. All laboratory work will be on an actual microcomputer.

*Corequisite: EL 2043J*

**EL 2072 2 hours****Sensors and Transducers**

A study of sensors and transducers as related to industrial control applications. The student is introduced to industrial ladder diagrams with an overview of Robotics fundamentals. Emphasis is placed on current applications of these devices in industrial systems.

*Prerequisite: EL 1046, 1052*

*Corequisite: EL 2054, 2061, 2084, 2091*

**EL 2084 4 hours****Introduction to Microprocessors Lecture**

A study of general microprocessor theory and operation. Topics include numbering systems, architecture, assembly language programming, I/O interfacing, and troubleshooting methods.

*Prerequisite: EL 2054, 2061 or consent of instructor*

*Corequisite: 2091*

**EL 2091 1 hour****Introduction to Microprocessors Lab**

A course comprised of experiments on the Motorola 6800 microprocessor. Programming, interfacing and troubleshooting the system are emphasized.

*Prerequisite: EL 2054, 2061*

*Corequisite: EL 2084*

**EL 2102 2 hours****Advanced Microprocessors Lecture**

A study of the theory and operation of the 8088 and 68000, 16 bit microprocessors. Advanced interfacing techniques will be discussed along with operating systems, advanced assembly language programming, and servicing techniques.

*Prerequisite: EL 2084, 2091 or consent of instructor*

*Corequisite: EL 2112*

**EL 2112 2 hours****Advanced Microprocessors Lab**

Experimentation with the 8088 and 68000 microprocessors and peripheral integrated circuits. Assembly language programming project and troubleshooting exercises are included.

*Prerequisite: EL 2084, 2091*

*Corequisite: EL 2102*

**EL 2123 3 hours****Electronics Internship**

Students are placed with cooperating employers in various specialized areas of electronics. The internship involves students working with experienced technicians to gain limited experience in the field of electronics. Positions are arranged by the department and assigned to the student. The trainee is expected to spend six clock hours on the job per week.

*Prerequisite: electronics major and consent of instructor*

**EL 2661, 2672, 2683 1-3 hours****Directed Studies in Electronics**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite: consent of instructor*

**EL 2991 1 hour****Directed Studies—Electronics Placement**

A course designed to assist electronics students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

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## Emergency Medical Technology

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**EM 1014 4 hours****Emergency Medical Technician Refresher**

A course which provides review in the emergency care of the sick and injured. It is designed to prepare the student for relicensure as an EMT. It includes both didactic and practical review. Upon successful completion of the course, the student is qualified to retake the Missouri State Licensure Examination. The course is held in conjunction with EM 1027.

*Offered evenings only.*

*Prerequisite: A currently licensed EMT having previously passed the Missouri State Licensure Examination within the last three years.*

**EM 1027 7 hours****Emergency Medical Technician**

A course which provides training in the emergency care of the sick and injured. The course includes didactic, practical, and off-campus clinical experiences. It fulfills the requirements of Senate Bill No. 57. Those completing the course are eligible for the Missouri State Licensure Examination and/or the National Registry Examination to become a licensed/registered EMT.

*Offered evenings only.*

*Note: A student can take the course and sit for the Missouri State Licensure Examination; however, a state license will not be issued until the student reaches the age of 18.*

**EM 1130 30 hours****Emergency Medical Technician-Paramedic**

A course which provides advanced training in emergency care and advanced life support techniques for the sick and injured. Course includes didactic, practical, and off-campus clinical experiences. A 300-hour field internship is also included. Upon successful completion, the student is eligible to sit for the Missouri State Licensure Examination as a paramedic. The course is completed in approximately one calendar year.

*Offered evenings only.*

*Prerequisite:* A high school diploma or GED, current license as an EMT in Missouri, successful completion of a paramedic pretest, and at least two letters of recommendation from specified persons. Experience is highly recommended and preferred. Exception is by consent of the course medical director only.

**EM 1136 6 hours****MEMT/EMT-Paramedic Refresher**

A course designed to meet the state requirements for relicensure as a paramedic. It includes didactic, laboratory, and clinical experiences. (Clinical may be waived.) Course is offered on an as needed basis.

*Offered evenings only.*

*Prerequisite:* Current Missouri License as an MEMT or EMT-P. Acceptance is based on the nearest expiration date of the paramedic license.

**EM 1153 3 hours****Teaching Techniques for EMS/Fire Personnel**

A study of the basic theories of learning and methods of instruction. The use of lectures, demonstrations, and visual aids as applied to the instruction of emergency medical services/fire department personnel are illustrated. Practice is provided in the use of lesson plans, visual aids, tests, and other teaching devices. Each student's application of a teaching procedure is critically discussed and evaluated.

*Meets a partial requirement to become a Missouri EMS instructor.*

*Offered evenings only on an as needed basis.*

*Prerequisite:* none

**EM 1661, 1672, 1683 1-3 hours****Directed Studies in Emergency Medical Technology**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite:* consent of instructor

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**Fire Technology**

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**FT 1003 3 hours****Introduction to Fire Science**

This course is designed to acquaint the student with the broad field of fire science. Topics included are history of fire problems, evaluation and survey of the fire protection characteristics and behavior of fire, chemistry of fire, building construction, extinguishing agents, and hazardous materials.

