

COURSES OF INSTRUCTION

ACCOUNTING (Acc.)

JOSEPH F. UPDYKE, CHAIRMAN

Associate Professor: UPDYKE*Assistant Professors:* HOBEN*Instructor:* ELEY*Part-time Instructors:* CONFER, FISCHER, GRISMER,
KESSLER, JAMES RYAN, JOSEPH RYAN,
SCHOCK, SLONAKER, VOITH, WEYRICH

ACC 203. SURVEY OF ACCOUNTING

THREE CREDIT HOURS

A consideration of the basic principles of accounting, including debits and credits, the balance sheet, the statement of profit and loss, the statement of surplus and elements of cost accounting from an interpretative viewpoint. Credit in this course does not satisfy degree requirements for the Bachelor of Science in Business Administration. Three class periods a week.

First Semester, Each Year

ACC 205-206. PRINCIPLES OF ACCOUNTING

EIGHT CREDIT HOURS

The purpose of the course is to acquaint the student with the primary function of accounting and introduce him to the entire accounting cycle in single proprietorships, partnerships, and corporations. This is a prerequisite to all other courses in accounting. Four class periods a week. *Full Year Course, Each Year*

ACC 303. COST ACCOUNTING

THREE CREDIT HOURS

This is an introductory course in the theory and practice of cost accounting as used in job, process, and estimated cost systems. Emphasis is placed on cost principles, control, and procedures in relation to materials, labor, and manufacturing expenses. Three class periods a week. *First Semester, Each Year*

ACC 304. ADVANCED COST ACCOUNTING

THREE CREDIT HOURS

Analysis and control of industrial costs through utilization of budgetary procedures and standard cost systems. Special consideration is given to distribution costs, profit-volume analyses and cost reports used in managerial and administrative decisions. Prerequisite: ACC 303. Three class periods a week.

Second Semester, Each Year

ACC 307. ACCOUNTING THEORY AND PRACTICE

THREE CREDIT HOURS

A study of balance sheet accounts and their interrelationship to profit and loss accounts. Also an introduction to alternative procedures, theory discussion, and accounting analysis. Three class periods a week. *First Semester, Each Year*

ACC 308. ADVANCED ACCOUNTING

THREE CREDIT HOURS

This course introduces the student to some of the more specialized accounting

subjects such as special sales procedures, insolvencies, estates and trusts, branch and home office, and consolidated statements. Three class periods a week.

Second Semester, Each Year

ACC 310. COST ACCOUNTING ANALYSIS

THREE CREDIT HOURS

The elements of manufacturing costs; cost and financial statement analysis; cost systems and budgets. Three class periods a week. Prerequisites: ACC 205-206 or ACC 203. Credit in this course does not satisfy degree requirements for the Bachelor of Science in Business Administration. *Second Semester, Each Year*

ACC 312. GOVERNMENTAL ACCOUNTING

THREE CREDIT HOURS

Accounting for institutions, municipalities, and for state and federal governments; organization; procedure, budget, accounts and records, reports. Three class periods a week. *Second Semester, Each Year*

ACC 320. BUDGETARY PROCEDURES FOR MANAGEMENT CONTROL

THREE CREDIT HOURS

This course is designed to emphasize the role of the budget as it relates to the management functions of motivation, planning, organization, and control. A study is made of the construction, control, and interpretation of accounts for the internal and external administration of business. The techniques and mechanics of budgeting will be considered briefly as a basis for the development of the course. Prerequisites: ACC 205 and 206. Three class periods a week.

ACC 401. AUDITING

THREE CREDIT HOURS

Re-examination of accounting principles in relation to their importance in current accounting practice. Study is made of auditing standards, procedures, and ethics as applied by the public accountant in annual examinations of business enterprises. Preparation and presentation of an auditor's report. Three class periods a week. *First Semester, Each Year*

ACC 403. ANALYSIS OF FINANCIAL STATEMENTS

THREE CREDIT HOURS

The financial reports of business concerns are examined for content and organization. Methods are developed for statement evaluation from the viewpoints of management, stockholders, and creditors. Three class periods a week.

Second Semester, Each Year

ACC 407. FEDERAL INCOME TAX ACCOUNTING

THREE CREDIT HOURS

An interpretation of the income tax portions of the current Revenue Act. The preparation of the individual, partnership and corporation income tax returns. Three class periods a week. *First Semester, Each Year*

ACC 408. FEDERAL, STATE, AND LOCAL TAXES

THREE CREDIT HOURS

An interpretation of the social security, estate, gift and excise tax portions of the current Revenue Act. A study of income, franchise, property, sales and payroll taxes currently typical in states (particularly Ohio) and municipalities. Three class periods a week. *Second Semester, Each Year*

ACC 413. ADVANCED ACCOUNTING PROBLEMS **THREE CREDIT HOURS**

A comprehensive review of accounting principles with training in the techniques of applying these principles to the solution of specific problems. Designed as a guide for preparation for the C. P. A. examination. Three class periods a week.
Second Semester, Each Year

ACC 414. SEMINAR IN ACCOUNTING **THREE CREDIT HOURS**

This course is designed for accounting majors to acquaint the students with (1) research methods in accounting, and (2) the implications of new accounting techniques as related to the handling of quantitative accounting data and as related to management control in the rapidly changing scientific environment of the business world. The responsibilities of the professional accountant to business and to the community will be emphasized. Class work will consist of individual reports, student panel presentations, open class discussions, and occasional outside speakers on topics of special current importance. Required of all seniors majoring in accounting.

Students enrolled prior to September, 1959 are following the sequence of courses listed below. These students have completed Elementary Accounting 101-102 and Intermediate Accounting 201-202, Acc 301-302, Acc 303-304, therefore, these courses will not be offered in 1962-1963.

ACC 401-402. AUDITING **SIX CREDIT HOURS**

A review of accounting with particular attention given to the theory and practice of auditing as applied to cash, receivables, inventories, etc. Practice in the auditing of special business types, and the preparation of auditor's reports. Three class periods a week.
Full Year Course, Each Year

ACC 407. FEDERAL INCOME TAX ACCOUNTING **THREE CREDIT HOURS**

An interpretation of the income tax portions of the current Revenue Act. The preparation of the individual, partnership and corporation income tax returns. Three class periods a week.
First Semester, Each Year

ACC 408. FEDERAL, STATE AND LOCAL TAXES **THREE CREDIT HOURS**

An interpretation of the social security, estate, gift and excise tax portions of the current Revenue Act. A study of income, franchise, property, sales and payroll taxes currently typical in states (particularly Ohio) and municipalities. Three class periods a week.
Second Semester, Each Year

ACC 412. C. P. A. PROBLEMS **THREE CREDIT HOURS**

The application of the principles of accounting to specific problems as set forth in the examination of the Ohio State Board of Accountancy. Three class periods a week.
Second Semester, Each Year

ART (ART)**EDWARD R. BURROUGHS, CHAIRMAN***Assistant Professor:* BURROUGHS*Instructor:* WEBER*Part-time Instructors:* CARMICHAEL, MARTINO**ART 101. DRAWING TWO CREDIT HOURS**

A study of the elements of drawing, including perspective, drawing from still life, light and shade and sketching. Two class periods a week.

First Semester, Each Year

ART 103. INTRODUCTORY PAINTING I TWO CREDIT HOURS

Painting in oil and water color from still life, landscape and floral subjects. Emphasis is placed on composition and application of art theories.

First Semester, Each Year

ART 104. INTRODUCTORY PAINTING II TWO CREDIT HOURS

A further study of painting problems with reference to technique and methods of procedure in building a painting. Prerequisite: ART 103 or its equivalent.

First Semester, Each Year

ART 201. PRINCIPLES OF DESIGN I TWO CREDIT HOURS

A study of the underlying elements and principles of design as they are applied to surface pattern. Color theories and their use in creative design are a part of this course.

Second Semester, Each Year

ART 202. PRINCIPLES OF DESIGN II TWO CREDIT HOURS

Advanced studies in creative design and their application to modern materials and to industry. Prerequisite: ART 201 or its equivalent.

Second Semester, Each Year

ART 203. GENERAL CRAFTS TWO CREDIT HOURS

The application of original designs to such materials as paper, textiles, ceramics and plastics through weaving, silk screen printing and modeling. A study of handwork as an integral part of an activity in the schools.

First Semester, Each Year

ART 205. GRAPHIC ARTS THREE CREDIT HOURS

The principal processes of the graphic arts (etching, block-printing, lithography, silkscreen, and related techniques) are studied as they pertain to contemporary expression in the fine arts and the various forms of advertising production.

Offered only at Marianist College.

Second Semester, Each Year

ART 207. COMMERCIAL ART AND LETTERING THREE CREDIT HOURS

Basic principles of advertising design, layout and lettering (designed, and drawn letter) and the relation of these subjects to current problems and methods. Offered only at Marianist College.

First Semester, Each Year

ART 221. PRACTICAL ARTS IN THE KINDERGARTEN AND PRIMARY GRADES
TWO CREDIT HOURS

Creative expression in the use of such materials as papers, textiles, ceramics, and plastics. A study of handwork as an integral part of activities in the schools. Accredited in Education.
Second Semester, Each Year

ART 222. PRACTICAL ARTS IN THE INTERMEDIATE GRADES **TWO CREDIT HOURS**
Same as ART 221, adjusted to the maturity of children in the intermediate grades. Accredited in Education.
Second Semester, Each Year

ART 301. CHRISTIAN ART **TWO CREDIT HOURS**
A study of the best examples of sacred art as representative expositions of Christian theology and religious tradition; correlations with Church history, theology, music, literature. The major work required is in the form of reading and discussion. Offered only at Regina Heights.

ART 307. CULTURAL HISTORY TILL 1830 **THREE CREDIT HOURS**
A brief review of pre-historic and Oriental art to prepare the ground for a study of modern art. Then a more intensive survey of the basic arts of architecture, painting, sculpture and music through the various movements in Europe and America: the Greek and Roman; the Byzantine and Saracenic; the Romanesque and Gothic; the Renaissance; the Baroque, the Rococo and the Neo-Classic.
First Semester, Each Year

ART 308. CULTURAL HISTORY SINCE 1830 **THREE CREDIT HOURS**
After a brief survey of the basic principles underlying all the arts, and their application to daily life, an intensive study of the Romantic, Realistic and Impressionistic movements, together with a study of the various Modern movements since 1900.
Second Semester, Each Year

ART 407. ART IN THE SCHOOLS **TWO CREDIT HOURS**
Present methods of teaching art in the elementary school; experience in art expression and the use of art elements and principles as the basis for creative-approach; organization of units of work, including drawing, painting, design, color, modeling, block printing, lettering, and the mural, as they relate to the integrated school program. Accredited in Education.
Each Semester, Each Year

ART 408. THE GREAT MASTERS **TWO CREDIT HOURS**
A study of the masters of art and the influences upon their works, beginning with the late Gothic period and continuing through the Baroque movement.
First Semester, Each Year

ART 409. THE GREAT MASTERS **TWO CREDIT HOURS**
A continuation of ART 408, beginning with the styles in the art of the masters of the Rococo period through Impressionism to contemporary movements in art.
Second Semester, Each Year

BIOLOGY (Bio)

DR. PAUL MACHOWICZ, S.M., CHAIRMAN

Associate Professors: FASO, JOLY, MACHOWICZ, NOLAND, SCHUELLEIN,
SHAY

Assistant Professors: CONCANNON, HIGGINS

Part-time Instructors: ALLEN, WILLIAMS

BIO 101. GENERAL BIOLOGY I **THREE CREDIT HOURS**

A study of the more important biological processes and principles through analysis and synthesis. The first semester deals primarily with the organizational aspects of living matter. The second semester stresses primarily the operational aspects of living matter. Three class periods a week. *Each Semester, Each Year*

BIO 101L. GENERAL BIOLOGY LABORATORY I **ONE CREDIT HOUR**

Course to accompany BIO 101. One three-hour laboratory per week.
Each Semester, Each Year

BIO 102. GENERAL BIOLOGY II **THREE CREDIT HOURS**

A continuation of Bio 101. Prerequisite Bio 101. *Each Semester, Each Year*

BIO 102L. GENERAL BIOLOGY LABORATORY II **ONE CREDIT HOUR**

Course to accompany BIO 102. One three-hour laboratory period per week.
Each Semester, Each Year

BIO 113. INTRODUCTION TO BIOLOGY **FOUR CREDIT HOURS**

A general survey of biological phenomena dealing with protoplasm and cells, as well as, the development and physiology of living organisms. The course is designed to acquaint the student with the principles of life and their application to living things. *Each Semester, Each Year*

BIO 205-206. HUMAN ANATOMY AND PHYSIOLOGY **SIX CREDIT HOURS**

A foundation study in the basic anatomy of the human body, consisting of lecture-demonstrations on the various organs and systems composing the body. The functions of the human body as a living organism are integrated with the study of structure. This course will meet the needs of students in physical education. Three class periods a week. Prerequisites: BIO 101-2.

Evening 1962-1963

BIO 207. HUMAN ANATOMY **THREE CREDIT HOURS**

A foundation study in the basic anatomy of the human body, consisting of lecture demonstrations on the various organs and systems composing the body. Three class periods a week. Prerequisites: BIO 101-2 or BIO 113.

First Semester, Each Year

BIO 207L. HUMAN ANATOMY LABORATORY **ONE CREDIT HOUR**

A course to accompany BIO 207 lecture. One three-hour period per week.

First Semester, Each Year

BIO 209. COMPARATIVE ANATOMY OF THE VERTEBRATES**THREE CREDIT HOURS**

A study of the similarities and the differences in the anatomy of the different organ systems of the various vertebrate groups. Embryology, histology, and morphology play an important role in this comparative study. Physiology is introduced where it is deemed advisable. Three class periods a week. Prerequisites: BIO 101-2.

Each Semester, Each Year

BIO 209L. COMPARATIVE ANATOMY LABORATORY**TWO CREDIT HOURS**

Course to accompany Bio 209 lecture. Two three-hour periods per week.

Each Semester, Each Year

BIO 213. COMPARATIVE ANATOMY**FOUR CREDIT HOURS**

A short course patterned after BIO 209, Prerequisites: BIO 101-2.

Second Semester, 1962-1963—Eve.

BIO 220. GENERAL BOTANY**THREE CREDIT HOURS**

A course designed to acquaint the student with the structure, physiology, reproduction and inheritance of representatives of the plant groups. The importance of plants in the life of man will be discussed. Three class periods a week. Prerequisites: BIO 101, 102.

First Semester, Each Year

BIO 220L. GENERAL BOTANY LABORATORY**ONE CREDIT HOUR**

A course to accompany BIO 220 lecture. One two-hour laboratory period per week.

First Semester, Each Year

BIO 303. PHYSIOLOGY**THREE CREDIT HOURS**

A lecture course showing the functions of the human body as a living organism. Sufficient anatomy is introduced to give at least an elementary knowledge of the organs and organ systems. Three class periods a week. Prerequisites: BIO 101-2, CHM 123-4 or equivalents, CHM 313-314 recommended.

Each Semester, Each Year

BIO 303L. PHYSIOLOGY LABORATORY**ONE CREDIT HOUR**

Course to accompany BIO 303 lecture. One three-hour period per week.

Each Semester, Each Year

BIO 304. HISTOLOGY**TWO CREDIT HOURS**

Fundamentals of cell structure, tissue organization and the microscopic anatomy of organs of the vertebrate animal, with special stress on the mammals. Kodachromes will take the place of microscopic laboratory work. Prerequisites: BIO 101-2.

Second Semester, 1962-1963—Eve.

BIO 309. MICROTECHNIQUE**THREE CREDIT HOURS**

This course is essentially for medical technology and biology majors. It includes

fixing, washing, dehydrating, clearing, infiltrating, imbedding, sectioning, affixing, staining and study of normal tissues. It also aims at recognition of the organ systems of the vertebrate body. Three class periods a week. Prerequisites: BIO 101-2. *Each Semester, Each Year*

BIO 309L. MICROTECHNIQUE LABORATORY ONE CREDIT HOUR
Course to accompany BIO 309. One three-hour laboratory period per week. *Each Semester, Each Year*

BIO 312. GENERAL GENETICS THREE CREDIT HOURS
A study of the principles of variation and heredity in plants and animals, with stress on the inheritance of human characteristics. Three lecture periods a week. Prerequisites: BIO 101-2 and MTH 121. *Each Semester, Each Year*

BIO 312L. GENERAL GENETICS LABORATORY ONE CREDIT HOUR
Course to accompany BIO 312. One two-hour period per week. *Each Semester, Each Year*

BIO 316. PLANT MORPHOLOGY TWO CREDIT HOURS
A lecture and laboratory course dealing with the structure, reproduction and evolution of representative plant groups. Two class periods a week. Prerequisites: BIO 101-2 and BIO 220. *Feb. 1963 and 1965*

BIO 316L. PLANT MORPHOLOGY ONE CREDIT HOUR
Course to accompany BIO 316 lecture. One two-hour period per week. *Feb. 1963 and 1965*

BIO 320. EVOLUTION THREE CREDIT HOURS
The course presents the evidence of evolution and discusses the factors which initiate change in species and the agencies which guide it. Three class periods a week. Prerequisites: BIO 101-2, BIO 209 recommended, or consent of instructor. *Feb. 1964 and 1966*

BIO 324. ENTOMOLOGY TWO CREDIT HOURS
Lectures and laboratory periods on the biology, morphology and identification of insects with emphasis on the local forms. The influence of insects and related animals on man and his possessions will be considered. Students will be required to prepare a properly identified collection. Two lectures per week. Prerequisite: Biology or Zoology one year. *Feb. 1964 and 1966*

BIO 324L. ENTOMOLOGY LABORATORY ONE CREDIT HOUR
Course to accompany BIO 324 lecture. One two-hour period per week. *Feb. 1964 and 1966*

BIO 325. PARASITOLOGY TWO CREDIT HOURS
An introduction to the morphology, life history and significance of those organisms deriving their sustenance from the tissues of others. Two lecture periods a week. Prerequisite: 8 hours biology *Feb. 1963 and 1965*

BIO 325L. PARASITOLOGY LABORATORY**ONE CREDIT HOUR**

Course to accompany BIO 325 lecture. One three-hour period per week.

*Feb. 1963 and 1965***BIO 330. PLANT PHYSIOLOGY****THREE CREDIT HOURS**

A basic course in plant physiology. Topics considered will include water relations in plants, photosynthesis, mineral nutrition, metabolism, growth and reproduction. Three class periods per week. Prerequisites: BIO 101, 102, 220 and one year of chemistry.

*Feb. 1964 and 1966***BIO 330L. PLANT PHYSIOLOGY LABORATORY****ONE CREDIT HOUR**

Course to accompany BIO 330 lecture. One two-hour laboratory per week.

*Second Semester, Each Year***BIO 361. INVERTEBRATE ZOOLOGY****TWO CREDIT HOURS**

A course designed to give the student a general knowledge of the structure, activities, life histories and relationships of the invertebrate animals, with some emphasis on their origin and development. Two class periods a week. Prerequisites: BIO 101, 102.

*Second Semester, Each Year***BIO 361L. INVERTEBRATE ZOOLOGY LABORATORY****TWO CREDIT HOURS**

Course to accompany BIO 360 Lecture. Two two-hour periods per week.

*Second Semester, Each Year***BIO 400. APPLIED BACTERIOLOGY****TWO CREDIT HOURS**

A course intended to meet the needs of students in Home Economics. A study of the physiology, classification and cultivation of bacteria. Emphasis will be placed on the applications of bacterial activities to foods, sanitation and public health. Two class periods a week. Prerequisites: BIO 101, 102 and CHM 110.

*Sept. 1962 and 1964***BIO 400L. APPLIED BACTERIOLOGY LABORATORY****ONE CREDIT HOUR**

Course to accompany BIO 400 Lecture. One three-hour period per week.

*Sept. 1962 and 1964***BIO 407. EMBRYOLOGY****THREE CREDIT HOURS**

The course gives the student a clear understanding of the early stages of development of the invertebrates and the vertebrates. It pays special attention to the study of the development of the chick and of the pig. Three class periods a week. Prerequisites: BIO 101-2 and BIO 209.

*Each Semester, Each Year***BIO 407L. EMBRYOLOGY LABORATORY****TWO CREDIT HOURS**

Course to accompany BIO 407 lecture. One four-hour period per week.

BIO 409. BIOPHYSICS**TWO CREDIT HOURS**

The course applies physical and chemical principles to the following biological problems: stress and strain in biologic systems, surface tension, osmosis, membranes, colloids, cells, dynamics of cell division and growth, bio-hydraulics,

heat production, calorimetry, sound production and reception, electric phenomena in cells and tissues, diatherms, artificial fevers, effects of radiant energy on biological materials, spectrographic methods of investigation, treatment of tumors with X-rays, and the production of vitamins. Two class periods a week.

To be announced

BIO 410. RADIATION BIOLOGY

THREE CREDIT HOURS

An introductory course in the theory and principles of ionizing radiation. Techniques in handling, detection, and determination of radioactive materials will be emphasized. Application of radioactive tracers to biological problems will be considered. Two three-hour periods per week. Prerequisites, BIO 303 or consent of instructor.

First Semester, Each Year

BIO 411. GENERAL BACTERIOLOGY

THREE CREDIT HOURS

A brief course covering the physiology, classification, and cultivation of bacteria. Their relation to medicine, agriculture, water, sewage, and milk are stressed. Isolation and microscopic observations of certain pathogenic germs; theories of immunity and immunization; three class periods a week. Prerequisites: BIO 101-2 and CHM 123-4. CHM 313-314 recommended. *Each Semester, Each Year*

BIO 411L. GENERAL BACTERIOLOGY LABORATORY

TWO CREDIT HOURS

Course to accompany BIO 411 lecture. One four-hour period per week.

Each Semester, Each Year

BIO 412. HUMAN GENETICS

TWO CREDIT HOURS

A study of the genetic principles as applied to families, pedigrees and to large populations. Aspects of genetic counseling and medicolegal problems are summarily discussed. Prerequisites: BIO 311 or 312, and MTH 121.

Feb. 1963 and 1965

BIO 416. PATHOGENIC BACTERIOLOGY

TWO CREDIT HOURS

A brief survey of pathogenic organisms, including their classification, cultural characteristics, biochemical and physiological reactions. Isolation and identification of unknowns; demonstration of and limited training in clinical serological methods as related to pathogens included in course. Two class periods a week. Prerequisite: BIO 411.

Feb. 1964 and 1966

BIO 416L. PATHOGENIC BACTERIOLOGY

ONE CREDIT HOUR

A course to accompany BIO 416 lecture. One two-hour period per week.

Feb. 1964 and 1966

BIO 420. SEMINAR

ONE CREDIT HOUR

Practice in development, presentation, and discussion of papers dealing with biological problems. Prerequisite: Jr. and Sr. standing.

Each Semester, Each Year

BIO 421. BIOLOGICAL PROBLEMS
(laboratory work)

ONE OR TWO CREDIT HOURS

Each Semester, Each Year

BIO 422. BIOLOGICAL PROBLEMS
(library work)

ONE OR TWO CREDIT HOURS
Each Semester, Each Year

BIO 454. NEUROANATOMY

THREE CREDIT HOURS

Study of neurological structure and function as applied to human experience and behavior. Acquaints the student with the role of the nervous and glandular systems in sensation, perception, learning and adjustment. Prerequisite: BIO 207. Accredited also in Psychology.

Second Semester, 1962-1963

All laboratories must be taken concurrently with the corresponding lecture courses.

BUSINESS MANAGEMENT (Bus)

BARTH J. SNYDER, CHAIRMAN

Professors: MCGOVERN, SNYDER

Associate Professors: BETH, COMER, FECHER, KRIEGBAUM, LEESE,
MURPHY

Assistant Professors: FUSZARA, WILL

Instructor: NASH

Part-time Instructors: ARNOLD, DOODY, EMERICK, EWALD, FLANAGAN,
HAMILTON, HAZELL, HOEFLING, HUMM,
LAUFERSWEILER, MERVAR, NOLTING, ONDERCIN,
PRYOR, TONEY, WATERHOUSE

ACCOUNTING 205-206 AND ECONOMICS 201-202 are prerequisites to all advanced courses. Students preparing for teaching positions in secondary schools should consult their advisor in the selection of required courses.

BUS 101. INTRODUCTION TO BUSINESS

THREE CREDIT HOURS

A survey of the fields of business and their inter-relationships. The uses and functions of production and distributive systems, capital, labor, finance, accounting, statistics, marketing, etc., are studied. The objectives are to emphasize business concepts and to prepare the students for specialized courses. Three class periods a week.

Each Semester, Each Year

BUS 301. CORPORATION FINANCE

THREE CREDIT HOURS

Principles of financial organization and management. A study of business organizations, corporate securities, financial structures; financing of new and established corporations; management of corporate funds; corporate expansion; mergers, failures and reorganizations; security exchanges, financial markets and government regulation of financial institutions and practices. Three class periods a week.

Each Semester, Each Year

BUS 303. BUSINESS LAW I: CONTRACTS**THREE CREDIT HOURS**

The basic course in business law treating the nature and classification of law, the courts and court procedure and considering in some detail the law of contracts and agency. Three class periods a week. *Each Semester, Each Year*

BUS 304. BUSINESS LAW II: SALES AND NEGOTIABLE INSTRUMENTS

A consideration of the law of sales and negotiable instruments. Prerequisite: BUS 303. Three class periods a week.

BUS 305. PRINCIPLES OF MARKETING**THREE CREDIT HOURS**

The general principles and practices underlying the processes of marketing. An analysis of the problems of the manufacturer, wholesaler, retailer and other marketing agencies. Principles, trends, methods and policies with relation to marketing efficiency. Three class periods a week. *Each Semester, Each Year*

BUS 306. ADVANCED MARKETING**TWO-THREE CREDIT HOURS**

The marketing policies of manufacturers and wholesalers; the technique of marketing research; and analysis of current problems and literature relating to marketing efficiency. Three class periods a week.

BUS 307. ADVERTISING**THREE CREDIT HOURS**

Nature and functions of advertising; the preparation of layouts, the writing of copy; selection and evaluation of media. The coordination of advertising with other marketing efforts. Social implications of advertising are discussed. Three class periods a week. *Each Semester, Each Year*

BUS 309. RETAIL MERCHANDISING**THREE CREDIT HOURS**

Surveys basic merchandising principles and problems of large and small retail stores. Includes organizations, location, buying and selling, cost reductions, current practices and trends. *Each Semester, Each Year*

BUS 310. SALESMANSHIP**THREE CREDIT HOURS**

A study of the basic principles underlying all selling and their practical application to specific cases. Topics include: types of selling jobs; fundamentals of selling, sales personality, buying motives, methods and sources of acquiring product knowledge; planning the sale; selling techniques, securing prospects, the approach, arousing interest, overcoming objections, closing the sale.

*Each Semester, Each Year***BUS 311. SALES MANAGEMENT****THREE CREDIT HOURS**

The structure of the sales organization, determination of sales policies, the selection, training, and motivation of salesmen, the establishing of sales territories and quotas. Specific problems are used to illustrate and apply principles.

*Second Semester, Each Year***BUS 313. BUSINESS STATISTICS****THREE CREDIT HOURS**

A survey of statistical methods including sampling, tabulations, graphics,

averages, dispersions, index numbers, time series, trends, and simple correlations. Three class periods a week.

Each Semester, Each Year

BUS 314. PERSONNEL MANAGEMENT

THREE CREDIT HOURS

A study of managerial principles and practices as they pertain to the total work force; manpower requirements; the selection process; training; transfers and promotions; job evaluation and remuneration policies; merit rating; grievances, morale and motivation; employee security; service and participation programs; current practices in personnel work. Three class periods a week.

Second Semester, Each Year

BUS 315. PRINCIPLES OF MANAGEMENT

THREE CREDIT HOURS

A basic course that recognizes the importance of "management" as a distinct function and the universality of management principles in the administration of any type of enterprise. The managerial functions of planning, organizing, and controlling are presented as a basis for subsequent courses that emphasize their application in specific areas. As a terminal course it is valuable in providing the student with a survey of the basic principles of administration.

Prerequisite: BUS 101. Three class periods a week. *Each Semester, Each Year*

BUS 316. PRODUCTION MANAGEMENT

THREE CREDIT HOURS

Nature and place of management, and factors underlying management decisions; product designs, physical facilities, location and layout; job evaluation and classification; plant operation and output; control of purchases and inventories. Problems of production control and coordinating factory operations. Three class periods a week. Prerequisite: BUS 315, Principles of Management, or permission of instructor.

BUS 320-321. MOTION AND TIME STUDY

SIX CREDIT HOURS

See INE 403-403L and INE 404-404L.

Full Year Course, Each Year

BUS 322. WAGE AND SALARY ADMINISTRATION

THREE CREDIT HOURS

A discussion of the role of wages and salaries for the individual, the firm, and society. Problems in the determination of wage levels and structures, methods of compensation, fringe benefits, and general aspects of identifying and determining overall policies, programs, and procedures. Three class periods a week. Prerequisite: BUS 314, Personnel Management or permission of instructor.

BUS 324. LABOR LEGISLATION

THREE CREDIT HOURS

The development, constitutional aspects, and practical effects of Federal and State legislation with respect to child labor, wages, hours, conditions of employment, industrial accidents, social security, civil and criminal liability and labor relations. Prerequisites: BUS 315, 314, or permission of instructor. Three class periods a week.

First Semester, Each Year

BUS 327. ELEMENTS OF SUPERVISION

THREE CREDIT HOURS

A consideration of the responsibilities of the shop or department head within the field of operative management; emphasis on training, motivation, griev-

ances and maintenance of morale in the light of sound management principles. An exposition of accepted solutions to present day problems. Three class periods a week.

First Semester, Each Year

BUS 340. INTRODUCTION TO DATA PROCESSING **THREE CREDIT HOURS**

A study of the basic principles and applications of punched-card and tape recordkeeping in business. Card, tape, and business report designs; basic card and tape equipment, and their functions; machine applications in selected business areas, and their relation to Electronic and Integrated Data Processing. Prerequisite: Upper division status.

First Semester, Each Year

BUS 341. PRINCIPLES OF SYSTEMS AND PROCEDURES **THREE CREDIT HOURS**

The object of this course is to introduce the student to the basic principles underlying systems work in business where machines data processing is employed. Modern systems procedures; operational flow charting; systems planning, installation, and control; audit trails; the "exception principle" in the handling of business data; report design, distribution, and control; relationship of systems and procedures work to Electronic and Integrated Data Processing. Prerequisite: BUS 340.

Second Semester, Each Year

BUS 402. CREDITS AND COLLECTIONS **TWO-THREE CREDIT HOURS**

Nature and functions of credit. Principles and practices in retail and mercantile credit administration. Sources and analysis of credit information. Two or three class periods a week.

BUS 403. BUSINESS LAW III: THE LAW OF BUSINESS ORGANIZATION AND PROPERTY

A treatment of the law of partnerships and corporations and the law of property. Prerequisite: BUS 303. Three class periods a week.

**BUS 409. BUSINESS COMMUNICATION AND
REPORT WRITING**

THREE CREDIT HOURS

The principles of letter writing and report writing are studied and applied in conformity with the best current practices in business. *Each Semester, Each Year*

BUS 414. INDUSTRIAL PURCHASING **THREE CREDIT HOURS**

Principles, policies, and practices of industrial procurement. Organization and functions; purchasing procedure; quality and quantity control, supply sources; price policies, forward buying, legal aspects of purchasing procedure. Three class periods a week.

BUS 415. PRODUCTION METHODS AND CONTROL **THREE CREDIT HOURS**

Principles and techniques used in production; current practices in production planning, routing, scheduling and dispatching; study of production standards, labor efficiency and costs; quantity and quality control. Three class periods a week.

First Semester, Each Year

BUS 419. COLLECTIVE BARGAINING, MEDIATION AND ARBITRATION**THREE CREDIT HOURS**

Meaning, practices, principles and organization of collective bargaining; techniques of mediation and agencies for effecting mediation; major economic problems involved in the adjustment of labor disputes. Three class periods a week.

*Second Semester, Each Year***BUS 421. THEORY OF ORGANIZATION****THREE CREDIT HOURS**

A review of the development of improved administrative methods in industry and commerce and their contribution to the field of higher wages and lower costs. Works of Taylor, Fayol, Emerson, Davis, Urwick, Mooney and others are examined; stress is placed upon the development of effective organization and operation through the application of the principles of scientific management. Three class periods a week.

*Second Semester, Each Year***BUS 422. COUNSELING TECHNIQUES****TWO-THREE CREDIT HOURS**

Functions of counselors in employee adjustment in personnel and in industrial relations; establishing counseling services, organizing and administering a program; evaluation and remedial action. Two-three class periods a week.

*Second Semester, Each Year***BUS 423. BUSINESS POLICIES AND MANAGEMENT****THREE CREDIT HOURS**

Coordination and integration of knowledge and techniques acquired in previous courses in Business Administration and Economics. Management and organizational problems of business enterprises are presented from the view of the chief executive with overall responsibility for the administration of the enterprise.

*Each Semester, Each Year***BUS 450. BUSINESS MANAGEMENT HONORS SEMINAR****TWO CREDIT HOURS**

A course in research and writing upon a subject within the student's major and under the direction of an instructor within the Department. The course is open only to those students who have attained a cumulative grade point average of 3.20 or above in their Sophomore and Junior years.

*Each Semester, Each Year***CHEMICAL ENGINEERING (CME)****PROFESSOR RAYMOND J. STITH, ACTING CHAIRMAN***Assistant Professor: WILLIS**Part-time Instructors: ADAMS, ECK, KEITH, ROTH***CME 202. CHEMICAL ENGINEERING FUNDAMENTALS I****THREE CREDIT HOURS**

An introduction to chemical engineering with lectures and problems on material and energy balances as applied to industrial processes. Prerequisites: CHM 124, MTH 216.

First Semester, Each Year

CME 303. CHEMICAL ENGINEERING FUNDAMENTALS II THREE CREDIT HOURS
Development of the fundamental principles of thermodynamics, particularly with respect to chemical engineering processes. Prerequisites: CME 202, MTH 218.
First Semester, Each Year

CME 304. CHEMICAL ENGINEERING FUNDAMENTALS III THREE CREDIT HOURS
Kinetics and catalysis of the chemical reactions utilized in industrial processes. Prerequisite: CME 303.
Second Semester, Each Year

CME 311. UNIT OPERATIONS I THREE CREDIT HOURS
Scientific principles forming the basis of the Unit Operations with particular reference to fluid flow and heat transfer. Prerequisite: CME 202.
First Semester, Each Year

CME 312. UNIT OPERATIONS II THREE CREDIT HOURS
A critical study of the Unit Operations of chemical engineering. This course is concerned with diffusional processes. Prerequisite: CME 311.
Second Semester, Each Year

CME 411. UNIT OPERATIONS III THREE CREDIT HOURS
A continued study of the unit operations of chemical engineering. Topics studied are evaporation, mechanical separations, air-water contact operations and drying.
First Semester, Each Year

CME 413L. UNIT OPERATIONS LABORATORY TWO CREDIT HOURS
This course is designed to acquaint the students with Unit Operations equipment and its utilization. Prerequisite: CME 311.
First Semester, Each Year

CME 414L. UNIT OPERATIONS LABORATORY TWO CREDIT HOURS
Continuation of CME 413L. Prerequisite: CME 312.
Second Semester, Each Year

CME 420. SEMINAR ONE-HALF CREDIT HOUR
Required of all junior and senior students in Chemical Engineering.
Each Semester, Each Year

CME 426L. CHEMICAL ENGINEERING PROJECTS TWO CREDIT HOURS
Laboratory development of individual projects. Senior standing in Chemical Engineering.
Second Semester, Each Year

CME 430. CHEMICAL ENGINEERING DESIGN THREE CREDIT HOURS
Study of the principles of process development, plant design and economics. Prerequisite: CME 411.
Second Semester, Each Year

CME 451. INDUSTRIAL INSTRUMENTATION TWO CREDIT HOURS
A study of industrial instruments and systems for indicating, recording and controlling process variables. Prerequisite: Junior standing in chemical engineering.
First Semester, Each Year

CME 452L. INDUSTRIAL INSTRUMENTATION LAB. TWO CREDIT HOURS
Laboratory course in Industrial Instrumentation. Prerequisite: CME 451.

Second Semester, Each Year

CME 481. ENGINEERING CALCULATIONS THREE CREDIT HOURS
The application of mathematics in the solution of engineering problems.
Prerequisite: MTH 218.

Second Semester, Each Year

Chemical Engineering Electives

CME 400. ELEMENTARY CHEMICAL ENGINEERING RESEARCH CREDIT ARRANGED
Independent study of elementary laboratory problems in chemical engineering.

CME 461. ELEMENTS OF NUCLEAR ENGINEERING TWO CREDIT HOURS
Introduction to the application of engineering principles to the field of nuclear science.

CME 471. ELEMENTS OF BIO-ENGINEERING TWO CREDIT HOURS
Introduction to the application of engineering principles to those industries which are based on biological or natural products.

CME 499. SPECIAL PROBLEMS IN CHEMICAL ENGINEERING TWO TO SIX CREDIT HOURS
Particular assignments to be arranged and approved by Chairman of the Department. Credit hours to be determined.

CME 501. ADVANCED THERMODYNAMICS TWO CREDIT HOURS
Advanced topics of thermodynamics with applications. Prerequisite: CME 303 or equivalent.

CME 502. FLUID FLOW TWO CREDIT HOURS
A study of compressible and incompressible flow with applications. Prerequisite: CME 311 or equivalent.

CME 503. ADVANCED UNIT OPERATIONS TWO CREDIT HOURS
This course covers diffusional topics, including extraction and multi-component absorption. Prerequisite: CME 312 or equivalent.

CME 504. HEAT TRANSMISSION TWO CREDIT HOURS
A study of the basic concepts of the flow of heat by conduction, convection and radiation. Prerequisite: CME 311 or equivalent.

CHEMISTRY (CHM)

DR. CLETUS CHUDD, S.M., CHAIRMAN

Professor: CHUDD

Associate Professors: EVESLAGE, LUCIER, MICHAELIS,
PAPPALARDO, WOTTLE

Assistant Professors: HASKIN, KARL, D. O'BRIEN, STEED, VANCE

Part-time Instructors: ANDUZE, BECKER, B. O'BRIEN

CHM 110. GENERAL CHEMISTRY FOUR CREDIT HOURS

Fundamental principles of general chemistry, including a brief study of metals, non-metals, and their compounds. A brief treatment of organic chemistry is also included. This course is designed for students requiring a less rigorous course than CHM 123-124. Four class periods per week.

First Semester, Each Year

CHM 110L. GENERAL CHEMISTRY LABORATORY ONE CREDIT HOUR

Course to accompany CHM 110 lecture. One two-hour laboratory period per week.

First Semester, Each Year

CHM 123-124. GENERAL CHEMISTRY SIX CREDIT HOURS

A comprehensive treatment of the fundamentals of general chemistry. Three class periods per week.

Full Year Course, Each Year

CHM 123L-124L. GENERAL CHEMISTRY LABORATORY TWO CREDIT HOURS

Course to accompany CHM 123-124 lecture. The second semester laboratory work is devoted to semimicro qualitative analysis. One three-hour laboratory period per week.

Full Year Course, Each Year

CHM 126L. GENERAL CHEMISTRY LABORATORY TWO CREDIT HOURS

This course for Chemistry majors to accompany CHM 124 lecture in the second semester. Two three-hour laboratory periods per week.