*Offered evenings only.*

*Prerequisite:* none

**FT 1013 3 hours****Basic Fire Protection and Alarm Systems**

A study of modern fire protection including water supply and distribution systems, housing of equipment and personnel, private fire protection methods, chemical extinguishers, building construction, and a study of the various types of fixed and portable fire detection and alarm systems. Written documentation included as applicable.

*Offered evenings only.*

*Prerequisite:* FT 1003 recommended

**FT 1023 3 hours****General Building Construction**

A study of fundamentals of building construction and materials related to fire protection. Includes building plan layouts, conventional representations, symbols and abbreviations for building materials, methods of showing floor plans, elevations, sections, and dimensions.

*Offered evenings only.*

*Prerequisite:* FT 1003 recommended

**FT 1034 4 hours****Fire Service Hydraulics and Equipment**

This course is designed to acquaint firefighters, pump operators, and engineers with the following: characteristics of water flow, friction loss, engine pressure, multiple lines, unequal layouts, pump and pumpers, and field equations. Written documentation included as applicable.

*Offered evenings only.*

*Prerequisite:* FT 1003 recommended; mathematics and physics advisable

**FT 1043 3 hours****Fire Department Organization and Supervision**

Instruction in management and administration for the fire service including the functions of management,

planning, organizing, directing, controlling, the management cycle, motivation, behavioral science, executive development, educational development, and labor relations. Written documentation included as applicable.

*Offered evenings only.*

*Prerequisite: FT 1003 recommended*

### **FT 1063 3 hours**

#### **Codes and Ordinances**

This course is designed to acquaint students with necessary procedures to properly enforce national, state, and local ordinances related to fire protection. Includes building, electrical, and plumbing codes.

*Offered evenings only.*

*Prerequisite: FT 1023 recommended*

### **FT 2023 3 hours**

#### **Hazardous Materials**

Content will provide students with basic information concerning the properties of hazardous materials and the methods that are most appropriate for handling the various kinds of accidents that can occur with these substances.

*Offered evenings only.*

*Prerequisite: FT 1003 recommended*

### **FT 2033 3 hours**

#### **Inspection and Fire Prevention**

This course is designed to introduce students to various inspection practices which include surveying and mapping procedures associated with the organization and functions of fire prevention. Also includes areas of legal responsibilities and fire hazard characteristics. Opportunity is provided to make at least one complete inspection and report on an operation industry. Written documentation included as applicable.

*Offered evenings only.*

*Prerequisite: FT 1003, 1063 recommended*

### **FT 2043 3 hours**

#### **Fire Investigation**

This course is designed to introduce students to methods of determining point of origin, path of fire travel, and fire causes. Topics include motives and methods of fire setting, recognizing and preserving evidence, arson laws, types of arson fires, court testimony, reports, and records.

*Offered evenings only.*

*Prerequisite: FT 1003 recommended*

### **FT 2054 4 hours**

#### **Fire Fighting Tactics and Strategy I**

This course is designed to provide experience in the fundamental strategy and methods of attack employed

for various fire protection problems. Includes principles of command and control, and techniques required at the scene of an incident, which may be small or large, complex or unique in nature.

*Offered evenings only.*

*Prerequisite: FT 1003 recommended*

### **FT 2063 3 hours**

#### **Rescue Techniques**

A course designed to provide technical knowledge and practical skills necessary to perform emergency rescue procedures. Content will include: auto extrication, water and ice rescue, rope rescue, cave rescue, trenching incidents, search and rescue, electrical emergencies, and proper use and care of equipment.

*Offered evenings only.*

*Prerequisite: FT 1003 recommended*

### **FT 2073 3 hours**

#### **Fire Fighting Tactics and Strategy II**

A course designed to provide advanced techniques of fire control involving the utilization of personnel, equipment, and extinguishing agents in emergency situations.

*Offered evenings only.*

*Prerequisite: FT 1003, 2054*

### **FT 2661, 2672, 2683 1-3 hours**

#### **Directed Studies in Fire Technology**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite: consent of instructor*

### **FT 2991 1 hour**

#### **Directed Studies—Fire Technology Placement**

A course designed to assist fire technology students in obtaining jobs suitable to their training and interests.

*To be taken last semester of study.*

## **Horticulture/ Nursery Management**

### **HR 1003 3 hours**

#### **The Home Gardener (Telecourse)**

An introductory course outlining the basics of gardening. Greenhouse labs support this interesting course covering the general plant types and their planting requirements. For special interest students only.

*Prerequisite: none*

### **HR 1013 3 hours**

#### **Introduction to Horticulture**

An introductory course covering flowering plants as

well as conifers. Various plant types (groups) are given value as to their growth and development. Students will be introduced to the biological aspects of plant life and to the environmental factors which affect plant growth, including light, temperature, moisture, soils, and the essential elements.

*Prerequisite: none*

### **HR 1033 3 hours** **Plant Propagation**

An introduction to the common methods of commercial plant reproduction including seeds, cuttings, layering, grafting, and division. The course makes use of the greenhouse propagation facilities. Pruning labs are included. Hormonal relationships and growth-promoting substances are explored.

*Prerequisite: none*

### **HR 1043 3 hours** **Greenhouse and Nursery Management**

A course with a greenhouse field/lab approach. Modern growing structures are studied. Containerized nursery stock is explored. Topics studied include systems of nursery production, bedding plants, bulbous crops, potted plants, and commercial cut flowers.