Second Semester, Each Year

CHM 200. ORGANIC CHEMISTRY FOUR CREDIT HOURS

A brief course in the fundamentals of organic chemistry. Aliphatic and aromatic compounds are treated. This course is intended for those students who need a less rigorous course than CHM 313-314 or CHM 315-316. Four class periods per week. Prerequisite: CHM 110.

Second Semester, Each Year

CHM 200L. ORGANIC CHEMISTRY LABORATORY ONE CREDIT HOUR

Course to accompany CHM 200 lecture. One two-hour period per week.

Second Semester, Each Year

CHM 215. QUANTITATIVE ANALYSIS I TWO CREDIT HOURS

A course for chemistry majors and chemical engineers. The fundamental theory

and techniques of gravimetric and volumetric analysis is treated. Two class periods per week. Prerequisite: CHM 124, one semester of college mathematics.

First Semester, Each Year

CHM 215L. QUANTITATIVE ANALYSIS I LABORATORY TWO CREDIT HOURS
Course to accompany CHM 215 lecture. Two three-hour laboratory periods per week.

First Semester, Each Year

CHM 216. QUANTITATIVE ANALYSIS II TWO CREDIT HOURS
A continuation of analytical techniques with the accent on separations and instrumental methods. Two class periods per week. Required for chemistry majors. Prerequisite: CHM 215.

Second Semester, Each Year

CHM 216L. QUANTITATIVE ANALYSIS II LABORATORY TWO CREDIT HOURS
Course to accompany CHM 216 lecture. Two three-hour laboratory periods per week.

Second Semester, Each Year

CHM 217L. QUANTITATIVE ANALYSIS LABORATORY ONE CREDIT HOUR
A short course for Chemical engineers. To accompany CHM 215 lecture. One three-hour laboratory period per week.

First Semester, Each Year

CHM 301. QUANTITATIVE ANALYSIS TWO CREDIT HOURS
A short course intended for premedical, predental, and medical technology students. Two class periods per week. Prerequisite: CHM 124.

Each Semester, Each Year

CHM 301L. QUANTITATIVE ANALYSIS LABORATORY TWO CREDIT HOURS
Course to accompany CHM 301 lecture. One four-hour laboratory period per week.

Each Semester, Each Year

CHM 302. PHYSICAL CHEMISTRY THREE CREDIT HOURS
A short course for premedical and predental students. Discussion of the properties of laws of matter in its different states and in solution; chemical equilibrium; thermo-chemistry; reaction kinetics; phase rule. Three lecture periods per week. Prerequisite: CHM 301.

Second Semester, Each Year

CHM 302L. PHYSICAL CHEMISTRY LABORATORY ONE CREDIT HOUR
Course to accompany CHM 302 lecture. Includes physicochemical methods and their applications. One three-hour laboratory per week.

Second Semester, Each Year

CHM 303. PHYSICAL CHEMISTRY THREE CREDIT HOURS
First semester of a comprehensive course for chemistry majors and chemical engineers. Included are the behavior of gases, liquids, solutions; correlation of physical properties with molecular structure; introduction to thermodynamics, thermochemistry, and the phase rule. Prerequisite: CHM 215 or equivalent; Corequisite: MTH 218.

Each Semester, Each Year

CHM 303L. PHYSICAL CHEMISTRY LABORATORY ONE CREDIT HOUR
Course to accompany CHM 303 lecture. One three-hour laboratory period each week.
Each Semester, Each Year

CHM 304. PHYSICAL CHEMISTRY THREE CREDIT HOURS
A continuation of CHM 303. Studies in chemical equilibria: homogeneous, heterogeneous, and ionic with emphasis on thermodynamics and the phase rule. Included are studies in electrochemistry, kinetics, quantum theory, photochemistry, and nuclear chemistry. Prerequisite: CHM 303. *Each Semester, Each Year*

CHM 304L. PHYSICAL CHEMISTRY LABORATORY ONE CREDIT HOUR
Course to accompany CHM 304 lecture. One three-hour laboratory period each week.
Each Semester, Each Year

CHM 307. CHEMICAL LITERATURE ONE CREDIT HOUR
The use of chemical literature, indexing methods, and patent procedure. Prerequisite: GER 307.
Second Semester, Each Year

CHM 313-314. ORGANIC CHEMISTRY SIX CREDIT HOURS
This course is designed for premedical, pre dental, and medical technology students. A strong grounding in the fundamentals of Organic Chemistry is given. Three class periods per week. Prerequisite: CHM 124.
Full Year Course, Each Year

CHM 313L-314L. ORGANIC CHEMISTRY LABORATORY TWO CREDIT HOURS
Course to accompany CHM 313-314 lecture. One three-hour laboratory period each week.
Full Year Course, Each Year

CHM 315-316. ORGANIC CHEMISTRY SIX CREDIT HOURS
A study of the aliphatic, aromatic, and heterocyclic compounds, including laboratory preparations of typical compounds, and aimed to develop the basic techniques of organic methods. This course is required of chemistry majors and chemical engineers. Three class periods per week. Prerequisite: CHM 215.
Full Year Course, Each Year

CHM 315L-316L. ORGANIC CHEMISTRY LABORATORY FOUR CREDIT HOURS
Course to accompany CHM 315-316. Two three-hour laboratory periods each week. Prerequisite: CHM 124.
Full Year Course, Each Year

CHM 400. BIOCHEMISTRY FOUR CREDIT HOURS
A one semester course intended to meet the needs of students in Home Economics. A study of the chemistry of the essential food constituents, their digestion, absorption, and intermediary metabolism. Four class periods per week. Prerequisite: CHM 200.
First Semester, 1962-1963

CHM 400L course to accompany CHM 400 lecture. One three-hour laboratory period per week.
First Semester, 1962-1963

CHM 405. QUALITATIVE ORGANIC ANALYSIS ONE CREDIT HOUR
A systematic study of the reactions of functional groups and of the physical properties which lead to the identification of organic compounds. One class period per week. Prerequisite: CHM 315-316. *First Semester, Each Year*

CHM 405L. QUALITATIVE ORGANIC ANALYSIS CHEMISTRY LABORATORY TWO CREDIT HOURS
Course to accompany CHM 405 lecture. Two three-hour laboratory periods per week. *First Semester, Each Year*

CHM 408L. LABORATORY TECHNIQUES IN ORGANIC CHEMISTRY ONE CREDIT HOUR
A one three-hour laboratory period covering the standard but more advanced techniques of organic chemistry, such as types of distillation, hydrogenation, etc. Prerequisite: CHM 315-316. *Second Semester, Each Year*

CHM 412. INTERMEDIATE ORGANIC CHEMISTRY THREE CREDIT HOURS
This course provides an understanding of the modern theory of organic chemistry with emphasis on reaction mechanisms. Prerequisite: CHM 315-316. *Second Semester, Each Year*

CHM 417. INORGANIC CHEMISTRY THREE CREDIT HOURS
This course comprises topics such as electronic distribution in atoms and ions, the Bohr Atom, types of forces resulting in compound stability, nature of the chemical bond, electron affinity and the periodic arrangement, the nucleus and its reactions, coordination compounds, systematization of the inorganic family. Three class periods per week. Prerequisite: CHM 216. *First Semester, Each Year*

CHM 498. SEMINAR TWO CREDIT HOURS
Required of all Chemistry majors. Two meetings are held each week. *Second Semester, Each Year*

CHM 499. RESEARCH THREE CREDIT HOURS
An elective for Chemistry majors. Permission of Chairman of Department required. Prerequisite: Senior standing. *Each Semester, Each Year*

CIVIL ENGINEERING AND ENGINEERING MECHANICS

SEYMOUR J. RYCKMAN, CHAIRMAN
Professors: CHAMBERLAIN, RYCKMAN
Associate Professors: DRISCOLL, STITH, THOMSON
Assistant Professor: PAYNE
Instructor: DUBOSAR
Part-time Instructors: POLI, STRAUS

CIVIL ENGINEERING (CIE)

CIE 205L. SURVEYING FIELD PRACTICE THREE CREDIT HOURS
Use and care of surveying instruments in the field. Includes study, field work

and computation in the following: topography, highway curves and alignment, sections and slope stakes, triangulation, level net, celestial observations, evaluation of errors, and preparation of plans. Five eight-hour days a week for three weeks. Prerequisite: CIE 208. *Summer, Each Year*

CIE 207. SURVEYING I

FOUR CREDIT HOURS

Theory of Measurements, and computation and instrumentation for surveys for engineering projects including determination and distribution of errors, traverse and area computations, U.S. Public Land boundary and construction surveys, celestial observations, triangulation and level net adjustments, elementary geodesy, and state coordinate systems. For Civil Engineering students only. Four class periods a week. Corequisite: MTH 216. *First Semester, Each Year*

CIE 208. SURVEYING II

THREE CREDIT HOURS

Continuation of Surveying I, including study of photogrammetry, circular and spiral curves, vertical curves, grade lines, earthwork and mass diagram, slope and grade stakes, contour grading, and use of aerial photographs. Three class periods a week. Prerequisite: CIE 207. *Second Semester, Each Year*

CIE 211. SURVEYING

ONE CREDIT HOUR

General Principles of Surveying with emphasis on plane table mapping. Designed for students in Geology. One class period a week. Prerequisite: MTH 117 or MTH 122. *Second Semester 1963-1964*

CIE 211L. SURVEYING LABORATORY

ONE CREDIT HOUR

Field and laboratory work in application of principles of CIE 211. One laboratory period a week. Corequisite: CIE 211. *Second Semester 1963-1964*

CIE 306. THEORY OF STRUCTURES

FIVE CREDIT HOURS

The analytical and graphical methods of stress determination in statically determinate structures, together with a study of influence lines. Five class periods a week. Prerequisite: EGM 303. *Second Semester, Each Year*

CIE 307. HYDRAULICS

FOUR CREDIT HOURS

A basic course in the principles of hydrostatics and hydrodynamics; pressures exerted by water at rest or in motion; measurement of fluid flow; fundamentals of dimensional analysis and dynamic similarity; flow of water in pipes and open channels, with application of basic principles to the flow of other fluids; hydraulic turbines and centrifugal pumps. Four class periods a week. Prerequisite: EGM 202; Corequisite: CIE 307L. *First Semester, Each Year*

CIE 307L. HYDRAULICS LABORATORY

ONE CREDIT HOUR

Experiments include Fluid Statics, Reynold's Criterion, Flow in pipes and open channels, Pump performance, Loss of head in pipe and fittings and measurement of flow by Venturi Meter, Orifice and Wiers. One laboratory period a week. Corequisite: CIE 307. *First Semester, Each Year*

CIE 310L. CIVIL ENGINEERING LABORATORY**ONE CREDIT HOUR**

A laboratory course relating the engineering properties of certain materials to their fundamental nature and composition. Specific materials include: metals, timber, portland cement concrete, bituminous mixes, reinforced plastics, and structural adhesives. One laboratory period a week. Corequisite: EGM 303.

*Second Semester, Each Year***CIE 402. STRUCTURAL DESIGN II****TWO CREDIT HOURS**

A study of concentrated loads and their distribution on slabs, stringers and floor beams as applied to bridges and buildings, footings on piles; composite construction, rigid frames, flat slabs as rigid frames where code moment coefficients do not apply, plastic design of rectangular and tee beams. Two class periods a week. Prerequisites: CIE 407, CIE 415; Corequisite: CIE 402L.

*Second Semester, Each Year***CIE 402L. STRUCTURAL DESIGN LABORATORY II****TWO CREDIT HOURS**

Assigned problems illustrating and affording practice in the design covered in CIE 402. Two laboratory periods a week. Corequisite: CIE 402.

*Second Semester, Each Year***CIE 405. HIGHWAY ENGINEERING****THREE CREDIT HOURS**

Fundamentals of highway design, construction maintenance, and economics with illustrative practical problems. Three class periods a week. Prerequisites: CIE 208, CIE 310L.

*First Semester, Each Year***CIE 406. INDETERMINATE STRUCTURES****THREE CREDIT HOURS**

The determination of stresses and deflections of statically indeterminate frames and trusses by the classic and modern methods, including Castigliano's Theorem, least work, moment and shear distribution. Three class periods a week. Prerequisite: CIE 407.

*Second Semester, Each Year***CIE 407. REINFORCED CONCRETE****FOUR CREDIT HOURS**

The first course in the theory and design of reinforced concrete structures; the study of earth pressure; design of retaining walls and footings. Four class periods a week. Prerequisite: CIE 306.

*First Semester, Each Year***CIE 408. SEMINAR****ONE CREDIT HOUR**

Practice in the presentation and discussion of papers dealing with civil engineering subjects; lectures by staff and prominent engineers. One class period a week for Sophomore, Junior and Senior years.

*Each Semester, Each Year***CIE 409. SOIL MECHANICS****TWO CREDIT HOURS**

A study of the physical properties of soil as an engineering material, including principles of classification, soil structure, permeability, capillarity, shear consolidation, stress analysis, stability of slopes, lateral pressure and bearing capacity. Two class periods a week. Corequisites: CIE 409L, EGM 304.

First Semester, Each Year

CIE 409L. SOIL MECHANICS LABORATORY ONE CREDIT HOUR

Laboratory tests evaluate soil properties and identify soils for engineering purposes including specific gravity, Atterberg limits, grading, permeability, consolidation, tri-axial, direct shear, optimum moisture content and field sampling. One laboratory period a week. Corequisite: CIE 409. *First Semester, Each Year*

CIE 415. STRUCTURAL DESIGN I THREE CREDIT HOURS

A study of rolled beams, plate girders, columns and steel trusses with emphasis on typical connections and splices both riveted and welded, together with assigned problems. Three class periods a week. Prerequisite: CIE 306; Corequisite: EGM 304. *First Semester, Each Year*

CIE 433. SANITARY ENGINEERING I THREE CREDIT HOURS

An integrated study of the principles of water sanitation, water supply, and waste water disposal systems. General topics considered: rainfall and runoff, statistical analysis of experimental data, storage regulation of runoff, wells and ground water, water distribution systems, sewers and appurtenances, design of sewers and water distribution systems. Three class periods a week. Prerequisites: CIE 307, CIE 307L. *First Semester, Each Year*

CIE 434. SANITARY ENGINEERING II THREE CREDIT HOURS

A continuation of the study of water supply and waste water disposal systems begun in CIE 433 and continuing with brief considerations of municipal and rural sanitation. Topics considered: standards of water quality, unit operations and design of water and sewage treatment plants, stream pollution and pollution control, swimming pools and rural sanitation. Three class periods a week. Prerequisite: CIE 433. *Second Semester, Each Year*

Civil Engineering Electives

CIE 421. CONSTRUCTION ENGINEERING THREE CREDIT HOURS

Organization, planning and control of construction projects. Includes: a study of the use of machinery, economics of equipment, methods, materials, estimates, and cost controls. Three class periods a week.

CIE 422. MATERIALS OF CONSTRUCTION THREE CREDIT HOURS

A comprehensive study of the properties of timber, stone, clay products, wrought iron, steel, cast iron, non-ferrous alloy and plastics. Three class periods a week. Prerequisite: CIE 310L.

CIE 499. SPECIAL PROBLEMS IN CIVIL ENGINEERING

TWO TO SIX CREDIT HOURS

Particular assignments to be arranged and approved by Chairman of the Department. Credit hours to be determined.

CIE 502. PRESTRESSED CONCRETE THREE CREDIT HOURS

Discussion of the properties of concrete and prestressing steel. Theory and design of prestressed concrete beams, slab, circular tanks and rigid frames. Three class periods a week. Prerequisite: CIE 407.

CIE 504. LIMIT DESIGN IN STEEL**THREE CREDIT HOURS**

A review of the physical properties of metal, the theory and application of limit design to simple and redundant members, trusses and columns. A brief study of connection details. Three class periods a week. Corequisite: CIE 406.

CIE 506. ULTIMATE DESIGN OF REINFORCED CONCRETE**THREE CREDIT HOURS**

The theory and application of ultimate design in reinforced concrete as applied to the sections of beams, columns and members subject to both bending and direct stress. The latest report of the A.S.C.E.-A.C.I. Joint Committee is reviewed. Three class periods a week. Prerequisite: CIE 407.

CIE 524. FOUNDATION DESIGN**THREE CREDIT HOURS**

Analysis of earth pressure and stability of natural slopes. Study of frost action, permafrost. The design of spread foundations, pile foundations, caissons, cofferdams, anchored bulkheads, bridge piers and abutments. Three class periods a week. Prerequisite: CIE 409; Corequisite: CIE 407.

CIE 542. HIGHWAY DESIGN I**THREE CREDIT HOURS**

Design and construction of pavements, including concrete, asphalt, aggregate and soil cement surfaces. Designs of base courses. Maintenance. Three class periods a week. Prerequisite: CIE 405.

CIE 544. TRAFFIC ENGINEERING**THREE CREDIT HOURS**

Characteristics of traffic, including the road user, the vehicle, origin, and destination surveys. Traffic regulation, control devices and aids, design, administration and planning. Three class periods a week. Prerequisite: CIE 405.

ENGINEERING MECHANICS (EGM)**EGM 202. STATICS****THREE CREDIT HOURS**

A review of the principles of mechanics; force systems, resultants and equilibrium; centroids and centers of gravity of composite lines, areas, and bodies; application to trusses, frames, and beams; friction; virtual work; moments of inertia of composite lines, areas, and bodies. Three class periods a week. Prerequisite: PHY 206; Corequisite: MTH 218. *Each Semester, Each Year*

EGM 301. DYNAMICS**THREE CREDIT HOURS**

Kinematics, including translation, rotation, plane motion, and relative motion; kinetics of particles and bodies by the methods of force-mass-acceleration, work-energy, and impulse-momentum. Engineering applications are stressed throughout. Three class periods a week. Prerequisite: EGM 202.

*Each Semester, Each Year***EGM 303. STRENGTH OF MATERIALS****THREE CREDIT HOURS**

The study of stresses and strains in tension, compression, shear, flexure and torsion; riveted and welded joints; shear and moment diagrams; stresses and

deflections of beams and analysis of columns. Three class periods a week.
Prerequisite: EGM 202. *Each Semester, Each Year*

EGM 304. ADVANCED STRENGTH OF MATERIALS **THREE CREDIT HOURS**

A detailed study of the limitations of the direct stress, flexure, and torsion formulas; stresses and strains at a point, including Mohr's circle for stress and strain, theories of failure, and strain energy; shear center; unsymmetrical bending; curved beams; approximate analysis of flat plates; torsion of bars of non-circular cross-section, including membrane analogy; thick-walled cylinders. Three class periods a week. Prerequisite: EGM 303.

Each Semester, Each Year

EGM 305L. MATERIALS TESTING **ONE CREDIT HOUR**

A laboratory course to acquaint the student with A. S. T. M. standards and procedures in the physical tests of metals, timber and concrete. Mechanical tests include those of tension, compression, flexure, torsion, hardness and impact. One laboratory period a week. Corequisite: EGM 303. *Each Semester, Each Year*

ECONOMICS (Eco)

DR. EDMUND B. O'LEARY, CHAIRMAN

Professor: O'LEARY

Associate Professors: FECHER, LEESE, WHALEN

Assistant Professor: TORCHIA

Part-time Instructors: ARNDTS, DICKISON, EWALD, MAY,
STAFFORD, WEIDEMANN

Eco 201-202 is prerequisite for all advanced courses in Economics.

Eco 201-202. PRINCIPLES OF ECONOMICS **SIX CREDIT HOURS**

A general survey of the economic institutions, forces, and factors which affect the production, exchange, distribution, and consumption of wealth. Fundamental principles and concepts are emphasized. Designed for students who desire a general knowledge of economics as well as for those planning to concentrate on economics, business organization, and the social sciences. Required of all students selecting economics for a major or minor and for business administration students. *Both 201 and 202 Each Semester, Each Year*

Eco 203. SURVEY OF ECONOMICS **THREE CREDIT HOURS**

A general treatment of the principles, objectives and applications of economics. Credit in this course does not satisfy degree requirements for the Bachelor of Science in Business Administration or the Bachelor of Arts with a major in Economics. *Each Semester, Each Year*

ECO 303. REAL ESTATE**THREE CREDIT HOURS**

Consideration of current real estate problems and practices, from the standpoint of the broker, the businessman, and the property owner. Financial, social, economic, and legal aspects of the real estate field are included.

Evening Division Only

ECO 305. COMPARATIVE ECONOMIC SYSTEMS**THREE CREDIT HOURS**

A study of economic systems from early times to the present. The emphasis is upon the theories of socialism, fascism, communism and capitalism. Three class periods a week.

ECO 308. PRINCIPLES OF INSURANCE**THREE CREDIT HOURS**

A general course in underlying principles of property, marine, casualty, and life insurance. The use and functions of insurance in the life of a business and in the life of individuals. The theory and practices of insurance carriers are discussed. Three class periods a week.

Each Semester, Each Year

ECO 309. PRINCIPLES OF LIFE INSURANCE**THREE CREDIT HOURS**

An intensive study of the principles and practices of life insurance; types of policies; premiums; reserves; insurance programs and government regulations. Three class periods a week.

First Semester, Each Year

ECO 310. SOCIAL INSURANCE**THREE CREDIT HOURS**

Application of social insurance to old age, accident, disability and unemployment. Private and cooperative programs for worker security. Current pension and retirement programs are analyzed and discussed.

Second Semester, Each Year

ECO 312. TRANSPORTATION**THREE CREDIT HOURS**

A survey of inland transportation agencies and facilities and a discussion of current transportation problems and regulations. Three class periods a week.

ECO 313. PUBLIC UTILITIES**THREE CREDIT HOURS**

Development of public utilities in the United States. Legal basis of public utilities. Special problems of valuation, depreciation, pricing, financing and management control of utilities. Policies and problems in public administration of utilities. Three class periods a week.

First Semester, Each Year

ECO 314. PRINCIPLES OF INTERNATIONAL TRADE**THREE CREDIT HOURS**

Principles and procedures in exporting and importing. Export and import organization, market analysis, handling shipments, packing, customs, and current practices. Three class periods a week.

ECO 325. LABOR ECONOMICS**THREE CREDIT HOURS**

The background and development of the American labor movement. Attention is given to the nature of the labor market, including problems of workers, insecurity, wages, collective bargaining, labor legislation, social insurance, and government intervention. Three class periods a week.

First Semester, Each Year

ECO 401. INVESTMENTS**THREE CREDIT HOURS**

A study of the basic features and principles underlying sound investments. The discussions include an analysis and evaluation of government, municipal, railroad, public utility, industrial, financial, and real estate securities. Problem and trends are emphasized. Three class periods a week. *Second Semester, Each Year*

ECO 402. PUBLIC FINANCE AND TAXATION**THREE CREDIT HOURS**

A survey of government expenditures, borrowing, indebtedness, and revenue. The theory of taxation; constitutional, distributive and administrative effects of taxation; American fiscal system. Three class periods a week.

*Second Semester, Each Year***ECO 403. HISTORY OF ECONOMIC THOUGHT****TWO-THREE CREDIT HOURS**

The development of economic concepts and theories from the mercantilists to recent economists. Emphasis upon the modern period. Two or three class periods a week.

ECO 404. BUSINESS CYCLES**THREE CREDIT HOURS**

Characteristics and economic consequences of business cycles. Analysis of causes and theories of business cycles. Examination of the proposals for eliminating or controlling the business cycle. Some attention is given to the barometers and measurements of business cycles. Three class periods a week.

*First Semester, Each Year***ECO 405. MONEY, CREDIT AND BANKING****THREE CREDIT HOURS**

A survey of the concepts, principles and practices in the fields of money, credit, and banking. Consideration of monetary systems, foreign exchange, credit instruments, and the principal types of modern financial institutions. Special attention to the commercial bank and its relation to the Federal Reserve System. Three class periods a week.

*Each Semester, Each Year***ECO 406. ADVANCED BANKING AND MONETARY PROBLEMS****THREE CREDIT HOURS**

Policies and operation of central banks, particularly the Federal Reserve System, and the financial markets. Problems of credit control, monetary stabilization and banking regulations and reform. Current banking problems and trends are emphasized. Three class periods a week.

ECO 408. CONTEMPORARY ECONOMICS**THREE CREDIT HOURS**

Analysis and discussion of current economic issues. Among the problems considered are labor, prices, government and economic maladjustments. Important current economic problems will be emphasized and discussed as they arise. Three class periods a week.

*Second Semester, Each Year***ECO 413. ECONOMICS ANALYSIS AND POLICY****TWO-THREE CREDIT HOURS**

Analysis of basic economic principles with special attention to the theories of value and distribution. Two or three class periods a week.

ECO 425. ECONOMICS SEMINAR

TWO CREDIT HOURS

A study and discussion of special economic problems currently important and of interest to the group. Two class periods a week. *Each Semester, Each Year*

ELEMENTARY—SECONDARY EDUCATION (EDU.)

BRO. THOMAS J. POWERS, S.M., *Chairman*

Professors: BARRETT, ELBERT, FAERBER, LEARY, SEEBOLD

Associate Professors: CHAVEZ, DARBY, JANSEN, KRIEGBAUM,
MILLER, SR. PELAGIA, POWERS

Assistant Professors: ANDERSON, SR. AUDREY, EMLING, SR. J. AGNES,
SR. LAURIETTA, WHITE

Instructors: SR. MARGARET, RUHMSCHUSSEL

Part-time Instructors: BENSON, SR. CLAUDIA, LUBBERS,
OWEN, PHILLIPS, RESTON, SCHNELLE,
TURNER, VANDEVANDER, WEIDNER

EDU 100. ORIENTATION

ONE CREDIT HOUR

Deals with the total problem of adjustment to the college campus. Second half of course deals with orientation to the teaching profession.

First Semester, Each Year

EDU 109. MORAL AND SPIRITUAL VALUES

THREE CREDIT HOURS

For freshman students in lieu of Religion. A study of the basic religious and moral values inherent in the American tradition. Stresses the importance of such values in the personal life of the teacher and emphasizes their role as integrating factor in the educative process.

Each Semester, Each Year

EDU 198. NATURE OF THE LEARNER

THREE CREDIT HOURS

This course is essentially an introduction to psychology, emphasizing concepts from general psychology that are of particular interest and value to the teacher. Special attention is given to the fundamental equipment of the learner and to the functioning of that equipment in the processes involved in learning. Required of all freshman education students. (A combination of PSY 204 General Psychology and PHL 207 Philosophical Psychology may be counted as substituting for the requirement of Edu 198.)

Each Semester, Each Year

EDU 207. GROWTH AND DEVELOPMENT OF THE LEARNER

THREE CREDIT HOURS

Study of the factors that influence the growth, development, and maturation of the learner as he progresses through the various stages from infancy through adolescence. Nine clock hours of observation of teaching required of cadet students. Prerequisite: EDU 198 or equivalent.

Each Semester, Each Year

EDU 208. THE LEARNING PROCESS**THREE CREDIT HOURS**

The psychology of learning. Includes such areas as motivation, readiness, methods of study, transfer, individual differences, and measurement of progress. Planned observation of learning situations is an essential part of the course. Required of all sophomore education students. Prerequisites: EDU 198, 207, or equivalent. *Each Semester, Each Year*

EDU 219. KINDERGARTEN INSTRUCTION**THREE CREDIT HOURS**

Deals both with the theory and the necessary practical skills to meet the needs of children in the Kindergarten. Observation in Kindergarten is included. Required for Kindergarten-Primary certification. *First Semester, Each Year*

EDU 221. PRACTICAL ARTS IN THE KINDERGARTEN AND PRIMARY GRADES**TWO CREDIT HOURS**

Creative expression in the use of such materials as papers, textiles, ceramics, and plastics. A study of handwork as an integral part of activities in the schools. Required of those preparing for Kindergarten-Primary certification. Accredited in Art. *Second Semester, Each Year*

EDU 222. PRACTICAL ARTS IN THE INTERMEDIATE GRADES**TWO CREDIT HOURS**

Same as EDU 221, adjusted to the maturity of children in the intermediate grades. Accredited in Art. *First Semester, Each Year*

EDU 303. READING IN THE ELEMENTARY SCHOOL**THREE CREDIT HOURS**

Covers the program of reading. Treats the following problems: reading-readiness, experience reading, methods of meeting individual differences, functional reading, diagnosis in reading, and remedial measures. Observation of teaching in the cooperating schools of the city by prearrangement. Intended for students on a retraining program. Prerequisite: EDU 306 or EDU 207. *Each Semester, Each Year—Evening*

EDU 304. ADOLESCENT PSYCHOLOGY**THREE CREDIT HOURS**

A study of the inter-related physical, physiological and mental changes associated with adolescence; interests and ideals; social tendencies and adjustments; causal factors in maladjustment and delinquency among adolescents. Required of students in Physical Education. Accredited in Psychology. Prerequisite: EDU 198 or equivalent. *First Semester, Each Year*

EDU 306. CHILD PSYCHOLOGY**THREE CREDIT HOURS**

A longitudinal study of childhood development with some concentration on prenatal growth trends. Explains in detail the genetic sequences appearing in the life of the child, e.g., motor development, sociability, language, intelligence, and imaginative life. Shows how discipline or training should be dependent upon the developmental growth patterns that emerge in the life of the child. Treats children up to the age of puberty. Accredited in Psychology. Prerequisite: EDU 198 or equivalent. *Each Semester, Each Year*

EDU 320. READING AND LANGUAGE ARTS IN ELEMENTARY SCHOOL**FIVE CREDIT HOURS**

An integrated language arts course with reading as its core subject. A study of the following problems: modern concept of reading; methods and materials of instruction at the various reading levels; consideration of individual differences; diagnosis and remedial instruction; the development of oral and written communication, spelling, and handwriting skills. Acquisition of a certificate in handwriting is required. Includes field experiences in teaching, particularly observation of teaching.

*Each Semester, Each Year***EDU 324. LANGUAGE IN THE ELEMENTARY SCHOOL****TWO CREDIT HOURS**

Stresses the expressional phase of elementary school language, including oral and written expression, spelling and handwriting. Also treats instructional methods, measurement of accomplishments, and correction of pupil difficulties. Acquisition of certificate in handwriting is required.

*Evening and Summer, Each Year***EDU 325. SOCIAL STUDIES IN THE ELEMENTARY SCHOOL****TWO CREDIT HOURS**

Function of the social studies in the elementary school; appraisal of teaching procedures in the field; formulation of definite principles to use in the selection of suitable contents and methods; testing the results of instruction.

*Evening and Summer, Each Year***EDU 328. BUSINESS EDUCATION, SECRETARIAL****THREE CREDIT HOURS**

For students in secretarial teaching field. Invokes the principles of teaching shorthand and typing. Includes a survey of commercial textbooks, curricula construction, testing programs, professional periodicals, business teacher organizations. Observation of teaching in cooperating schools of city. Three class periods a week. Prerequisite: Near completion of teaching field in Stenography-typing.

*First Semester, Each Year***EDU 329. BUSINESS EDUCATION, BASIC****THREE CREDIT HOURS**

For students in basic business teaching field (non-secretarial). Deals with the specialized methods of teaching business courses in high school with major emphasis on the social business subjects including bookkeeping, law, economics. Observation of teaching is a required part of course. Prerequisite: Near completion of teaching field in Bookkeeping—Basic Business.

*Second Semester, Each Year***EDU 330. RELIGION METHODS I****TWO CREDIT HOURS**

Deals with principles and techniques for the effective teaching of religion. Prepares the student to teach Catholic pupils on released time from the public elementary schools. It includes the teacher preparation program of the Confraternity of Christian Doctrine and hence enables students to gain the CCD teaching certificate for religious instruction. Prerequisite: Four semester hours of college religion.

First Semester, 1962-63

EDU 331. RELIGION METHODS II**TWO CREDIT HOURS**

Concentrates on principles and techniques of religious instruction for high school students. It follows the teacher preparation program of the Confraternity of Christian Doctrine and enables the student to merit the CCD high school teaching certificate in religion.

*Second Semester, 1962-63***EDU 350. THE ELEMENTARY SCHOOL: PURPOSES AND PRACTICES****THREE CREDIT HOURS**

Deals with objectives, organization, curricula, community relationships, and the practical aspects of teaching in the elementary schools. Studies ways of promoting desirable patterns of pupil behavior and orderly "housekeeping" in the classroom; provides experiences in planning instructional activities centered around social studies and science units; examines methods of motivating learning through the use of pupil participation, instructional aids, and community resources. Visitation of schools for observation.

*Each Semester, Each Year***EDU 351. THE SECONDARY SCHOOL: PURPOSES AND PRACTICES****THREE CREDIT HOURS**

Traces the historical background in relation to the present system. Treats the purposes, organization, curricula, community relationships, and the practical aspects of teaching in high school. It includes the study of discipline as an aspect of school morale and the development of skills in handling matters of routine connected with classroom management. Visitation of high schools for observation. Prerequisite: EDU 208 or equivalent.

*Each Semester, Each Year***EDU 352. THE ELEMENTARY SCHOOL: PAROCHIAL****THREE SEMESTER HOURS**

Deals with the purposes and organization of the Catholic elementary school. Emphasis is placed on the curriculum and on the planning of instructional activities. Visitation of parochial schools for observation.

*Each Semester, Each Year***EDU 400. RELIGION IN THE ELEMENTARY SCHOOL****TWO CREDIT HOURS**

Deals with methods and materials of instruction; employment of the principles of adaptation with a view to the practical needs of elementary school children in the Catholic schools. Directed observation of teaching.

*First Semester, Each Year***EDU 403. ARITHMETIC IN THE ELEMENTARY SCHOOL****TWO CREDIT HOURS**

Deals with distribution of content according to grade levels; methods of presentation; diagnosis of number difficulties; remedial instruction; testing. Directed observation of teaching. Prerequisite: MTH 141-142.

*Each Semester, Each Year***EDU 405. ENGLISH AND SPEECH IN SECONDARY SCHOOL****THREE CREDIT HOURS**

Considers ways and means whereby the teacher of English and speech can make his teaching more functional in the lives of students, more modern, more vigorous, and more inspiring. Observation of teaching by prearrangement with cooperating schools.

Second Semester, Each Year

EDU 406. SOCIAL STUDIES IN SECONDARY SCHOOL**THREE CREDIT HOURS**

Aims and values of social studies in high school. General method and special techniques in the field of social studies in relation to basic principles of learning. Attention is given to practical teaching materials and devices. Observation of teaching in local cooperating schools.

*Second Semester, Each Year***EDU 407. ART IN THE SCHOOLS****TWO CREDIT HOURS**

Deals with the place of art in the elementary and high school curriculum; creative art expression and the use of art elements and principles as the basis for creative approach; organization of units of work, including drawing, painting, design, color, modeling, block printing, lettering, and the mural, as they relate to the integrated school program. Accredited in Art.

*Each Semester, Each Year***EDU 408. MODERN LANGUAGE IN THE SECONDARY SCHOOL****THREE CREDIT HOURS**

Considers the functions and values of language study; courses of study; organization of materials; conventional and progressive methods; illustrative materials; selection of texts; tests. Observation of teaching on high school level.

*To be announced***EDU 409. MATHEMATICS IN THE SECONDARY SCHOOL****THREE CREDIT HOURS**

The objectives of high school mathematics; sequence and correlation of subject matter; methods of teaching; analysis of courses of study and text books; materials and equipment; current trends. Directed observation of teaching on high school level.

*Second Semester, 1962-63***EDU 410. RELIGION IN THE SECONDARY SCHOOL****THREE CREDIT HOURS**

Presents the teacher of religion with modern methods of instruction; evaluates the relative merits of religion texts; teaches the employment of the principles of correlation and adaptation with view to the practical needs of adolescents; treats the function of Catholic literature and the problem of pupil participation.

*Summer, 1962***EDU 411. SCIENCE IN THE SECONDARY SCHOOL****THREE CREDIT HOURS**

Discusses the social basis for instruction in science; development of a philosophy for the teaching of science; selection of objectives on the basis of reliable criteria; determination of technique for developing an integrated science curriculum and a review of pertinent research on science teaching. Observation of teaching on high school level.

*Second Semester, 1962-63***EDU 412. MEASUREMENT IN EDUCATION****TWO CREDIT HOURS**

The measurement of student achievement is approached as one important aspect of the broad field of evaluation confronting the future teacher. Attention is directed toward the place of measuring student achievement in the overall evaluative school program. Major emphasis is placed upon the con-

struction of teacher-made achievement tests and the analysis of test results. Basic statistics as they relate to classroom use will be studied. Prerequisite: Completion of required 300 courses in Education. *First Semester, 1962-63*

EDU 414. STUDENT TEACHING

SIX-TWELVE CREDIT HOURS

Consists of teaching in actual classroom situations for full semester under close supervision; evaluating pupil progress; conferences with supervising teachers on teaching procedures employed; participation in general school activities. A seminar under the direction of the campus supervisor and with staff members participating is held once a week throughout the semester.

The minimum of twelve full weeks of full-day student teaching actually yields nine (9) semester hours of credit; however, students have the option of registering for either nine or six semester credit hours with the understanding that there is no diminution of the twelve full weeks minimum requirement in the latter case. Students who register for twelve semester hours are required to complete the minimum of fifteen full weeks usually in two different school situations.

Prerequisites for candidacy for student teaching are: (1) matriculation in the School of Education, (2) prospective completion of minimum residence requirement of 30 sem. hrs. inclusive of student teaching, (3) completion of required clock hours in observation of teaching, (4) submission of formal application a semester in advance of student teaching. *Each Semester, Each Year*

EDU 417. LIBRARY GUIDANCE FOR TEACHERS

TWO CREDIT HOURS

Trains the teacher to make use of the available services and resources of the standard school library in behalf of a well-rounded education for pupils. Acquaints the class with library organization, reference material, indexes, and bibliography. Not designed for teacher-librarians. *Second Semester, 1962-63*

EDU 419. PHILOSOPHY OF EDUCATION

THREE CREDIT HOURS

The application of the fundamental principles of a philosophy of life to the work of education. The course draws up criteria for the intelligent evaluation of educational theory and practice. By interrelating the principal concepts pertaining to man, society, and the school, the student should develop the ability to evolve a constructive philosophy of education based on a sound philosophy of life. It is planned as the integrating experience in the professional education sequence. Accredited in Philosophy. *Each Semester, Each Year*

EDU 423. PHILOSOPHY OF EDUCATION: CATHOLIC

TWO CREDIT HOURS

Investigation of the Catholic approach to the basic problems in education. The educand, the aims and agencies of education, and the educative process are viewed in the light of Catholic theology and scholastic philosophy. The course is built around the papal encyclical, "The Christian Education of Youth."

First Semester, Each Year

EDU 431. VISUAL AND OTHER SENSORY AIDS IN EDUCATION**TWO CREDIT HOURS**

Studies the aims and psychological bases of the use of visual and other sensory aids in the classroom; the techniques of the various types, including slides, motion pictures, television, maps, charts, radio, field trips, etc.; demonstration lessons applying sensory methods to the subjects of the curriculum. Includes laboratory experience.

*Second Semester, 1962-63***EDU 439. SCHOOL PROVISIONS FOR INDIVIDUAL DIFFERENCES****TWO SEMESTER HOURS**

Studies the different traits and abilities of pupils and ways whereby teaching might be adjusted to these differences. Special attention focused on the slow learner, the gifted student, and the educationally retarded child. Demonstrations and directed observation of teaching. Prerequisite: The required 300 courses in Education.

*Second Semester, 1962-63***EDU 440. HONORS SEMINAR****TWO CREDIT HOURS**

Concerns itself with the current great issues and problems of education. Offered as an elective for junior and senior members of the Education Honor Society.