*Prerequisite: none*

### **HR 1053 3 hours** **Horticulture/Nursery Management Internship**

A course which combines on-the-job training at the campus growing center, the Missouri Botanical Garden's Arboretum (Gray Summit), and/or ornamental horticulture businesses to provide the student with opportunities to use competencies developed in the classroom and laboratory. Emphasis is on preparation for full-time employment. Independent project studies may be included in the internship studies.

*Prerequisite: consent of instructor*

### **HR 1093 3 hours** **Residential Landscape Design**

A survey course for non-majors. Students will explore basic landscape design concepts. Basic plant materials and graphics will be covered. Students will analyze landscape situations and develop appropriate plans mainly at the residential level.

*Prerequisite: none*

### **HR 2003 3 hours** **Landscape Maintenance**

A course designed to tie together the skills and knowledge acquired in soils, nursery management, and woody

plants as related to the management of commercial and large residential grounds. Labs covering maintenance skills will be incorporated.

*Prerequisite: HR 2013, 2053*

### **HR 2013 3 hours** **Woody Plants I**

A study of trees, shrubs, vines, and ground covers with regard to their identification, culture, growth habits, and landscape values. Major emphasis is given to the development of a functional use concept in planting design.

*Prerequisite: none*

### **HR 2023 3 hours** **Landscape Design I**

A detailed study of the functional uses of ornamental plants. Landscape design is introduced with concern for design development, site analysis, plant graphics, and lettering. Principles of landscape design are applied to residential design problems.

*Prerequisite: none*

### **HR 2033 3 hours** **Florist/Nursery Management**

A course which includes student involvement in wholesale-retail management activities. Segments of the course include floriculture, with floral design and retail flower shop management. In the area of nursery management, mid-management skills are developed along with techniques of nursery production. A third segment addresses the modern garden center operation. This practical course earmarks a trend toward a broadening approach to commercial horticulture.

*A special fee of \$25 is charged.*

*Prerequisite: none*

### **HR 2043 3 hours** **Landscape Design II**

A study in landscape plan, landscape surfaces, plant materials, construction and maintenance, and implementation of landscape plans. The process of design is given particular emphasis.

*Prerequisite: HR 2023*

### **HR 2053 3 hours** **Soil Science**

A study of interactions between water, air, organisms, and soil minerals important in plant growth and land use. The course includes up-to-date studies of new soil mixes and plant nutrition. Field observations and soil testing labs complete the course.

*Prerequisite: sophomore standing*

**HR 2063 3 hours****Woody Plants II**

A continuation of woody plant identification and landscape usage. Special concern is given to the cultural aspects of proper planting in functional landscape design.

*Prerequisite:* HR 2013

**HR 2073 3 hours****Herbaceous Plants**

A study of the major plant groups: annuals and perennials (home-garden landscape), bulbs, and groundcovers. A segment of the course pursues the increasingly popular interior plantscaping where interior design skills are developed along with cultural management of these tropical plants. The entire course seeks to develop identification and functional uses of herbaceous plants.

*Prerequisite:* none

**HR 2661, 2672, 2683 1-3 hours****Directed Studies in Horticulture/Nursery Management**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite:* consent of instructor

**HR 2991 1 hour****Directed Studies—Horticulture/Nursery Management Placement**

A course designed to assist horticulture students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

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## Nursing — Associate Degree

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**NR 1014 4 hours****Fundamentals of Nursing Lecture**

A course designed to introduce the student to the nature of man and his response to illness. Abdellah's Nursing Problems are used to show the human as a whole as well as various alterations that may occur as a result of illness. The primary focus is to develop a high degree of skill in performing commonly prescribed therapeutic and nursing regimes. Normal nutrition and pharmacology are introduced. Pediatrics is integrated. Four hours lecture per week.

*Prerequisite:* admission to program

*Corequisite:* NR 1022; BI 2102, 2112; CH 1203, 1211; PY 1103

*Placement:* fall semester, first year

**NR 1022 2.5 hours****Fundamentals of Nursing Lab**

Opportunities are provided for students to perfect skills and apply knowledge acquired in NR 1014. Includes initial practice sessions in the college laboratory and clinical experience in community hospitals. Eight hours practicum per week.

*Prerequisite:* admission to program

*Corequisite:* NR 1014; BI 2102, 2112; CH 1203, 1211; PY 1103

*Placement:* fall semester, first year

**NR 1035 5 hours****Nursing of Adults and Children I Lecture**

A course designed to give the student an opportunity to apply previously learned scientific knowledge and nursing skills in caring for adults and children with common medical and surgical conditions. Pathophysiology, therapeutic nutrition, and teaching learning principles are introduced. Application of the nursing process is broadened to include assessment of the patient's total needs and preparation of more comprehensive nursing care plans. Five hours lecture per week.

*Prerequisite:* NR 1014, 1022; BI 2102, 2112; CH 1203, 1211; PY 1103

*Corequisite:* NR 1044; BI 2202, 2203; PY 2403

*Placement:* spring semester, first year

**NR 1045 5 hours****Nursing of Adults and Children I Lab**

General hospitals and other health care agencies are utilized for observation and/or practice in caring for adults and children clients/patients. Knowledge acquired in NR 1035 is applied, with emphasis on physical assessment and patient/client teaching. Sixteen hours practicum per week.