*Second Semester, Each Year***EDU 441. DIAGNOSIS AND REMEDIAL READING****THREE CREDIT HOURS**

A study of the major factors associated with reading difficulties, techniques that might be used to diagnose the nature and causes of pupil difficulty, and the methods by which remedial adjustments can be made. Demonstrations and directed observation of teaching. Prerequisite: EDU 320 (or EDU 303, 324) Reading and Language Arts in the Elementary School.

EDU 422. SCHOOL AND SOCIETY**THREE CREDIT HOURS**

The relationship of the school to the total cultural pattern and the development of inter-action between school and community are appraised and concrete suggestions are presented. The nature of the individual child and his relations with society and culture; the special culture of the school and its accompanying social world, school, teacher, and community relations. Accredited in sociology.

EDU 448. PSYCHODYNAMICS OF BEHAVIOR**THREE CREDIT HOURS**

An intensive and highly selective treatment of core concepts from Mental Hygiene, Personality Theory, and Abnormal Psychology. Aims at instilling in the teacher and in the School Counselor trainee a sound understanding of the behavioral dynamics of human personality. Stresses the positive integrative, and self-actualizing aspects of human behavior as well as the range of individual maladjustments represented in the school-age population. It is a prerequisite for admission to the graduate program in school counseling. Prerequisites: EDU 207, 208.

ELECTRICAL ENGINEERING (ELE)

BRO. LOUIS H. ROSE, S.M., CHAIRMAN

Professor: ROSE*Associate Professors:* BORDEN, MORGAN, SCHMIDT, YAKURA*Instructors:* JOSEFCZYK, KUBACH*Part-time Instructors:* FARREN, FRANKLIN, OLIVEROS, REGULINSKI

ELE 201. ELEMENTS OF ELECTRICAL ENGINEERING THREE CREDIT HOURS
Physical and electrical concepts, electrical circuit analysis, power and energy, conductors and insulators, magnetic circuits, electrodynamics, electrostatics. Three class periods a week. Corequisites: PHY 207, MTH 217.

Each Semester, Each Year

ELE 205. ALTERNATING CURRENT CIRCUITS THREE CREDIT HOURS
Vector and complex quantities applied to alternating currents. Analysis of simple circuits. Resonance. Solution of network equations. Balanced and unbalanced three phase circuits. Three class periods a week. Prerequisite: ELE 201; Corequisite: MTH 218.

Each Semester, Each Year

ELE 301. ELECTRICAL ENGINEERING TWO CREDIT HOURS
For Chemical, Civil, and Industrial Engineering students. A series of lectures and exercises to familiarize the student with basic principles and practical applications of electricity. Properties of conductors and circuits; sources of electrical energy; voltaic cells, batteries, induced electromotive force; direct-current generators, motors and their characteristics. Two class periods a week. Prerequisites: PHY 207, MTH 218.

First Semester, Each Year

ELE 301L. ELECTRICAL ENGINEERING LABORATORY ONE CREDIT HOUR
Experiments, tests and measurements paralleling lectures of ELE 301. Combinations of resistors and circuit components: studies of Ohm's law: direct-current generators, excitation, loading and performance: tests on d-c motors. One laboratory period a week. Corequisite: ELE 301.

First Semester, Each Year

ELE 302. ELECTRICAL ENGINEERING TWO CREDIT HOURS
A continuation of ELE 301. The production and utilization of alternating current: Alternators, transformers, motors and circuits: resonant networks: elementary electronics. Two class periods a week. Prerequisite: ELE 301.

Second Semester, Each Year

ELE 302L. ELECTRICAL ENGINEERING LABORATORY ONE CREDIT HOUR
Continuation of ELE 301L. Tests and measurements of AC generators, inductive, capacitive and resonant circuits: transformers, AC motors of various types: elementary electronic experiments. One laboratory period a week. Corequisite: ELE 302.

Second Semester, Each Year

ELE 307. ELECTRICAL MEASUREMENTS**THREE CREDIT HOURS**

A basic course covering both DC and AC measurements. Topics covered are: galvanometers, shunts and DC meters; errors of measurements; deflection and null methods of measurements; DC and AC bridge analysis; wave forms and AC meters; square law movements. Three class periods a week. Prerequisite: ELE 205.

*Each Semester, Each Year***ELE 307L. ELECTRICAL MEASUREMENTS LABORATORY****ONE CREDIT HOUR**

Experiments to accompany topics outlined in ELE 307. One laboratory period a week. Corequisite: ELE 307.

*Each Semester, Each Year***ELE 310. CIRCUIT ANALYSIS****THREE CREDIT HOURS**

Fourier Series and Fourier Integral, steady state analysis; Network theorems; Coupled Circuits; Resonance and Foster's Reactance theorem; Iterative networks. Three class periods a week. Prerequisite: ELE 312.

*Each Semester, Each Year***ELE 310L. CIRCUIT ANALYSIS LABORATORY****ONE CREDIT HOUR**

Experiments to accompany topics of ELE 310. Application of network theorems to linear systems. Use of the Q-meter. Wave analysis. One laboratory period a week. Corequisite: ELE 310.

*Each Semester, Each Year***ELE 312. ENGINEERING ELECTRONICS I****THREE CREDIT HOURS**

A basic course with emphasis on terminal behavior of vacuum tubes and transistors. Qualitative physical description, characteristic volt-ampere curves and their measurement, graphical solution of simple circuits, formulation of incremental and piecewise linear models. Three class periods a week. Prerequisite: ELE 205.

*Each Semester, Each Year***ELE 312L. ENGINEERING ELECTRONICS LABORATORY I****ONE CREDIT HOUR**

Receiving tube and transistor characteristics, electronic instruments, basic amplifier circuits, power supplies, waveshaping circuits. One laboratory period a week. Corequisite: ELE 312.

*Each Semester, Each Year***ELE 313. ENGINEERING ELECTRONICS II****THREE CREDIT HOURS**

A course in linear electronic circuits. Among the topics covered are general methods for the analysis of electronic circuits, network theorems for electronic circuits, single and multistage amplifiers, transient response of electronic circuits and feedback amplifiers. Introduction to non-linear electronic circuits. Three class periods a week. Prerequisite: MTH 341; Corequisite: ELE 310.

*Each Semester, Each Year***ELE 313L. ENGINEERING ELECTRONICS LABORATORY II****ONE CREDIT HOUR**

Single and multistage amplifiers, DC amplifiers, transistor amplifier configurations, feedback amplifiers, electronic timing and switching circuits. One laboratory period a week. Corequisite: ELE 313.

Each Semester, Each Year

ELE 318. MACHINERY I

THREE CREDIT HOURS

The theory, construction and characteristics of series, shunt and compound generators and motors; the theory of commutation and armature reaction; parallel operation of generators, methods of speed control, testing. The theory, construction and characteristics of transformers. Three class periods a week. Prerequisite: ELE 205. *Each Semester, Each Year*

ELE 403. MACHINERY II

THREE CREDIT HOURS

Parallel and polyphase transformer connections; theory, construction and characteristics of polyphase induction motors, synchronous generators and motors, single phase motors and rotary converters. Three class periods a week. Prerequisite: ELE 318. *Each Semester, Each Year*

ELE 403L. MACHINERY LABORATORY

ONE CREDIT HOUR

Experiments covering operation of series, shunt and compound DC machines. Transformer voltage regulation and efficiency. Parallel and polyphase operation of transformers. Autotransformers, induction motors, synchronous generators and motors, single phase motors. One laboratory period a week. Corequisite: ELE 403. *Each Semester, Each Year*

ELE 408. ELECTRICAL TRANSIENTS

THREE CREDIT HOURS

A rigorous development of the theory of the Laplace Transform. Application of the Laplace Transform in electrical circuits, containing the unit step function, delta function, non-sinusoidal pulse function, current sources, as well as voltage sources. The operational impedance concept and the poles and zeros of the impedance function are used to show the relationship between transient response and AC steady-state response. The theory and application of Fourier series, integral, and transforms in the various circuit problems. Three class periods a week. Prerequisites: ELE 313, MTH 342. *Each Semester, Each Year*

ELE 410. SEMINAR

ONE CREDIT HOUR

Weekly meetings of students and members of the staff for presentation of papers by the students and lectures by engineers in active practice. One class period a week for Junior and Senior years. *Each Semester, Each Year*

ELE 413. COMMUNICATION ENGINEERING

THREE CREDIT HOURS

Analysis and synthesis of various types of wave filter. Treatment of the infinite transmission line, incident and reflection wave phenomena in the general transmission line. Theoretical and graphical study of lossless line. Theory and graphical analysis of impedance matching. Application of "Smith Chart" in high frequency transmission lines. Study of the fundamental principles of equalization. Theoretical concept of linear amplifiers. Analysis of amplitude, frequency and phase modulation. Three class periods a week. Prerequisites: ELE 310, ELE 310L. *Each Semester, Each Year*

ELE 413L. COMMUNICATION ENGINEERING LABORATORY ONE CREDIT HOUR

The experiments will be closely correlated with the lecture materials. Analysis and synthesis of a filter. Study of the behavior of the open-and short-circuited

general AF, RF, and UHF transmission lines. Concept of the matching network, compared with the results obtained from use of the "Smith Chart." Analysis of the differential and integration circuits and their application. Determination of the behavior of transformer coupling. Study of behavior of antenna arrays—field patterns. One laboratory period a week. Corequisite: ELE 413.

Each Semester, Each Year

ELE 414. ADVANCED ELECTRONICS

THREE CREDIT HOURS

Electron ballistics, elementary theory of metals and semiconductors, types of electron emission, space charge flow, fundamental gas processes. Concurrent application of the above theory to a qualitative and quantitative study of modern electron devices including important developmental types as they appear in the technical publications. Three class periods a week. Prerequisite: MTH 301 or MTH 341.

Each Semester, Each Year

Electrical Engineering Electives

ELE 411. ELECTRIC AND MAGNETIC FIELD THEORY

THREE CREDIT HOURS

Mathematical theory of classical electricity and magnetism with an introduction to electromagnetism and Maxwell's equations. Three class periods a week. Prerequisite: MTH 341.

ELE 412. POWER DISTRIBUTION

THREE CREDIT HOURS

Mechanical features of conductors and supports. Electrical characteristics of lines; system stability; distribution system. Three class periods a week. Prerequisite: ELE 205.

ELE 415. MICROWAVE THEORY AND PRACTICE

THREE CREDIT HOURS

Maxwell's equations; transmission lines, wave guides, cavity resonators; transmission, reflection, and absorption in media; microwave generators; applications of microwaves. Three class periods a week. Prerequisite: ELE 411.

ELE 417. THESIS

THREE CREDIT HOURS

Independent project in a field selected by the student and approved by the faculty. Open to seniors in the second semester.

ELE 419. SERVOMECHANISMS

THREE CREDIT HOURS

The analysis and description of closed-loop control systems, elements, operation and performance. Analysis and synthesis of Routh's criterion and Nyquist stability criterion in feedback servomechanisms. Presents complex plane and attenuation-frequency methods of analyzing and synthesizing simple forms of servomechanisms control. The root-locus approach to the analysis and synthesis of feedback control systems. The analysis and design procedure of multiple input in complex multi-loop systems. Study of the relationship between steady-state and transient performance of servomechanisms. Application of the analog computer in servomechanisms for solving control problems. Three class periods a week. Prerequisite: ELE 408.

ELE 422. TRANSISTOR CIRCUITS**THREE CREDIT HOURS**

Transistor fundamentals. Basic building blocks in digital computers, logical chains in digital computers. Transistor transient response. Diode gating. Voltage-switching diode gate logic with transistor inverting amplifiers. Direct-coupled transistor logic. Miscellaneous transistorized logic circuits. Design of Flip-Flops and delay multivibrators. Corequisite: ELE 408.

ELE 499. SPECIAL PROBLEMS IN ELECTRICAL ENGINEERING**TWO TO SIX CREDIT HOURS**

Particular assignments to be arranged and approved by Chairman of the Department.

ELE 502. ADVANCED CIRCUIT ANALYSIS**THREE CREDIT HOURS**

Poles and zeros of polynomial functions and networks. Numerical procedures. Chebyshev and Taylor approximations to brick wall functions. Elementary and modern synthesis. Low pass and band pass amplifiers. Feedback amplifiers and stability. Three class periods a week. Prerequisites: ELE 413, MTH 341.

ELE 503. ANALOG COMPUTERS**THREE CREDIT HOURS**

The discussion and analysis of linear electrical computing elements in conjunction with electronic differential analysis. The utilization of electrical and electronic circuits for the performance of linear operation, for multiplication and division, and for function generation. Use of differential analyzers for solving linear integral-differential equations, simultaneous linear algebraic equations, and non-linear differential equations. Three class periods a week. Prerequisites: ELE 313, MTH 342.

ELE 504. DIGITAL COMPUTERS**THREE CREDIT HOURS**

Digital Computers and their design. Circuit components and binary numbers. Boolean algebra. The simplification of Boolean functions. Memory element input equations. The derivation of application equations. Digital computer memories. Input-output equipment. The arithmetic unit. Error-free computer operation. The control unit. Completing computer design. Three class periods a week. Prerequisite: ELE 313.

ELE 511. ADVANCED THEORY AND DESIGN OF ROTATING MACHINERY I**THREE CREDIT HOURS**

Basic Principles and applied theory in practical design of induction machinery, commercial, aircraft and missile types. Prerequisite: ELE 403.

ELE 512. ADVANCED THEORY AND DESIGN OF ROTATING MACHINERY II**THREE CREDIT HOURS**

Detailed theory and design of Direct Current and Synchronous machines. Permanent magnet and flux switch machines. Heat transfer phenomena; the general temperature field. Prerequisite: ELE 511.

ENGLISH: (ENG)

REV. ADRIAN MCCARTHY, S.M., CHAIRMAN

Professor: BOLL*Associate Professors:* KOHLES, O'DONNELL, PETERSON, WHETRO*Assistant Professors:* COCHRAN, CONNER, DONNELLY, FISHER,
MCCARTHY, PETITPAS, ROUGIER, SHANK,
STOCKUM, STURM, ZIMMERMAN*Instructors:* COTE, LABADIE, MURPHY, RUFF*Part-time Instructors:* ARMSTRONG, DESCH, HELLWIG,
LAW, VLAHOS

ENG 101 and ENG 102 are prerequisites for all courses listed as 200 or above. In addition to prerequisites ENG 101, 102, 221, 222 majors must take 316 or 318, 331 411 or 415, 423 or 424, 428, 440 and 6 hours of electives selected from 300 and 400 courses.

The Department sponsors one co-curricular activity, *The Exponent*, the literary magazine of the University.

ENG 99. ENGLISH ESSENTIALS

NO CREDIT

An intensive review of the essentials of English grammar, punctuation, usage, and sentence structure. The course is open to those who feel that they have an insufficient background in the essentials of English, recommended for those who have some deficiency, and required for those who have a serious deficiency. Three hours per week for eight weeks. *Twice a Semester, Each Year*

ENG 101. ENGLISH COMPOSITION I

THREE CREDIT HOURS

The principles of grammar, usage, and sentence structure are reviewed. The elements of rhetoric are studied including the methods of analyzing a subject, as well as the arrangement and style in the full composition. Weekly exercises and themes assigned. Required of all freshmen except those admitted on advanced placement basis. *Each Semester, Each Year*

ENG 102. ENGLISH COMPOSITION II

THREE CREDIT HOURS

Continuation of ENG 101. Practice is taken in various types of theme-writing, the research paper, and the book review. Required of every student.

Each Semester, Each Year

ENG 103. ADVANCED PLACEMENT ENGLISH COMPOSITION

THREE CREDIT HOURS

This course, designed for the freshman whose ability in written communication is superior, includes a study of various techniques of writing, with emphasis on the development of a research paper and the preparation of a critical analysis of fiction. Prerequisites: Superior score in ACT English Test and submission of a theme acceptable to the Department of English. *Each Semester, Each Year*

ENG 220. INTRODUCTION TO LITERATURE THREE CREDIT HOURS

Representative works of American and British writers are studied as a means of acquainting the student with the literary principles involved in poetry, drama, fiction and essays. *Each Semester, Each Year*

ENG 221. ENGLISH LITERATURE THREE CREDIT HOURS

A survey of English literature from its beginning to the present day; includes a study of the background as well as the works of the authors of each period. *Each Semester, Each Year*

ENG 222. AMERICAN LITERATURE THREE CREDIT HOURS

A survey of American literature from the Colonial Period to the present day; presents a study of the background as well as representative works of the different periods. *Each Semester, Each Year*

ENG 305. MEDICAL TERMINOLOGY THREE CREDIT HOURS

A study of the Greek and Latin stems which form the foundation of medical terms. The subject matter is subdivided into three parts: prefixes, suffixes, and compounds. Copious illustrations are used. *Each Semester, Each Year*

ENG 315. DEVELOPMENT OF GRAMMAR THREE CREDIT HOURS

Studies in the grammatical structure of modern English in the light of historical development. Emphasis is placed on syntactical and morphological constructions. Traditional and modern linguistic points of view are considered. Abundant practice is provided in the analysis of grammatical constructions. *Each Semester, Each Year*

ENG 316. ADVANCED COMPOSITION THREE CREDIT HOURS

Offers intensive practice in the standard forms of theme writing, with emphasis on the formal, rhythmic, and thought patterns of the sentence, the paragraph, and the total composition. Prerequisites: ENG 101-102. *Each Semester, Each Year*

ENG 318. CREATIVE WRITING THREE CREDIT HOURS

The principles for writing the short story, the informal and formal essay, and the biographical sketch are presented. Classroom analysis of the students' manuscripts is supplemented by the professor's written critiques and personal conferences. Prerequisite: ENG 316 or permission. *First Semester, 1963-1964*

ENG 322. WORLD LITERATURE THREE CREDIT HOURS

A survey of the literature of continental Europe and of Asia, from its beginning up to the twentieth century. Particular emphasis is placed on the several streams of culture out of which the literature evolved and on the types of literature, their origin and development, and their influence on the later literature of Western Europe and America. *First Semester, Each Year*

ENG 324. HISTORY OF THE AMERICAN NOVEL THREE CREDIT HOURS
A study of the American novel from its beginnings to the present day. Outside readings and reports constitute an integral part of the course.

First Semester, 1962-1963

ENG 325. TECHNIQUE OF VERSE THREE CREDIT HOURS
A study of poetic devices old and new, together with a review of rhetorical principles useful in the development of poetic thought. Students must produce original verse. The study aims to perfect those who have the ability as well as the desire to write verse.

First Semester, 1962-1963

ENG 327. HISTORY OF THE NOVEL THREE CREDIT HOURS
The English novel from its beginnings to the present day. Outside readings and reports are required.

Second Semester, 1963-1964

ENG 328. SURVEY OF THE ESSAY THREE CREDIT HOURS
This course deals with the history, nature, structure, and style of the essay. Both British and American essayists are treated either by the professor or by reports and discussions of the students. Original essays by the students are required.

First Semester, 1963-1964

ENG 329. SHORT STORY THREE CREDIT HOURS
A study of the techniques employed in the writing of the short story. Various models of the short story will be analyzed.

First Semester, 1963-1964

ENG 331. ROMANTIC POETS THREE CREDIT HOURS
A study of the characteristics of the writers of the Romantic Age through direct contact with their works. The influence of these writers will also be pointed out.

Second Semester, 1962-1963

ENG 335-336. The Victorian Age THREE CREDIT HOURS, EACH SEMESTER
The first semester of this course will be devoted to a study of the major English poets from Tennyson to Housman; the second semester, to the leading English prose writers from Carlyle to Pater. Students may take either semester, or both.

Full Year Course, 1962-1963.

ENG 340. ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY THREE CREDIT HOURS
A study of the most representative works in prose and poetry from Swift to Johnson.

First Semester, 1963-1964

ENG 351. AMERICAN DOCUMENTARY LITERATURE THREE CREDIT HOURS
A study of influential political documents from the Mayflower Compact to the present day, stressing literary aspects, composition, rhetoric, and linguistics, as well as principles of democracy. This course is recommended for students in pre-law or majoring in history and political science.

First Semester, 1963-1964

ENG 360. CHILDREN'S LITERATURE

THREE CREDIT HOURS

Acquaints students with the various fields of children's literature and with adequate evaluative criteria. The contents include the following: history of children's literature, poetry for different age levels, verse choirs, use of poetry, modern stories in folk-tale style, folk tales, story telling. Required of all students in Elementary Education.

First Semester, Each Year

ENG 411. RENAISSANCE POETRY

THREE CREDIT HOURS

Lectures and readings include selected poetry of sixteenth and seventeenth century poets: Elizabethan lyricists, Sir Philip Sidney, Edmund Spenser, Christopher Marlowe, Michael Drayton, Shakespeare, John Donne, Ben Jonson, Robert Herrick, Thomas Carew, George Herbert, Richard Crashaw, Henry Vaughan, Andrew Marvell, and others.

First Semester, Each Year

ENG 414. FRANCIS THOMPSON

THREE CREDIT HOURS

A study of his poems toward the discernment of their manifold spiritual and autobiographical implications. Students are required to participate in the oral reading of poems. Writing is limited to occasional prose transcriptions of poems.

First Semester, Each Year

ENG 415. MILTON

THREE CREDIT HOURS

A study of *Paradise Lost* and *Paradise Regained* and a selected number of the minor poems of Milton.

First Semester, 1962-1963

ENG 419. NEWMAN: THE IDEA OF A UNIVERSITY

THREE CREDIT HOURS

The primary objective of this course is to cultivate a consciousness of the "philosophical habit of mind," as set forth by Cardinal Newman in the *Discourses on The Idea of a University*. Exercises in Communicative Reading constitute an essential part of the course. The writing of paragraphs and essays after the manner of these discourses is required.

Second Semester, Each Year

ENG 421. MODERN POETRY

THREE CREDIT HOURS

A study of modern American and British poets, from Emily Dickinson and Thomas Hardy to Robert Lowell and Dylan Thomas. The study concerns the philosophy of the writers, their techniques, and their purposes as revealed in the poetry.

Second Semester, Each Year

ENG 422. DEVELOPMENT OF DRAMA

THREE CREDIT HOURS

A study of the historical development of the drama from its beginnings in the Classic Age to the nineteenth century. Selected plays from each significant period are read and analyzed.

First Semester, 1962-1963

ENG 423. TRAGEDIES OF SHAKESPEARE

THREE CREDIT HOURS

All of the tragedies of Shakespeare are read; some are taken through in detail in the lecture periods and the rest assigned for out of class reading. Class discussion is encouraged. Students are tested on each of the assigned readings.

First Semester, 1962-1963

ENG 424. COMEDIES OF SHAKESPEARE THREE CREDIT HOURS

The same procedure as followed for ENG 423. Some of the Comedies may be omitted at the discretion of the professor. *First Semester, 1963-1964*

ENG 425. HISTORIES OF SHAKESPEARE THREE CREDIT HOURS

The same procedure as followed for ENG 423. All of the Histories are taken. *Second Semester, 1963-1964*

ENG 426. MODERN DRAMA THREE CREDIT HOURS

A selected number of dramas, representing the best of world theater by the foremost playwrights of the modern period, are read and studied to stimulate increased appreciation for literature through a critical approach to the philosophies, technical innovations, and artistic accomplishments of the various authors. *Second Semester, Each Year*

ENG 427. DANTE THREE CREDIT HOURS

A comprehensive study of the three Canticles of the *Divine Comedy*: Inferno, Purgatorio, and Paradiso. Interpretative Readings of the most impressive Cantos. One critical or analytical essay is required of the student upon the completion of each canticle. *Second Semester, Each Year*

ENG 428. LITERARY CRITICISM THREE CREDIT HOURS

A study of the history and development of literary criticism. It includes a study of fundamental principles of literary structure and style, together with the various theories advanced. *Second Semester, Each Year*

ENG 429. CHAUCER THREE CREDIT HOURS

A study of the life, the times, and the language of Chaucer. The main concentration is on the *Canterbury Tales* as rendered in Middle English. Prerequisites: ENG 102, 221. *Second Semester, Each Year*

ENG 430. HISTORY OF THE ENGLISH LANGUAGE THREE CREDIT HOURS

The stages in the development of the English language and the influences shaping its development are studied to show what happened to the English language from the beginning to the present time. Recommended to those majoring in English, as well as those intending to teach English. *Second Semester, Each Year*

ENG 440. SEMINAR THREE CREDIT HOURS

Concentration on one literary figure, genre, or period for purposes of research and analysis. Reports are read and criticized at the sessions. Required of all majors in English. With permission. *Second Semester, Each Year*

GEOLOGY (GEO)

GEORGE H. SPRINGER, CHAIRMAN

Professors: CORYELL, SPRINGER*Assistant Professor:* GRAY*Instructor:* MURTAUGH*Part-time Instructor:* HERRON

GEO 101. PHYSICAL GEOLOGY

THREE CREDIT HOURS

An introductory course in the composition and structure of the earth; its land forms and the agencies active in their production. Three class periods a week.

Each Semester, Each Year

GEO 101L. PHYSICAL GEOLOGY LABORATORY

ONE CREDIT HOUR

Course to accompany GEO 101. Two hours of laboratory a week.

Each Semester, Each Year

GEO 102. HISTORICAL GEOLOGY

THREE CREDIT HOURS

The geological history of the earth as interpreted from the rocks of its crust; its dynamic, geographic, and climatic changes; animals and plants of the past. Three class periods. Prerequisite: GEO 101.

Second Semester, Each Year

GEO 102L. HISTORICAL GEOLOGY LABORATORY

ONE CREDIT HOUR

Course to accompany GEO 102. Two hours per week.

Second Semester, Each Year

GEO 103. PRINCIPLES OF GEOGRAPHY

THREE CREDIT HOURS

An analysis of the physical factors of the earth's environment; weather, climate, rocks, land forms, oceans.

Each Semester, Each Year

GEO 104. ECONOMIC GEOGRAPHY

THREE CREDIT HOURS

The influence of physiographic factors on agriculture and the extractive industries.

Evening Only

GEO 115. PHYSICAL GEOLOGY

THREE CREDIT HOURS

An introductory course in geologic principles; designed for the student desiring a more rigorous course than GEO 101.

First Semester, Each Year

GEO 115L. PHYSICAL GEOLOGY LABORATORY

ONE CREDIT HOUR

Course to accompany GEO 115. Two hours per week.

First Semester, Each Year

GEO 116. HISTORICAL GEOLOGY

THREE CREDIT HOURS

A comprehensive study of earth history; designed for students desiring a more detailed treatment than presented in GEO 102.

Second Semester, Each Year

GEO 116L. HISTORICAL GEOLOGY LABORATORY

Course to accompany GEO 116. Two hours per week.

*Second Semester, Each Year***GEO 201. MINERALOGY****THREE CREDIT HOURS**

An introduction to the study of minerals; their chemical and physical properties; their associations and occurrences.

*First Semester, Each Year***GEO 201L. MINERALOGY LABORATORY****ONE CREDIT HOUR**

Course to accompany GEO 201. Three hours per week.

*First Semester, Each Year***GEO 204. OPTICAL MINERALOGY****TWO CREDIT HOURS**

Mineral determination through the use of the petrographic microscope employing crushed grains and thin sections. Prerequisite: GEO 201.

*Second Semester, Each Year***GEO 204L. OPTICAL MINERALOGY LABORATORY****TWO CREDIT HOURS**

Course to accompany GEO 204. Four hours per week.

*Second Semester, Each Year***GEO 218. ENGINEERING GEOLOGY****THREE CREDIT HOURS**

A comprehensive study of geologic principles applicable to civil engineering practices.

*Second Semester, Each Year***GEO 301. STRUCTURAL GEOLOGY****THREE CREDIT HOURS**

The origin and development of structural features of the earth's crust; folding, faulting, volcanism, mountain building, and metamorphism. Prerequisites: GEO 115, 116, 201, 204.

*First Semester, Each Year***GEO 301L. STRUCTURAL GEOLOGY LABORATORY****ONE CREDIT HOUR**

Course to accompany GEO 301. Two hours per week.

*First Semester, Each Year***GEO 302. GLACIAL GEOLOGY****THREE CREDIT HOURS**

The origin of mountain and continental glaciers; their depositional features and erosive activity; history of glaciation in geologic past with special emphasis upon North American Pleistocene ice advances. Prerequisites: GEO 115, 116.

*Second Semester, 1963-1964***GEO 302L. GLACIAL GEOLOGY LABORATORY****ONE CREDIT HOUR**

Course to accompany GEO 302. Two hours per week.

*Second Semester, 1963-1964***GEO 303. FIELD GEOLOGY****SIX CREDIT HOURS**

Six weeks summer study of structural and age relationship problems in areas containing abundant crystalline and sedimentary exposures. Prerequisites: GEO 115, 116, and 301.

Each Summer

GEO 307. GEOMORPHOLOGY

THREE CREDIT HOURS

A detailed study of landforms and the erosional processes that develop them.

Prerequisites: GEO 115, 116, and 301.

Second Semester, 1962-1963

GEO 307L. GEOMORPHOLOGY LABORATORY

ONE CREDIT HOUR

Course to accompany GEO 307. Two hours per week.

Second Semester, 1962-1963

GEO 309. PETROGRAPHY

TWO CREDIT HOURS

A study of the composition of igneous, sedimentary, and metamorphic rocks through the use of thin sections and hand specimens. Prerequisite: GEO 204.

First Semester, 1962-1963

GEO 309L. PETROGRAPHY LABORATORY

TWO CREDIT HOURS

Course to accompany GEO 309. Four hours per week.

First Semester, 1962-1963

GEO 310. STRATIGRAPHY

THREE CREDIT HOURS

The interpretation of specific lithotypes and the synthesis of the stratigraphic record. Prerequisites: GEO 116, 301.

Second Semester, 1962-1963

GEO 310L. STRATIGRAPHY LABORATORY

ONE CREDIT HOUR

Course to accompany GEO 310. Two hours per week.

Second Semester, 1962-1963

GEO 401. PALEONTOLOGY

THREE CREDIT HOURS

A study of animal life of the geologic past as shown by the fossil record.

Second Semester, 1963-1964

GEO 401L. PALEONTOLOGY LABORATORY

ONE CREDIT HOUR

Course to accompany GEO 401. Two hours per week.

Second Semester, 1963-1964

GEO 403. SEDIMENTATION

THREE CREDIT HOURS

Detailed study of sediment; their sources, environments of deposition, and methods of consolidation. Sedimentary rock classifications and analyses. Prerequisites: GEO 201, 204, 301.

First Semester, 1962-1963

GEO 403L. SEDIMENTATION LABORATORY

ONE CREDIT HOUR

Course to accompany GEO 403. Two hours per week. *First Semester, 1962-1963*

GEO 404. PROBLEMS IN GEOLOGY

THREE CREDIT HOURS

A consideration of special problems involving advanced work in the laboratory and library; arranged to meet the needs of individual students.

Each Semester, Each Year

GEO 405-406. ECONOMIC GEOLOGY

SIX CREDIT HOURS

A study of the origin and occurrence of the minerals of economic use. Prerequisites: GEO 201, 204, 301, and 309.

Full Year Course, 1962-1963

GEO 405L-406L. ECONOMIC GEOLOGY LABORATORY FOUR CREDIT HOURS
Course to accompany GEO 405-406. Two hours per week.

Full Year Course, 1962-1963

GEO 408. PETROLEUM GEOLOGY THREE CREDIT HOURS

A consideration of the development of oil deposits; their geologic associations and geographic occurrences. Prerequisites: GEO 301, 310, 403.

First Semester, 1962-1963

GEO 408L. PETROLEUM GEOLOGY LABORATORY ONE CREDIT HOUR

Course to accompany GEO 408. Two hours per week. *First Semester, 1962-1963*

GEO 411. IGNEOUS PETROLOGY THREE CREDIT HOURS

A study of the formation of igneous rocks. Prerequisites: GEO 201, 204, 309.

Second Semester, 1962-1963

GEO 411L. IGNEOUS PETROLOGY LABORATORY ONE CREDIT HOUR

Course to accompany GEO 411. Two hours per week.

Second Semester, 1962-1963

GEO 415-416. MICROPALAEONTOLOGY SIX CREDIT HOURS

A study of microfossils with special attention given to index fossils characteristic of various geologic horizons. Prerequisites: GEO 310, 403.

Full Year Course, 1963-1964

GEO 415L-416L. MICROPALAEONTOLOGY LABORATORY TWO CREDIT HOURS

Course to accompany GEO 415-416. Two hours per week.

Full Year Course, 1963-1964

HISTORY (Hst)

DR. WILFRED J. STEINER, CHAIRMAN

Professor: STEINER

Associate Professors: BEAUREGARD, MARAS, RUPPEL

Assistant Professors: DONATELLI, KING, MARAS

Instructors: DOHERTY, EID

Part-time Instructor: PERRY

Hst 101, 102, 251, 252 are prerequisite courses and may not be applied toward a major or a minor.

The course requirement for History majors is 26 credit hours, distributed as follows:

- (1) Four courses from Groups I, II, III, with at least one course in each group—a total of 12 credit hours;

(2) Two courses from Group IV and two from Group V—a total of 12 credit hours;

(3) History 401—2 credit hours.

The course requirement for History minors is 12 credit hours. Two courses must be taken from Groups I, II, or III, and two courses from Groups IV and V.

GROUP I	GROUP II	GROUP III	GROUP IV	GROUP V
301	319	409	351	364
302	340	415	355	427
309	421	424	368	458
	441	435	449	468
		445	451	

HST 101. HISTORY OF CIVILIZATION

THREE CREDIT HOURS

A survey of mankind from earliest times to 1660 A.D. The course stresses the social and cultural aspects of the prehistoric, ancient, medieval and early modern eras. History 101 and History 102 serve as prerequisites for advanced courses in History.

Each Semester, Each Year

HST 102. HISTORY OF CIVILIZATION

THREE CREDIT HOURS

A survey of mankind from 1660 A.D. to the present. The emphasis centers on the social and cultural history of the Old Regime, the French Revolution and Napoleonic Age, the Era of Nationalism and Liberalism, and the Period of the New Industrialism and Imperialism.

Each Semester, Each Year

HST 251. AMERICAN HISTORY TO 1865

THREE CREDIT HOURS

A general survey of the development of the American nation from colonial times to 1865. Due consideration is given to political trends, but the economic and social foundations of American institutions are also emphasized.

Each Semester, Each Year

HST 252. AMERICAN HISTORY SINCE 1865

THREE CREDIT HOURS

This course carries forward the story of the nation and its development after the Civil War. Stress is laid upon those social, economic, and political problems, a knowledge of which is essential to an understanding of contemporary America.

Each Semester, Each Year

HST 301. MEDIEVAL EUROPE

THREE CREDIT HOURS

The development of Europe from the fourth century to the fourteenth century. A resume of theories concerning the medieval epoch is followed by a treatment of the birth of the Middle Ages, Christianity, and the Byzantine, Islamic, and Carolingian Empires. There is also study of feudalism, manorialism, the Crusades, and the growth of national states. Prerequisite: HST 101, or consent of the instructor.

First Semester, 1963-1964

HST 302. RENAISSANCE AND REFORMATION

THREE CREDIT HOURS

The development of Europe from the fourteenth century to the middle of the seventeenth century. After summarizing theories about this era, the course

stresses causes of the period. There follows the emphasis on the economic, political, social, and religious aspects of the Renaissance, Protestant Revolution, and Catholic Reformation. Prerequisite: HST 101, or consent of the instructor.
First Semester, 1962-1963

HST 309. ANCIENT HISTORY **THREE CREDIT HOURS**

A survey of ancient civilizations between 5000 B. C. and 313 A. D. The civilizations—Egyptian, Mesopotamian, Anatolian, Syro-Palestinian, Persian, Aegean, Hellenic, Hellenistic, and Roman—will be studied for political, economic, social, religious and cultural factors. Prerequisite: HST 101, or consent of the instructor.
Second Semester, 1963-1964

HST 313. CHRISTIAN ANTIQUITY **THREE CREDIT HOURS**

This course investigates the origin and cultural setting of early Christianity, the conflict with the pagan Roman Empire and the subsequent emergence of Christianity under Constantine. Special emphasis is placed upon the doctrinal controversies and patristic writers of the fourth and fifth centuries. Offered only at Carthagena.
First Semester, Each Year

HST 319. FRANCE SINCE 1815 **THREE CREDIT HOURS**

A study of French history from the Bourbon Restoration to the establishment of the 20th century Fourth Republic, with special emphasis on the intellectual, social, economic, political, and diplomatic trends. Prerequisite: HST 102 or consent of the instructor.
Second Semester, 1962-1963

HST 336. CHURCH HISTORY I **THREE CREDIT HOURS**

Christianity in the Roman Empire; the Trinitarian and Christological controversies; conversion of the barbarians and lay domination; the Church and medieval society. Offered only at Regina Heights.

HST 337. CHURCH HISTORY II **THREE CREDIT HOURS**

The Protestant revolt and the Catholic reformation; the Church and the absolute state; secularism, liberalism, and modernism; the Church in the twentieth century. Offered only at Regina Heights.

HST 340. THE REVOLUTIONARY ERA, 1789-1918 **THREE CREDIT HOURS**

A historical analysis of the European peoples emphasizing the theme of War and Revolution. Attention will be focused on the French Revolution, the European Revolutions of the 19th century, and the Russian Revolutions of 1905 and 1917. Reference will also be made to the scientific and technological advances of the period. Prerequisite: HST 102 or consent of the instructor.
First Semester, 1962-1963

HST 351. AMERICAN COLONIAL HISTORY **THREE CREDIT HOURS**

A study of the foundations of American nationality. Beginning with a consideration of the European background of American colonization, the course continues with the development of the colonial system, with direct reference to the ideas and institutions that were transplanted from the Old World. Attention is

then given to the growth of democratic tendencies and the rise of conflicting points of view leading to the American Revolution. Prerequisite: HST 251, or consent of the instructor.

First Semester, 1963-1964

HST 355. THE AMERICAN REVOLUTION AND CONFEDERATION

THREE CREDIT HOURS

Beginning with the Declaration of Independence, this course deals with the war and the problems connected with the establishment of governmental processes. After a treatment of the Revolutionary period there will be a development of such topics as the decline of morale following the Peace of Paris, financial instability, the question of sovereignty, and the failure of the Confederation government. Prerequisite: HST 251.

First Semester, 1962-1963

HST 364. HISTORY OF OHIO

THREE CREDIT HOURS

The story of the growth and development of the first state to be created in the Northwest Territory. The political, economic, and cultural history of the state will be explained in relation to the parallel growth of the United States. Recommended for elementary and secondary school teachers.

Second Semester, 1963-1964

HST 368. PROBLEMS OF LATIN AMERICAN HISTORY

THREE CREDIT HOURS

This course traces the historical development of Hispanic America from the age of conquest to the contemporary period. Emphasis is placed upon an analysis of the historical structure of Latin American social, political, and economic development rather than a survey of the particular provincial or national histories.

First Semester, 1963-1964

HST 401. PRO-SEMINAR IN HISTORY

TWO CREDIT HOURS

An introduction to historiography and the study of research and writing in History. Special emphasis is given to the mechanics of research and the problems encountered in preparing a manuscript for publication. Practical application of the principles of research and composition will be required in the form of a term paper required of all History majors. Prerequisite: 6 credit hours of upper division History.

First Semester, Each Year

HST 409. EUROPE SINCE 1918

THREE CREDIT HOURS

An intensive treatment of Europe from 1918 to the present. Concentration is placed on these topics: causes and outcome of World War I; internal policies of nations between the two World Wars; diplomatic actions leading to World War II; and the impact of World War II. Prerequisite: HST 102 or consent of the instructor.