*Prerequisite:* NR 1014, 1022; BI 2102, 2112; CH 1203, 1211; PY 1103

*Corequisite:* NR 1035; BI 2202, 2203; PY 2403

*Placement:* spring semester, first year

**NR 1052 2 hours****Mental Health Nursing Lecture**

A course designed to increase the student's understanding of the psychosocial component of man. Communication skills are enhanced as well as therapeutic use of self in the nurse-client relationship. Knowledge and skills in the nursing process are broadened as the student learns factors and behaviors significant in psychiatric assessment, intervention, and evaluation. Four hours lecture per week.

*Prerequisite:* NR 1014, 1022, 1035, 1044; BI 2102, 2112, 2202, 2203; CH 1203, 1211; PY 1103, 2403

*Corequisite:* NR 1063

*Placement:* summer session, first year

*Course completed in eight-week session.*

**NR 1063****3 hours****Mental Health Nursing Lab**

Mental health facilities and the college laboratory are utilized for students to perfect communication skills and apply knowledge acquired in NR 1052. Fifteen hours practicum per week.

*Prerequisite:* NR 1014, 1022, 1035, 1044; BI 2102, 2112, 2202, 2203; CH 1203, 1211; PY 1103, 2403

*Corequisite:* NR 1052

*Placement:* summer session, first year

*Course completed in eight-week session.*

**NR 2012****2.5 hours****Maternal and Newborn Nursing Lecture**

A course which will provide the student with basic knowledge of the childbearing process from conception through post-partum care and management of the newborn. Family-centered health education is taught with emphasis on childbirth preparation, care of the newborn, and maternal health. Common disorders of the reproductive system are covered. Five hours lecture per week.

*Prerequisite:* NR 1014, 1022, 1035, 1044, 1052, 1063; BI 2102, 2112, 2202, 2203; CH 1203, 1211; PY 1103, 2403

*Corequisite:* NR 2022, 2032, 2042, 2991; BI 2402, 2412; EN 1223

*Placement:* fall semester, second year

*Course completed in eight-week session.*

**NR 2022****2.5 hours****Maternal and Newborn Nursing Lab**

Opportunities are provided for students to utilize the nursing process as it relates to the skills and knowledge acquired in NR 2012. Sixteen hours practicum per week occurs in a hospital setting.

*Prerequisite:* NR 1014, 1022, 1035, 1044, 1052, 1063; BI 2102, 2112, 2202, 2203; CH 1203, 1211; PY 1103, 2403

*Corequisite:* NR 2012, 2032, 2042, 2991; BI 2402, 2412; EN 1223

*Placement:* fall semester, second year

**NR 2032****2 hours****Nursing of Adults and Children II Lecture**

A course designed to strengthen and increase the student's ability to identify the pathophysiological processes as they affect the adult/child's ability to maintain regulatory, immunosuppressive and mobility needs. The student will utilize the nursing process in providing patient/family centered care with emphasis on setting short and long term goals. The course is planned to help the student recognize the adult/child's physical, psychosocial and developmental needs. Students will deliver nursing

care in a safe and prudent manner. Four hours lecture per week.

*Prerequisite:* NR 1014, 1022, 1035, 1044, 1052, 1063; BI 2102, 2112, 2202, 2203; CH 1203, 1211; PY 1103, 2403

*Corequisite:* NR 2012, 2022, 2042, 2991; BI 2402, 2412; EN 1223

*Placement:* fall semester, second year

*Course completed in eight-week session.*

**NR 2042****2.5 hours****Nursing of Adults and Children II Lab**

Clinical practice opportunities are provided in community hospitals for students to administer nursing care to adults and children as it relates to the skills and knowledge acquired in NR 2032. Emphasis is placed upon utilization of community resources. Sixteen hours practicum per week.

*Prerequisite:* NR 1014, 1022, 1035, 1044, 1052, 1063; BI 2102, 2112, 2202, 2203; CH 1203, 1211; PY 1103, 2403

*Corequisite:* NR 2032, 2012, 2022, 2991; BI 2402, 2412; EN 1223

*Placement:* fall semester, second year

**NR 2044****2.5 hours****Nursing of Adults and Children III Lecture**

A course designed to provide the the student with the opportunity to utilize the nursing process in complex nursing care situations, including critical care and management areas. Management and leadership skills are introduced and applied in various settings. Students will direct and deliver nursing care in a prudent and safe manner for patients in an episodic setting through the different nursing modalities. Four hours lecture per week.

*Prerequisite:* NR 1014, 1022, 1035, 1044, 1052, 1063, 2012, 2022, 2032, 2042, 2991; BI 2102, 2112, 2202, 2203, 2402, 2412; CH 1203, 1211; PY 1103, 2403

*Corequisite:* NR 2056, 2061; EN 1333; history/government elective

*Placement:* spring semester, second year

**NR 2058****8 hours****Nursing of Adults and Children III Lab**

Opportunities are provided for students to apply knowledge acquired throughout the curriculum, but with emphasis on organization and delivery of health care in an episodic setting through the different nursing modalities. Twenty-four hours practicum per week.