Second Semester 1963-1964

HST 415. SOVIET UNION SINCE 1917

THREE CREDIT HOURS

A detailed survey and analysis of Soviet Russia from the Revolution of 1917 to the present day. Concentration will be on the political, economic (including the impact of science and technology), and social aspects of the Soviet nation. Treatment will also be given to the full range of Soviet foreign relations and ideology. Prerequisite: HST 102 or consent of the instructor.

First Semester, 1963-1964

HST 421. HISTORY OF ENGLAND SINCE 1688**THREE CREDIT HOURS**

A study of England and Great Britain beginning with the Restoration. The aim of the course is to study the Hanoverian, Victorian, and modern periods of England in their economic, political, and cultural phases as transformed by the political and industrial revolutions, by imperialism, and by two World Wars. Prerequisites: HST 101, 102 or consent of the instructor.

*First Semester, 1962-1963***HST 424. AFRICA, 19TH AND 20TH CENTURIES****THREE CREDIT HOURS**

This course seeks to develop two themes—foreigners winning domination of Africa and the resulting native attempts to obtain freedom. Surveying the situation in 1800, the course unfolds European imperialism as it reaches its climax from 1870 to 1914. Thereupon comes the impact of World War I with emphasis on the mandate system and the movements for natives' rights. Finally the post-World War II period emerges with strife characterized by setbacks and advances for nationalism. Prerequisite: HST 102 or consent of the instructor.

*Second Semester, 1962-1963***HST 427. THE WESTWARD MOVEMENT****THREE CREDIT HOURS**

A history of the expansion of settlement in the United States since 1783. The movement of the frontier to the Pacific Coast will be followed in relation to the development of exploration, Indian relations, land policy, methods of transportation, and the influence of the West upon American ideals and institutions. Prerequisites: HST 251, 252 or consent of the instructor.

*Second Semester, 1962-1963***HST 431. MODERN CHURCH HISTORY****THREE CREDIT HOURS**

The French Revolution. Napoleon and Pius VII. Secularization in Germany. The Catholic Romantic Movement. The Cologne conflict. The Oxford Movement. The Roman Question. Infallibility: the Vatican Council. *Kulturkampf*. Modernism. Offered only at Carthage.

*Second Semester, Each Year***HST 435. THE MIDDLE EAST, 19TH AND 20TH CENTURIES****THREE CREDIT HOURS**

A survey of the Ottoman Empire, Iran, Egypt, and the modern states of the Middle East, emphasizing the development of nationalism and the place of the Middle East in international politics. Prerequisite: HST 102 or consent of the instructor.

*Second Semester, 1963-1964***HST 441. MODERN EUROPEAN THOUGHT****THREE CREDIT HOURS**

A discussion of five centuries of the main currents of Western thought which help to explain what the European intellectual climate was like then and what it is today. Close examination is made of men and ideas in such epochs as the Renaissance, the Religious Upheaval, the Enlightenment, the Scientific Revolution, the Era of Liberalism, and the Generations of Materialism. Prerequisites: HST 101, 102 or consent of the instructor.

*Second Semester, 1962-1963***HST 445. THE FAR EAST, 19TH AND 20TH CENTURIES****THREE CREDIT HOURS**

China, Japan, and the lesser nations of the Far East have begun to exert an

important influence on the world of today. The objective of this course is to offer the student an opportunity to study the major civilizations of the Far East as they have developed during the past two centuries. Special emphasis will be placed on recent events. Prerequisite: HST 102 or consent of the instructor.

Second Semester, 1963-1964

HST 449. RECENT AMERICAN HISTORY **THREE CREDIT HOURS**

A study of the immediate background of contemporary political, social, and economic problems. Among the topics discussed are "Normalcy," the Depression and New Deal, the impact of World War II on the United States, and World Communism. Prerequisite: HST 252 or consent of the instructor.

Second Semester, 1963-1964

HST 451. CIVIL WAR AND RECONSTRUCTION **THREE CREDIT HOURS**

Remote and immediate causes of the Civil War, especially from 1850 to 1861: problems of the North and South during the war; the consequences of the war; the efforts to create a new Union, 1865 to 1877, and the new problems created by those efforts. Prerequisite: HST 251 or consent of the instructor.

First Semester, 1963-1964

HST 458. INTELLECTUAL AND CULTURAL HISTORY OF THE U.S.

THREE CREDIT HOURS

An attempt to trace the evolution of a distinctive American civilization through a study of American thought and its expression in the fine and utilitarian arts. There will be parallel treatment of the fine arts—literature, painting, sculpture and architecture—and technological developments—agricultural mechanization, the factory system, urban living, and mass production. Prerequisites: HST 251, 252 or consent of the instructor.

Second Semester, 1962-1963

HST 468. THE REPUBLICS OF LATIN AMERICA **THREE CREDIT HOURS**

An analysis of the social, political, and economic history of Hispanic America from the independence movements to the present. The historical development of hemispheric relations and organizations is outlined. Internal problems are viewed through selected national histories, namely those of Argentina, Brazil, Mexico, and Colombia. Prerequisites: HST 251, 252 or consent of the instructor.

First Semester, 1962-1963

HOME ECONOMICS (HEC)

(MRS.) ELIZABETH PAYNE, CHAIRMAN

Associate Professor: PAYNE

Assistant Professors: METZGER, SMALLWOOD

Instructors: BERNHARD, ITTELSON

HEC 101. CLOTHING I **ONE CREDIT HOUR**

A study of clothing selection and construction of simple garments using com-

mercial patterns. Emphasis is on short-cut methods of construction, fitting, dressmaking details and finishing procedures. One lecture period per week.
Second Semester, Each Year

HEC 101L. CLOTHING I LABORATORY TWO CREDIT HOURS
A course to accompany HEC 101 lecture. Two two-hour periods per week.
Second Semester, Each Year

HEC 102. FOODS I TWO CREDIT HOURS
Basic principles and practices in food planning, preparation, preservation and serving. Two lecture periods per week.
First Semester, Each Year

HEC 102L. FOODS I LABORATORY ONE CREDIT HOUR
A course to accompany HEC 102 lecture. One two-hour period per week.
First Semester, Each Year

HEC 105. INTRODUCTION TO RELATED ART THREE CREDIT HOURS
A study of the fundamentals of design and color and their application in selection and arrangement. Three lecture periods per week.
First Semester, Each Year

HEC 201. FOODS II ONE CREDIT HOUR
Continuation of Foods I. One class period per week. Prerequisite: HEC 102 or equivalent.
Second Semester, Each Year

HEC 201L. FOODS II LABORATORY TWO CREDIT HOURS
Course to accompany HEC 201 lecture. Two two-hour laboratory periods per week.
Second Semester, Each Year

HEC 211. CLOTHING II ONE CREDIT HOUR
Detailed emphasis on principles of fitting and creative construction. One lecture period per week. Prerequisite: HEC 101 or equivalent. *First Semester, Each Year*

HEC 211L. CLOTHING II LABORATORY TWO CREDIT HOURS
Course to accompany HEC 211 lecture. Two two-hour laboratory periods per week.
First Semester, Each Year

HEC 214. TEXTILES I TWO CREDIT HOURS
A study of the natural man-made and synthetic fibers for the use and care of finished fabrics. Two class periods per week. *Second Semester, Each Year*

HEC 214L. TEXTILES I LABORATORY ONE CREDIT HOUR
A course to accompany HEC 214 lecture. One two-hour laboratory per week.
Second Semester, Each Year

HEC 221. HOME MANAGEMENT I THREE CREDIT HOURS
A study of the management and use of resources to promote the development of home and family life. Three class periods per week.
First Semester, Each Year

HEC 225. CHILD DEVELOPMENT I
(Formerly Child Guidance I)**THREE CREDIT HOURS**

A study of the pattern of development during prenatal, infancy and the second year of life and the resulting adult responsibilities that are indicated by this study. Actual observation and work with pre-school children. Two lecture periods per week.

*First Semester, Each Year***HEC 303. NUTRITION AND HEALTH****THREE CREDIT HOURS**

Fundamental principles of human nutrition, including requirements of the body for the nutritive essentials, the composition of foods and the planning of adequate diets for health. Three class periods per week.

*First Semester, 1962-1963***HEC 304. QUANTITY COOKERY****ONE CREDIT HOUR**

The planning, preparing and serving of foods in large quantities. Use and care of equipment for quantity cookery. One class period per week.

HEC 304L. QUANTITY COOKERY LABORATORY**TWO CREDIT HOURS**

Course to accompany Hec 304 lecture. Two two-hour periods per week.

HEC 308. INSTITUTIONAL BUYING**THREE CREDIT HOURS**

Selection and methods of purchasing institutional food and equipment. Three class periods per week.

HEC 309. HOUSEHOLD EQUIPMENT**TWO CREDIT HOURS**

A study of the principles involved in the selection, construction, operation and care of household equipment and its relation to the well-being of the family. Two lecture periods per week. Prerequisites: HEC 102, 201 or equivalent.

*Each Semester, Each Year***HEC 309L. HOUSEHOLD EQUIPMENT LABORATORY****ONE CREDIT HOUR**

Course to accompany HEC 309 lecture. One two-hour laboratory per week.

*Each Semester, Each Year***HEC 315. CONSUMER BUYING****THREE CREDIT HOURS**

A study of basic principles of selection and buying as they relate to the purchase of food, clothing, furnishings and equipment for the household. Three lecture periods per week.

HEC 318. FAMILY LIVING**THREE CREDIT HOURS**

A consideration of the factors necessary for the establishment and maintenance of a home in its changing context. Three lecture periods per week.

*Second Semester, Each Year***HEC 323. DEMONSTRATION METHODS****ONE CREDIT HOUR**

A study of lecture-demonstration techniques. Stress is placed on giving lecture-demonstrations. Two class periods per week.

Each Semester, Each Year

HEC 326. HOME CRAFTS

ONE CREDIT HOUR

A study of creative crafts which can be made for the home. Stress is placed on recreational crafts, weaving and enameling. One lecture period per week. Prerequisite: HEC 105.

HEC 326L. HOME CRAFTS

TWO CREDIT HOURS

Course to accompany HEC 326 lecture. Two two-hour laboratory periods per week.

HEC 327. FOOD PRESERVATION AND EXPERIMENTAL COOKERY

TWO CREDIT HOURS

The experimental application of food principles, theory and procedures in food handling. Two lecture periods per week. Prerequisite: HEC 201.

HEC 327L. FOOD PRESERVATION IN THE HOME LABORATORY

ONE CREDIT HOUR

Course to accompany HEC 327 lecture. One two-hour laboratory period per week.

HEC 328. HOME FURNISHINGS AND HOUSING

THREE CREDIT HOURS

A study of housing and selection of furnishings for the home, including arrangements, period styles and decorative details. Three lecture periods per week. Prerequisite: HEC 105. *Second Semester, 1962-1963*

HEC 329. CHILD DEVELOPMENT II

THREE CREDIT HOURS

An evaluation of the growth of children; the techniques for measuring growth over a period of time; implications for discipline and direction from the patterns of growth and development. Two lecture periods per week. *Second Semester, Each Year*

HEC 401. ADVANCED NUTRITION

THREE CREDIT HOURS

Aims to extend the student's knowledge of the Science of nutrition, stressing the metabolism of food constituents and the recent advances in the field of nutrition. Three class periods per week. Prerequisite: HEC 303. *Second Semester, 1963-1964*

HEC 402. DIET IN DISEASE

THREE CREDIT HOURS

Adaptation of diet to disease. Three class periods per week. Prerequisite: HEC 303. *Second Semester, 1962-1963*

HEC 405. TEACHING OF HOME ECONOMICS IN SCHOOLS

FOUR CREDIT HOURS

A study of Home Economics philosophies and Vocational Home Economics methods. Planning, preparing and presenting units and lessons for different grade levels. Four class periods per week. *First Semester, 1962-1963*

HEC 406. HOME MANAGEMENT II ONE CREDIT HOUR
Practical experience in maintaining a home on a minimum budget. One lecture period per week. *Both Semesters, 1962-1963*

HEC 406L. HOME MANAGEMENT II LABORATORY TWO CREDIT HOURS
Course to accompany HEC 406 lecture. *Both Semesters, 1962-1963*

HEC 407. INSTITUTIONAL ORGANIZATION AND
MANAGEMENT THREE CREDIT HOURS
Principles and problems of feeding institutional groups, including personnel management, organization and administration. Three class periods per week. *First Semester 1962-1963*

HEC 415. TAILORING ONE CREDIT HOUR
Tailoring construction as applied in the making of coats and suits. One lecture period per week. Prerequisites: HEC 105, 211 or equivalent. *Second Semester, Each Year*

HEC 415L. TAILORING LABORATORY TWO CREDIT HOURS
Course to accompany HEC 415 lecture. Two two-hour periods per week. *Second Semester, Each Year*

HEC 430. PROBLEMS IN HOME FURNISHINGS ONE CREDIT HOUR
Problems of making slip covers and draperies; individual problems of refinishing furniture and upholstering. One class period per week. Prerequisite: HEC 105. *First Semester, 1962-1963*

HEC 430L. HOME FURNISHINGS LABORATORY TWO CREDIT HOURS
Course to accompany HEC 430 lecture. Two two-hour periods per week. *First Semester, 1962-1963*

HEC 436. SPECIAL PROBLEMS TWO CREDIT HOURS
Problems chosen for individual study in various areas of the field of Home Economics. Two periods per week.

HEC 436L. SPECIAL PROBLEMS LABORATORY ONE CREDIT HOUR
Course to accompany HEC 436 lecture. One two-hour laboratory.

HEC 437. MEAL MANAGEMENT TWO CREDIT HOURS
To develop the ability to plan, prepare and serve palatable, nutritious and attractive meals at various economic levels. Gourmet and foreign cookery is also included. Two lecture periods per week. Prerequisite: HEC 201.

HEC 437L. MEAL MANAGEMENT LABORATORY ONE CREDIT HOUR
Course to accompany HEC 437 lecture. One two-hour period per week.

INDUSTRIAL ENGINEERING (INE)

ROBERT I. MITCHELL, CHAIRMAN

Associate Professors: MITCHELL, SCHMID*Part-time Instructors:* EILERMAN, LOGAN

INE 301. PERSONNEL ADMINISTRATION THREE CREDIT HOURS

A survey of methods of selection, testing, wage payment and policies, employee morale and relations. A study of promotions, layoffs and security and the influence exerted by labor unions on the above. Three class periods a week.

Second Semester, Each Year

INE 303. WAGE ADMINISTRATION THREE CREDIT HOURS

Philosophy, theory and practice involved in administration of financial compensation policies and programs. Includes study of wage practices, comparative rates, pay for specific jobs, pay for performance. Embraces the study of wage surveys, job evaluation, merit rating, work force and management incentives and a brief presentation of non-financial compensation systems. Three class periods a week.

First Semester, Each Year

INE 313. ENGINEERING LAW TWO CREDIT HOURS

Legal principles applied to engineering including: registration, professional responsibilities and privileges; legal considerations involved in the preparation of specifications, drawings, contracts, title transfers, conveyance, etc.; legal factors relating to the development of technical processes and equipment, patents, trade-marks, etc.; legal considerations of employment such as workmen's compensation and unemployment insurance. *Each Semester, Each Year*

INE 401. ENGINEERING ECONOMY TWO CREDIT HOURS

A brief introduction to methods of financing. A study of interest; depreciation, economics of tools and equipment; minimum cost point and economic lot sizes. Two class periods a week. Prerequisite: MTH 218. *First Semester, Each Year*

INE 403. TIME AND MOTION STUDY I TWO CREDIT HOURS

An elementary course in motion and time study. A study of the job analysis techniques including process charts, right and left hand charts, the laws of motion economy, man-machine charts and a survey of micromotion techniques. A study of timing equipment, and methods of establishing labor standards including a brief analysis of predetermined time systems. Two class periods a week.

First Semester, Each Year

INE 403L. TIME AND MOTION STUDY LABORATORY I ONE CREDIT HOUR

A series of laboratory problems based on the above. One laboratory period a week. Corequisite: INE 403. *First Semester, Each Year*

INE 404. TIME AND MOTION STUDY II**TWO CREDIT HOURS**

A study of advanced problems in establishing standard time data, progressive operations, application of statistics, micromotion study with practical problems.
Prerequisite: INE 403. *Second Semester, Each Year*

INE 404L. TIME AND MOTION STUDY LABORATORY II **ONE CREDIT HOUR**

A series of laboratory problems based on the above. One laboratory period a week. Corequisite: INE 404. *Second Semester, Each Year*

INE 405. PRODUCTION PLANNING**THREE CREDIT HOURS**

A study of the practices in production scheduling, routing, dispatching and inventory control; including an analysis of mechanized systems and current practices. Three class periods a week. *First Semester, Each Year*

INE 406. PLANT LAYOUT AND MATERIAL HANDLING **TWO CREDIT HOURS**

The design of a plant for a specified product. The study to include: structure; power requirements; heat; light; sound; and ventilation; transportation facilities, material handling requirements and equipment. Two class periods a week.
Prerequisites: INE 405, MEE 206L. *Second Semester, Each Year*

INE 406L. PLANT LAYOUT LABORATORY**ONE CREDIT HOUR**

The complete design of a light manufacturing plant including choice of site, building, equipment and organizational structure. One laboratory period a week. Corequisite: INE 406. *Second Semester, Each Year*

INE 408. ADMINISTRATION AND ORGANIZATION**THREE CREDIT HOURS**

A thorough analysis of organizations both small and large; a detailed study of their functions; policy determination and administration. The study to include the organization and functioning of an enterprise under specific conditions. Three class periods a week. *Second Semester, Each Year*

INE 410. SEMINAR**ONE CREDIT HOUR**

Required of all senior industrial engineering students. The preparation and presentation of a paper on current industrial engineering practices and topics. One class period a week. *Second Semester, Each Year*

INE 421. RELIABILITY THEORY**THREE CREDIT HOURS**

Applications of statistical theory to engineering reliability design. Testing methods for determining reliability. Design of components and assemblies for reliability. Prerequisite: MTH 331. *First Semester, Each Year*

*Industrial Engineering Electives***INE 201. INDUSTRIAL ENGINEERING FUNDAMENTALS** **THREE CREDIT HOURS**

A study of the development of industrial engineering, the scope of its functions, its relationship to other professions, organizing for industrial engineering, and methods for utilizing industrial engineering techniques.

INE 332. STATISTICAL CONTROL AND SYSTEMS DESIGN THREE CREDIT HOURS
A study of advanced statistical theory with engineering applications. Sampling theory, tests of hypotheses, analysis of variance, regression and correlation, experimental design, and factor analysis with examples from quality control and process design, analysis and control. Prerequisite: MTH 331.

INE 422. RELIABILITY APPLICATION THREE CREDIT HOURS
The application of reliability theories to the design of complex, integrated systems. Prerequisite: INE 421.

INE 499. SPECIAL PROBLEMS IN INDUSTRIAL ENGINEERING
TWO TO SIX CREDIT HOURS
Particular assignments to be arranged and approved by Chairman of the Department.

JOURNALISM (JRN)

Part-time Instructors: EUGENE MOORE, HELEN PETERSON

Majors in journalism must take JRN 200, 15 semester hours in JRN 300 and JRN 400 courses, and 9 semester hours from ENG 316, 328, 329, 351, 428, and 430. The Department sponsors one co-curricular activity, *The Flyer*, the campus newspaper.

JRN 200. INTRODUCTION TO JOURNALISM THREE CREDIT HOURS
This course covers the nature and purpose of the newspaper and other mass-communications media, occupational opportunities within the field, organization of a newspaper, and basic printing processes.