*Prerequisite:* NR 1014, 1022, 1035, 1044, 1052, 1063, 2012, 2022, 2032, 2042, 2991; BI 2102, 2112, 2202, 2203, 2402, 2412; CH 1203, 1211; PY 1103, 2043

*Corequisite:* NR 2044, 2061; EN 1333; history/government elective

*Placement:* spring semester, second year



**NR 2061 1 hour****Nursing Trends**

A study of selected topics related to the development of nursing practice and education; current issues; trends; ethical and legal aspects; professional organizations; and professional conduct. One hour discussion per week.

*Prerequisite:* NR 1014, 1022, 1035, 1044, 1052, 1063, 2012, 2022, 2032, 2042, 2991; BI 2102, 2112, 2202, 2203, 2402, 2412; CH 1203, 1211; PY 1103, 2403

*Corequisite:* NR 2044, 2056; EN 1333; history/government elective

*Placement:* spring semester, second year

**NR 2661, 2672, 2683 1-3 hours****Directed Studies—Nursing**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite:* consent of instructor

**NR 2991 1 hour****Directed Studies—Nursing Placement**

A course designed to assist nursing students in obtaining jobs suitable to their training and interests.

*To be taken in the fall semester, second year.*

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**Office Occupations**

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**OF 0001 1 hour****WordStar**

Instructs the student in the features of WordStar word processing software using the IBM Personal Computer. Topics include create, edit, format, print, save documents, text and column move, and mail merge.

*Prerequisite:* none

**OF 0011 1 hour****MultiMate**

Instructs the student in the features of MultiMate word processing software using the IBM Personal Computer. Topics include create, edit, format, print, save documents, multi-columns, spelling correction, mail merge, thesaurus, and line and box drawing.

*Prerequisite:* none

**OF 0021 1 hour****DisplayWrite 3**

Instructs the student in the features of DisplayWrite 3 word processing software using the IBM Personal Computer. Topics covered include create, edit, format, print, and save documents while using the spelling dictionary, math feature, and multi-column layout capabilities.

*Prerequisite:* none

**OF 0031 1 hour****Desktop Publishing**

Instruction in major features used in desktop publishing on the IBM Personal Computer. Students will produce professional quality fonts and images, and learn editing, page layout (1-4 columns), art (pictures), and graphics tools of desktop publishing.

*Prerequisite:* none

**OF 0041 1 hour****WordPerfect**

Instructs the student in the features of WordPerfect word processing software using the IBM Personal Computer. Topics covered include create, edit, format, print, and save documents while using the thesaurus, spelling dictionary, math feature, and multi-column layout capabilities.

*Prerequisite:* none

**OF 1003J 3 hours****Business English**

A course designed to help the student review the basic principles of English grammar, learn the fundamentals of the English language, and recognize common business terminology.

*Prerequisite:* none

**OF 1011 1 hour****Keyboarding**

An individualized typewriting course designed to provide keyboarding skills to students entering such fields as data processing, business, accounting, or any occupation that utilizes a keyboard to input information. The letter-key and figure-key reaches of the touch typing system will be developed.

*A special fee of \$1.00 is charged.*

*Prerequisite:* none

**OF 1013 3 hours****Typewriting I**

A study of the keyboard and techniques of touch typewriting, development of basic skills, and the arrangement of typewritten material. Individualized instruction.

*Prerequisite:* none

**OF 1015J 5 hours****Typewriting I**

A study of keyboard typewriting using the touch method. The course will include correctly typing business correspondence, tables, manuscripts, and forms. Speed and accuracy will be stressed. A schedule of typing assignments will be followed by each student.

*Prerequisite:* none

**OF 1023 3 hours**  
**Typewriting II**

A course in further development of typewriting skills, with special attention given to improving accuracy and increasing speed. Major emphasis is given to producing mailable copy on tables, letters, business forms, and rough draft manuscripts under timed conditions. Individualized instruction.

*Prerequisite:* OF 1013 or speed of at least 40 wpm for five minutes with a maximum of five errors.

**OF 1025J 5 hours**  
**Typewriting II**

A course in further development of typewriting skills. Emphasis will be given to speed and accuracy and in typing various letter displays, billing forms, two-page documents, financial statements, and legal documents. A schedule of typing assignments will be followed by each student.

*Prerequisite:* OF 1015J

**OF 1033 3 hours**  
**Typewriting III**

A continuation of OF 1023 with further development of accuracy and speed in typewritten work. Emphasis is placed upon higher production standards and more complex material for mailable copy under timed conditions. Individualized instruction.

*Prerequisite:* OF 1023

**OF 1035J 5 hours**  
**Typewriting III**

A continuation of OF 1025J with further development of speed and accuracy in typewritten assignments. Emphasis will be placed on office documents and forms and the ability to follow instructions. A schedule of typing assignments will be followed by each student.

*Prerequisite:* OF 1025J

**OF 1043 3 hours**  
**Shorthand I**

A study of Gregg shorthand theory and shorthand dictation at moderate rates. Attention is given to punctuation, spelling, word usage, and reading shorthand notes rapidly. Beginning transcription is also introduced. Individualized instruction.

*Prerequisite or Corequisite:* OF 1013

**OF 1053 3 hours**  
**Shorthand II**

A course emphasizing the development of shorthand speed. Stenographic skills of punctuation, spelling, vocabulary, and transcribing techniques are stressed. Specifically designed for students who have completed one

semester of shorthand instruction, the course is also helpful to students who want to review Gregg shorthand theory. Individualized instruction.

*Prerequisite:* OF 1013, 1043 or consent of instructor

**OF 1063 3 hours**  
**Shorthand III**

A course with emphasis on continued development of shorthand speed. The course is specifically designed for the individual who has completed at least one year of shorthand instruction. The student should be able to pass an 80 wpm speed-take comfortably. Stenographic skills of punctuation, spelling, vocabulary, and transcribing, etc. are stressed. Individualized instruction.

*Prerequisite:* OF 1013 and the ability to pass an 80 wpm speed-take comfortably for three minutes

**OF 1073 3 hours**  
**Shorthand IV**

A transcription course designed to increase the quantity and quality of transcribing reports, memos, manuscripts, and letters in conformity with occupational standards. Continued attention is given to maintaining speed, punctuation, word usage, and spelling. Individualized instruction.

*Prerequisite:* OF 1053 or 1063, and OF 1023

**OF 1083 3 hours**  
**Business Writing Skills**

A course in the improvement of basic language skills through the study of sentence structure, punctuation, capitalization, spelling, and other grammatical areas as they pertain to the business world in particular. Emphasis will also be placed upon proofreading and building a larger vocabulary to enhance written as well as oral communication.

*Prerequisite:* none

**OF 1093 3 hours**  
**Filing and Records Management**

A study of filing rules and their application to alphabetic, numeric, subject, and geographic filing. Attention is given to the selection and organization of filing systems, equipment and supplies, micrographics and electronic records, retention and disposition of records, and administrative duties.

*Prerequisite or Corequisite:* OF 1013

**OF 1103 3 hours**  
**Introduction to Office Automation**

An introduction to word processing and office automation concepts and how technology is changing today's office. Additionally, the coordination of people, equipment, and procedures in an effective office environment

*Prerequisite: none*

**OF 2013****3 hours****Business Mathematics**

A course in commercial and financial applications of basic arithmetic. Intended for students in office, business, and other A.A.S. degree programs. Individualized instruction.

*Prerequisite: none*

**OF 2021****1 hour****Directed Studies in Shorthand**

A course which stresses continued development of speed and accuracy in writing shorthand and improvement in transcription of mailable copy.

*Prerequisite: OF 1053 or 1063 and 1023*

**OF 2036****6 hours****Internship and Seminar**

A supervised work experience in an actual office situation putting to use the skills and related knowledge learned in previous courses. Supervision on the job will be by office personnel. Coordination of work experience to classroom learning will be done by the instructor. Time will be arranged. A one-hour seminar will be held each week to discuss work experiences and the latest trends in office equipment and techniques gathered through assigned readings in current publications.

*Prerequisite: enrollment in the office occupations program and consent of instructor*

**OF 2043****3 hours****Legal Typewriting**

A course specializing in the typing of a wide range of legal documents and correspondence into mailable form. Mag Card and memory typewriters will also be used. Individualized instruction.

*Prerequisite: OF 1023 or consent of instructor*

**OF 2053****3 hours****Legal Shorthand**

A course specializing in the dictation and transcription of various legal documents and correspondence into mailable form. Legal terminology will be emphasized. Individualized instruction.

*Prerequisite: OF 1073 or consent of instructor*

**OF 2063****3 hours****Legal Secretarial Procedures**

A course specializing in the organization, functions, and duties in a legal office. Special attention is given to office and client financial records, law office files, litigation, and preparing court and noncourt documents.

*Prerequisite: OF 1013*

**OF 2073****3 hours****Medical Office Procedures**

A self-paced course specializing in the organization, functions, and duties in a medical office. Special attention is given to patient records, financial responsibilities, medical abbreviations, and professional activities. Simulation exercises will be included in the course. Individualized instruction.

*Prerequisite: OF 1023, 1083, and 1133*

**OF 2083****3 hours****Medical Transcription**

A specialized course in medical terminology transcription for students who are proficient in typewriting and medical terminology, and have a working knowledge of transcription equipment. Individualized instruction.

*Prerequisite: OF 1023, 1083, and 1133, and BI 1112*

**OF 2103****3 hours****Office Automation Computer Applications I**

A course designed to give students with varying computer backgrounds hands-on microcomputer experience. The IBM Personal Computer (with WordStar software), IBM Displaywriter, and Wang computers will be used in every class. Topics include learning to operate microcomputers and using word processing and database software to create and revise letters, tables, multi-page reports, and form letters.

*Prerequisite: OF 1013 or consent of instructor*

**OF 2113****3 hours****Office Automation Computer Applications II**

Students will use the IBM Personal Computer during every class and learn the commands of popular spreadsheet, database, and word processing software programs. Using Lotus 1-2-3 software, students will learn the basic commands used to create spreadsheets; and using dBASE III software, students learn the basic commands to create databases for business and office use.

*Prerequisite: OF 1013 or consent of instructor*

**OF 2123****3 hours****Information Systems for Business**

Topics include computer technology and its impact on business organizations, the role of people in an information system environment, and computers in solving business management problems. During one-fifth of classes, students will use the IBM Personal Computer and complete introductory activities using word processing (WordStar), spreadsheet (Lotus 1-2-3), and database management (dBASE III) software.

*Prerequisite: none*

**OF 2661, 2672, 2683 1-3 hours****Directed Studies in Office Occupations**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite: consent of instructor*

**OF 2991 1 hour****Directed Studies—Office Occupations Placement**

A course designed to assist office occupations students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

**Real Estate****RE 1014 4 hours****Principles of Real Estate (Salesman's Class)**

The study of the nature of real estate and its ownership, titles, legal descriptions, contracts, leases, taxation, and values. A total of 60 clock hours is required.

*Offered evenings only.*

*Prerequisite: none*

**RE 2023 3 hours****Real Estate Appraisals**

An introduction to real estate appraisals, the study of the nature of real property, property values, general and local trends, site evaluation, building cost estimates, depreciation, and estimates on remodeling and modernization. Certification by the Independent Fee Appraisers Association may be necessary before employment.

*Offered evenings only.*

*Prerequisite: none*

**RE 2033, 2044 3-4 hours****Real Estate Internship**

The intern training program is designed to supplement classwork for practical experience in a chosen field. Faculty supervised jobs are chosen for their educational value. Students are paid by their employers (15 to 20 hours per week) for 3 or 4 credits. If suitable jobs are not available, students will work on special projects.

*Offered evenings only.*

*Prerequisite: RE 1014 and BU 1013*

**RE 2043 3 hours****Real Estate Investments**

A study of the methods of evaluating investment opportunities in real estate.

*Offered evenings only.*

*Prerequisite: RE 1014*

**RE 2053 3 hours****Real Property Management**

A course in investment planning, market analysis, cost and income projection, budgeting, rental collection, insurance, maintenance and repair, and control systems.

*Offered evenings only.*

*Prerequisite: RE 1014*

**RE 2066 6 hours****Real Estate Brokerage**

A study of the brokerage function. Included for discussion are the role of the broker, organization and management of the office, selection of office personnel, recruiting and training of sales personnel, sales promotion, budgeting, records, and record systems. This course also includes advanced real estate concepts.

*Offered evenings only.*

*Prerequisite: RE 1014*

**RE 2661, 2672, 2683 1-3 hours****Directed Studies in Real Estate**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite: consent of instructor*

**RE 2991 1 hour****Directed Studies—Real Estate Placement**

A course designed to help real estate students in obtaining jobs suitable to their training and interests.

*Offered evenings only.*

*To be taken the last semester of study.*

**Retailing****RT 1001 1 hour****Cashiering and Customer Service**

A course which provides entry-level skills to those individuals seeking part-time employment in retailing. Topics include: cashiering, selling, human relations, anti-theft techniques, receiving, marking, display, checking receipts, pricing and employment opportunities.

*Prerequisite: none*

**RT 1043J 3 hours****Retailing Internship I**

An individualized program aimed at giving students an opportunity to balance their knowledge of a retail organization through experience in most functional areas of retail businesses. Students must have or be willing to seek part-time employment in a retail firm. Assistance is available in locating a retailing job.

*Prerequisite: retail sales major*

**RT 1053J 3 hours****Retailing Internship II**

An individualized program aimed at giving students an opportunity to balance their knowledge of a retail organization through experience in most functional areas of retail businesses. Students must have or be willing to seek part-time employment in a retail firm. Assistance is available in locating a retailing job.

*Prerequisite:* RT 1043J

**RT 1991J 1 hour****Retailing Placement**

A course designed to assist students with job search activities such as resume writing, job application completion, interviewing techniques, and telephone inquiry skills.

*Prerequisite:* none

**RT 2003 3 hours****Display Project**

A study of visual and promotional merchandising activities that are vital to the success of a retail firm. Topics include: promotional activities, public relations, construction and evaluation of displays, and promotional budgets.

*Prerequisite:* none

**RT 2013 3 hours****Consumer Behavior**

A study and analysis of consumer buying habits and motives. Attention is given to the dominant position of the consumer in the marketing mechanism and his or her behavior in the marketplace. Recognition of motivation and the reactions of consumers and related business influences is also covered.

*Prerequisite:* RT 2023 or BU 1013

**RT 2023 3 hours****Merchandising I**

An introduction to the principles of retailing. Emphasis is on the development, interpretation, and use of fundamental management and merchandising skills. Topics include: establishing a retail store, merchandise planning, salesmanship, display, promotion, advertising, personnel, finance, and control. Particular attention is given to problem solving through use of common retailing problems chosen to raise some of the major issues confronting retailing and retailers today.

*Prerequisite:* none

**RT 2033 3 hours****Merchandising II**

A study of the problems inherent in merchandising

including: buying, control, pricing for profit, planning sales, model stocks, and promotions. Arithmetic skills are stressed.

*Prerequisite:* RT 2013 and working knowledge of arithmetic

**RT 2043 3 hours****Retailing Internship**

An individualized program aimed at giving students an opportunity to balance their knowledge of a retail organization through experience in most functional areas of retail businesses.

*Prerequisite:* retailing major

**RT 2661, 2672, 2683 1-3 hours****Directed Studies in Retailing**

Course content will be arranged by the instructor to meet individual needs of the student.

*Prerequisite:* consent of instructor

**RT 2991 1 hour****Directed Studies—Retailing Placement**

A course designed to help retailing students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*

**Small Engine Repair****SE 1015 5 hours****Small Engine Repair**

A course designed to provide students with an introduction to small gasoline powered engines from both a theoretical and practical point of view. Both two-stroke cycle and four-stroke cycle small engines are studied in detail. Emphasis is placed upon procedures for repair and replacement of engine parts and components. Small engine cooling, lubricating, electrical, and starting systems are studied. Engine overhaul and machine procedures are discussed in detail, and lab work includes the disassembly, measuring, and reassembly of engine components. Small engine tune-up is also covered. The course is offered for college credit and is open to vocational students who have need of small engine repair knowledge and skill as a part of another course of study, such as agriculture or horticulture, or who intend to seek employment in a small engine shop or operate such a shop themselves.

*Prerequisite:* none

## Teacher Aide (Assistant)

### TA 2013 3 hours

#### Teacher Aide Seminar

A seminar designed to acquaint the prospective teacher aide with the responsibilities and requirements of the position and to discover how the teacher aide fits into the instructional team. The student prepares through the seminar to do an internship in one of the district schools. A college staff member moderates the seminar which serves to tie coursework and experience together.  
*Prerequisite: none*

### TA 2021, 2032, 2043 1-3 hours

#### Teacher Aide Internship

A supervised work experience in an actual educational setting coordinated with the student's regular classwork to provide a realistic view of the varied duties of a teacher aide.  
*Prerequisite: consent of instructor*

### TA 2661, 2672, 2683 1-3 hours

#### Directed Studies in Teacher Aide

Course content will be arranged by the instructor to meet individual needs of the student.  
*Prerequisite: consent of instructor*

### TA 2991 1 hour

#### Directed Studies—Teacher Aide Placement

A course designed to assist teacher aide students in obtaining jobs suitable to their training and interests.  
*To be taken the last semester of study*

## Welding

### WL 1001 1 hour

#### Personal Welding

A course designed to introduce the student to his or her home welder and its related functions.  
*Prerequisite: none*

### WL 1015 5 hours

#### Welding I

An introduction to oxygen-acetylene brazing, cutting, and electric arc welding. A study of safety in oxyacetylene and electric arc welding is also included.  
*Prerequisite: none*

### WL 1025 5 hours

#### Welding II

A continuation of Welding I, stressing all-position shielded metal arc welding (SMAW).  
*Prerequisite: WL 1015*

### WL 1035 5 hours

#### Welding III

A course which stresses development of shielded metal arc welding (SMAW) in off-position, along with a study of joint design.  
*Prerequisite: WL 1015, 1025, 1055*

### WL 1045 5 hours

#### Welding IV

A course which stresses the development of skills in inert gas-arc welding, TIG and MIG welding machines, and inspection and testing.  
*Prerequisite: WL 1015, 1025, 1035, 1055*

### WL 1055 5 hours

#### Welder's Blueprint Reading

A course which includes the fundamentals of print reading, welding symbols, and related information on a blueprint in construction and various welding fields.  
*Prerequisite: none*

### WL 1065 5 hours

#### Introduction to Metallurgy and Properties of Materials

A study of physical metallurgy from a welding viewpoint. The course includes the study of mechanical properties of ferrous and non-ferrous metals and the effects of the different welding procedures on metals.  
*Prerequisite: WL 1015, 1025, 1055*

### WL 1661, 1672, 1683 1-3 hours

#### Directed Studies in Welding

Course content and hours arranged by the instructor.  
*Prerequisite: consent of instructor*

### WL 2010 10 hours

#### Special Problems in Welding

A study of welding shop practices and the tools used in the welding job shop. As students become familiar with the tools and equipment, they apply this knowledge to practical applications.  
*Prerequisite: WL 1015, 1025, 1035, 1045, 1055, 1065*

### WL 2035 5 hours

#### Advanced MIG Welding

A course which includes working instruction on the MIG welder using .030 and .035 diameter solid core

## 134/Occupational Courses

wire and .045 flux core wire in all positions plus aluminum welding.

*Prerequisite:* WL 1015, 1025, 1035, 1045, 1055, 1065

### **WL 2045**

**5 hours**

#### **Advanced TIG Welding**

The study and application of the TIG welding process on carbon steel, stainless steel, and aluminum in all positions.

*Prerequisite:* WL 1015, 1025, 1035, 1045, 1055, 1065

### **WL 2055**

**5 hours**

#### **Cored Wire Welding**

This course includes working instruction on the MIG welder using .035 and .045 diameter cored wire in all positions.

*Prerequisite:* WL 1015, 1025, 1035, 1045, 1055, 1065

### **WL 2063**

**3 hours**

#### **Plasma Arc Welding**

A course which stresses the development of skills in plasma arc welding of stainless steel and various other alloys in the vertical and flat positions.

*Prerequisite:* Completion of one-year welding certificate program or consent of instructor.

### **WL 2073**

**3 hours**

#### **Plasma Arc Cutting**

A course which includes working instruction in the plasma arc cutting process on carbon steel, stainless steel, and aluminum.

*Prerequisite:* Completion of one-year welding certificate program or consent of instructor.

### **WL 2991**

**1 hour**

#### **Directed Studies—Welding Placement**

A course designed to assist welding students in obtaining jobs suitable to their training and interests.

*To be taken the last semester of study.*