Second Semester, Each Year

JRN 300. NEWS STORY WRITING THREE CREDIT HOURS
Determining news values. Structure of the news story. Interview techniques. Covering a beat. Research materials. Analysis of metropolitan, small town, and trade papers. Organization of a modern newspaper. Use of the style sheet. Prerequisite: JRN 200. Work on *UD Flyer* mandatory. *First Semester, 1963-1964*

JRN 301. FEATURE STORY WRITING THREE CREDIT HOURS
Advanced reporting. Analysis of feature story structure and techniques. Studies of notable feature stories in various fields. Conducting a column or special feature of a newspaper. News stories with feature slant. Technical reporting. Actual practice in writing feature stories for university publications. Prerequisites: JRN 200, 300. *First Semester, 1962-1963*

JRN 302. LAW AND ETHICS OF THE PRESS THREE CREDIT HOURS
Limitations of freedom of the press. What you have a right to print. What

people have a right to know. The right to privacy. Crime and sensational news. Censorship. Off-the-record material. Slander and libel laws. Copyright laws. Postal regulations. *Second Semester, 1962-1963*

JRN 303. FREE-LANCE WRITING **THREE CREDIT HOURS**

Types of free-lance articles. Analysis of literary markets. Manuscript form and submission methods. Peculiarities of magazine and book publishing. Completion and submission of one saleable article required for credit.

Second Semester, 1962-1963

JRN 400-401. EDITING AND COPYREADING **SIX CREDIT HOURS**

The copydesk on large and small newspapers. Editing, headline writing, page makeup, use of pictures, typography, composing room problems. Prerequisites: JRN 300 and 301.

First and Second Semester, 1963-1964

JRN 402. PUBLICITY AND PUBLIC RELATIONS **THREE CREDIT HOURS**

A non-professional course for students in other fields such as business, education, personnel management, etc., who will be expected to direct publicity campaigns or write news releases in their future work. Explains nature, organization, and problems of newspaper publishing. How to pick out news value in a story and write it up in basic newspaper style. How to set up and administer a house organ or school paper. Practice in writing publicity releases.

First Semester, 1963-1964

JRN 403. PROPAGANDA ANALYSIS **THREE CREDIT HOURS**

Use and abuse of propaganda. Editorial persuasion. Propaganda devices and techniques. An application of the principles of Aristotelian logic to the field of mass communications.

Second Semester, 1963-1964

JRN 404. NEWSPAPER MANAGEMENT PROBLEMS **THREE CREDIT HOURS**

A study of the operation and problems of circulation, advertising, and printing departments as they affect the work of the reporter and editor. Since most journalism majors begin their careers on small weeklies or trade papers, this course will emphasize the problems peculiar to this type of publication. Visits to newspaper plants and guest lectures.

First Semester, 1962-1963

JRN 405-406. ADVERTISING COPY WRITING **SIX CREDIT HOURS**

See current catalogue, under BUS 307, BUS 308.

JRN 430. HISTORY OF JOURNALISM **THREE CREDIT HOURS**

A critical survey of the development of the English language press. Emphasis will be placed on the American press. The work of notable editors and their papers will be stressed. Underlying purpose will be to fill in the student's background and point out the direction of future development of the press.

First Semester, 1962-1963

LANGUAGES

DR. JOHN R. PERZ, S.M., CHAIRMAN

Professor: PERZ

Associate Professors: REYST, SULLIVAN

Assistant Professors: BARTHOLOMEW, MCKENZIE, MACLEMORE,
SHATTOCK, SORY

Instructor: LINDNER

Part-time Instructors: ANDUZE, DARBY

Note: All the courses in Latin and Greek are offered only at Marianist College, and are restricted to student members of the Society of Mary.

FRENCH (FRN)

FRN 101. ELEMENTARY FRENCH THREE CREDIT HOURS
Elements of French, including pronunciation, reading, translation, grammar, dictation and conversation. *Each Year, Each Semester*

FRN 102. ELEMENTARY FRENCH II THREE CREDIT HOURS
Continuation of Elementary French 101. *Each Year, Each Semester*

FRN 201-202. INTERMEDIATE FRENCH SIX CREDIT HOURS
Grammar review, selected readings from modern authors, exercises in composition and conversation. *Full Year Course, Each Year*

FRN 307-308. ADVANCED FRENCH COMPOSITION AND CONVERSATION SIX CREDIT HOURS
Practice in composition based on area material. Intensive drill in the aural and oral use of the language. *Full Year Course, 1962-1963*

FRN 309-310. READINGS IN FRENCH SIX CREDIT HOURS
A course designed to improve and accelerate the reading ability of students and to lead them to an understanding and appreciation of the great works of French literature. The students are required to read, to report on and to discuss a series of works of appreciable length but of moderate difficulty. *Full Year Course, 1962-1963*

FRN 311-312. FRENCH LITERATURE TO 1700 SIX CREDIT HOURS
A survey of French literature from the earliest beginnings to the eighteenth century, with special emphasis on the principal authors and works of the seventeenth century. Lectures, discussions and reports on area material. *Full Year Course, 1963-1964*

FRN 405-406. FRENCH LITERATURE OF THE TWENTIETH CENTURY

SIX CREDIT HOURS

A survey of the literary movements, outstanding authors and works of the present century. Lectures, discussions and reports on assigned readings.

Full Year Course, 1963-1964

FRN 407-408. FRENCH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES

SIX CREDIT HOURS

A survey covering the literary movements, outstanding authors and works of this period. Lectures, discussions and reports on assigned readings.

Full Year Course, 1962-1963

GERMAN (GER)

GER 101. ELEMENTARY GERMAN

THREE CREDIT HOURS

Elements of German, including pronunciation, reading, translation, grammar, dictation and conversation.

Each Semester, Each Year

GER 102. ELEMENTARY GERMAN II

THREE CREDIT HOURS

Continuation of Elementary German 101.

Each Semester, Each Year

GER 201-202. INTERMEDIATE GERMAN

SIX CREDIT HOURS

Grammar review, selected readings from modern authors, exercises in composition and conversation.

Full Year Course, Each Year

GER 301-302. GERMAN LITERATURE TILL 1800

SIX CREDIT HOURS

A survey of German Literature from the earliest times to the period of Romanticism. A study of literary movements, outstanding authors and works: Lectures, discussions and reports on assigned readings.

Full Year Course, 1963-1964

GER 306. SCIENTIFIC GERMAN

THREE CREDIT HOURS

A reading course intended to familiarize students with the technical vocabulary used in scientific fields.

Second Semester, Each Year

GER 307. CHEMICAL GERMAN

THREE CREDIT HOURS

A course intended to train students to acquire a reading knowledge of German chemical literature. Required of students majoring in Chemistry.

First Semester, Each Year

GER 308. ADVANCED GERMAN CONVERSATION AND COMPOSITION

THREE CREDIT HOURS

Intensive drill in the oral and aural use of the language, based on area material. Practice in composition.

First Semester, 1962-1963

GER 309. GERMAN CIVILIZATION

THREE CREDIT HOURS

A survey of the German people, its geographical, historical and political background. German art and folklore.

Second Semester, 1962-1963

GER 407. GERMAN LITERATURE OF THE TWENTIETH CENTURY.

THREE CREDIT HOURS

A survey of the outstanding authors and works of the present century. Lectures, discussions and reports on assigned readings.

First Semester, 1962-1963

GER 408. THE CLASSICAL PERIOD

THREE CREDIT HOURS

A study of the principal authors and works of this period. Lectures, discussions and reports on assigned readings.

Second Semester, 1962-1963

GER 409-410. GERMAN LITERATURE OF THE NINETEENTH CENTURY

SIX CREDIT HOURS

A survey of nineteenth century German literature, including a study of literary movements, outstanding authors and works. Lectures, discussions and reports on assigned readings.

Full Year Course, 1963-1964

GREEK (GRK)

GRK 101-102. ELEMENTARY GREEK

SIX CREDIT HOURS

A study of the essentials of Greek grammar with exercises and readings.

Full Year Course, Each Year

GRK 201. INTERMEDIATE GREEK

THREE CREDIT HOURS

Continuation of the study of grammar. Readings from New Testament.

First Semester, Each Year

GRK 303. PLATO

THREE CREDIT HOURS

The *Apologia* is read and selections from the rest of Plato's works. Plato's contribution to the history of ideas as emphasized and illustrated through extensive supplementary reading in Jowett.

GRK 304. HOMER

THREE CREDIT HOURS

Readings from the *Iliad* and the *Odyssey*.

Second Semester, Each Year

GRK 305. THE SEPTUAGINT

THREE CREDIT HOURS

Extensive readings. Comparison with the Vulgate. Excursions into the field of Biblical science.

To be announced

GRK 306. THE NEW TESTAMENT

THREE CREDIT HOURS

Similar to GR 305. Comparison of the Greek and Latin texts with modern renditions.

GRK 403. GREEK DRAMA

THREE CREDIT HOURS

Reading of Sophocles' *Oedipus Rex* and *Antigone* with a study of the origin and development of Greek drama.

HEBREW (HEB)

HEB 101. ELEMENTARY HEBREW

THREE CREDIT HOURS

Brief history of the language. Basic grammar: nouns and adjectives with their pronominal suffixes; regular verbs in the seven ordinary conjugations; prepositions and their suffixes. Pronunciation, reading, translation, writing, and conversation.
First Semester, Each Year

HEB 102. INTRODUCTION TO CLASSICAL HEBREW

THREE CREDIT HOURS

Further study of the verb: pronominal suffixes, peculiarities of tenses, conjugation according to radicals. Chapters read from all portions of the Old Testament with emphasis on the Pentateuch. Oral reading and conversation in the spirit of Classical Hebrew. Translation of poetic portions. Exegetical treatment of the Song of Songs.
Second Semester, Each Year

ITALIAN (ITA)

ITA 101-102. ELEMENTARY ITALIAN

SIX CREDIT HOURS

Elements of Italian, including pronunciation, reading, translation, grammar, dictation and conversation.
Full Year Course, Each Year

ITA 201-202. INTERMEDIATE ITALIAN

SIX CREDIT HOURS

Grammar review, selected readings from modern authors, exercises in composition and conversation.
Full Year Course, 1963-1964

LATIN (LAT)

LAT 101-102. ELEMENTARY LATIN

SIX CREDIT HOURS

A college course in Latin fundamentals.

LAT 201-202. INTERMEDIATE LATIN

SIX CREDIT HOURS

Second year course in Latin. Readings from classical authors of the pre-Christian periods.

LAT 301. LATIN COMPOSITION AND CONVERSATION

THREE CREDIT HOURS

This course aims to give an intensive review of inflections and syntax with emphasis on original style and fluency of expression. *Second Semester, Each Year*

LAT 304. VERGIL

THREE CREDIT HOURS

A survey of the work of Vergil, with special attention to the literary art of the *Aeneid* and the nature and development of the Roman epic.

Second Semester, Each Year

LAT 305. MEDIEVAL LATIN

THREE CREDIT HOURS

An outline of the main course of Latin literature from 400 A.D. to 1500 A.D., with special attention being given to the classical heritage of the Middle Ages.

- LAT 306. HORACE THREE CREDIT HOURS
 Readings of selected Odes and Epodes, and the *Ars Poetica* of Horace; a study of his lyric quality, workmanship, and meters.
First Semester, Each Year
- LAT 307. READINGS IN LATIN LITERATURE THREE CREDIT HOURS
 This course embraces the reading of excerpts from a wide range of Latin authors.
First Semester, Each Year
- LAT 309. CICERO THREE CREDIT HOURS
 A study of *De Amicitia* and *De Senectute* or other works of Cicero.
Second Semester, Each Year
- LAT 310. SELECTED LETTERS OF PLINY THREE CREDIT HOURS
 A study of the Latin letter as a literary form. The men and the world of the times of Pliny are revealed by his letters.
- LAT 313. OVID THREE CREDIT HOURS
 Intensive readings in the *Metamorphoses* with emphasis on the influence of the mythological epic on some of the modern literatures.
- LAT 314. LIVY THREE CREDIT HOURS
 This course comprises readings from Books I, XXI, and XXII of Livy's History and an examination of his historical method and literary form.
- LAT 401. ADVANCED LATIN COMPOSITION THREE CREDIT HOURS
 An intensive course in Latin composition, with special attention to the classical style of Cicero.
- LAT 403. SENECA THREE CREDIT HOURS
 A study of Seneca's philosophical style and the ethical teachings of Stoicism as revealed in his *Moral Epistles* and *Essays*.
- LAT 405-406-407. PHILOSOPHICAL LATIN NINE CREDIT HOURS
 Translation of Latin philosophical works. LAT 405: *Logica et Ontologia*; LAT 406: *Cosmologia et Psychologia*; LAT 407: *Theodicaea et Ethica*.
Summer Session
- LAT 412. ECCLESIASTICAL LATIN THREE CREDIT HOURS
 The object of this course is to acquaint students for the priesthood with the Latin of theologians.
Summer Session
- LAT 413. THE CONFESSIONS OF ST. AUGUSTINE THREE CREDIT HOURS
 Excerpts are taken from the first Nine Books. *First Semester, Each Year*
- LAT 414. PATRISTIC LATIN THREE CREDIT HOURS
 Selections from St. Augustine, Tertullian, St. Cyprian, Lactantius, St. Ambrose, St. Jerome, and other Fathers.

RUSSIAN (Rus)

RUS 101. ELEMENTARY RUSSIAN THREE CREDIT HOURS
Designed to familiarize the beginner with the essentials of the spoken and written language. Vocabulary practice, simple sentence structure, conversational drills, and reading of modern text, with equal stress on each.

Each Semester, Each Year

RUS 102. ELEMENTARY RUSSIAN II THREE CREDIT HOURS
Continuation of Russian 201. *Each Semester, Each Year*

RUS 201. INTERMEDIATE RUSSIAN THREE CREDIT HOURS
Review of the essentials of grammar, intensive conversational and comprehension exercises, reading of graded modern and contemporary prose and poetry. Prerequisite: RUS 101-102, or equivalent. *Each Semester, Each Year*

RUS 202. INTERMEDIATE RUSSIAN II THREE CREDIT HOURS
Continuation of Russian 201. *Each Semester, Each Year*

RUS 203-204. SCIENTIFIC RUSSIAN SIX CREDIT HOURS
This course is given only at Wright-Patterson Air Force Base. Prerequisite: RUS 101-102, or equivalent.

RUS 301-302. RUSSIAN READING AND CONVERSATION SIX CREDIT HOURS
Intended for students who possess a general knowledge of Russian, but lack the practical experience of the spoken language. The conversation is based principally on more advanced reading material. Prerequisite: RUS 201-202, or equivalent. *Full Year Course, Each Year*

RUS 401-402. TECHNICAL AND SCIENTIFIC RUSSIAN SIX CREDIT HOURS
A course intended to train students to acquire a reading knowledge of Russian scientific literature. Special grammatical constructions will be explained, as well as general techniques of translation. Prerequisite: RUS 301-302.

SPANISH (Spn)

SPN 101. ELEMENTARY SPANISH THREE CREDIT HOURS
Elements of Spanish, including pronunciation, reading, translation, grammar, dictation and conversation. *Each Semester, Each Year*

SPN 102. ELEMENTARY SPANISH II THREE CREDIT HOURS
Continuation of Spanish 101. *Each Semester, Each Year*

SPN 201-202. INTERMEDIATE SPANISH SIX CREDIT HOURS
Grammar review, selected readings from modern authors, exercises in composition and conversation. *Full Year Course, Each Year*

SPN 205-206. SPANISH READING AND CONVERSATION SIX CREDIT HOURS
Intended for students who possess a general knowledge of Spanish, but lack the practical experience of the spoken language. *Full Year Course, Each Year*

SPN 301-302. SPANISH LITERATURE **SIX CREDIT HOURS**

A survey of Spanish Literature, with special emphasis on the Golden Age and the modern period. Lectures, discussions and reports on assigned readings.

Full Year Course, 1962-1963

SPN 303-304. SPANISH-AMERICAN LITERATURE **SIX CREDIT HOURS**

A study of the principal authors and works of the colonial, revolutionary and modern periods. Lectures, discussions and reports on assigned readings.

Full Year Course, 1963-1964

SPN 403. MODERN SPANISH DRAMATISTS **THREE CREDIT HOURS**

A study of the important dramatists from 1830 to the present time. Lectures, discussions and reports on assigned readings.

First Semester, 1963-1964

SPN 404. DRAMA OF THE GOLDEN AGE **THREE CREDIT HOURS**

A study of the significance and principal works of the great dramatists of the sixteenth and seventeenth centuries. Lectures, discussions and reports on assigned readings.

Second Semester, 1963-1964

SPN 405. SPANISH LITERATURE OF THE TWENTIETH CENTURY **THREE CREDIT HOURS**

A study of the principal Spanish and Spanish-American authors and works of the present century. Lectures, discussions, and reports on assigned readings.

First Semester, 1962-1963

SPN 406. SPANISH NOVELISTS OF THE NINETEENTH CENTURY **THREE CREDIT HOURS**

A study of the more important works of the principal novelists of this period. Lectures, discussions and reports on assigned readings.

Second Semester, 1962-1963

MATHEMATICS (Mth)

DR. KENNETH C. SCHRAUT, CHAIRMAN

Professors: BELLMER, SCHRAUT

Associate Professors: BOSSHART, ESSER, JEHN, KELLER,
KREIDER, PRATHER

Assistant Professors: BACK, DWYER, NANDA, PETERSON,
SPECK, STANDER

Instructors: DIERKER, RICE

Part-time Instructors: BOLD, CONDON, FLUKE, GRABNER, HUDSON,
KESTER, KUNTZ, NIKOLAI, STEAR, SUITS,
VANKUREN, ZONARS

MTH 14. ELEMENTARY ALGEBRA II **NO COLLEGE CREDIT**

This course is equivalent to the second year of high school algebra. Five periods a week.

Each Semester, Each Year

MTH 111. MATHEMATICS AND ITS CULTURAL ASPECTS THREE CREDIT HOURS

Historical development of mathematics, the axiomatic approach, various mathematical systems, applications. Three class periods a week. Prerequisite: One and one-half years of high school algebra and a year of high school geometry.

Each Semester, Each Year

MTH 117. COLLEGE ALGEBRA AND TRIGONOMETRY FIVE CREDIT HOURS

This course covers the traditional topics in college algebra and analytic trigonometry. It is intended for students in engineering and for those majoring in one of the sciences or mathematics. Prerequisites: one and one-half years of high school algebra and one year of high school geometry. Five class periods a week.

Each Semester, Each Year

MTH 121. COLLEGE ALGEBRA THREE CREDIT HOURS

Linear and quadratic equations, systems of equations, progressions, logarithms, binomial theorem, complex numbers, determinants, partial fractions, and theory of equations, and probability. Prerequisites: one and one-half years of high school algebra and one year of high school geometry. Three class periods a week.

Each Semester, Each Year

MTH 122. PLANE TRIGONOMETRY THREE CREDIT HOURS

The usual topics in plane trigonometry with applications. Prerequisite: MTH 121 or registration therein.

Each Semester, Each Year

MTH 123. ANALYTIC GEOMETRY FOUR CREDIT HOURS

The traditional topics covered in plane and solid analytic geometry. Prerequisites: MTH 121 and 124 or MTH 117. Four class periods a week.

Each Semester, Each Year—Evening

MTH 125. INTRODUCTION TO STATISTICS AND FINANCE THREE CREDIT HOURS

This course is designed for students in Business Administration and covers such topics as the mean, median, standard deviation, moments, frequency distributions, correlations, curve fitting and least squares, simple interest and bank discount, compound interest and discount, annuities, amortization and sinking funds, valuation of bonds, depreciation and insurance. Prerequisite: MTH 121.

Each Semester, Each Year

MTH 141. MATHEMATICAL CONCEPTS I THREE CREDIT HOURS

Concepts necessary for an understanding of the structure of arithmetic and the algorithms. The Hindu-Arabic number system. Elementary notions of sets, closure, and operations useful in the development of real numbers; the number line. Binary, duodecimal, and other systems. Commutative, associative, distributive laws. Prime numbers; modular arithmetic. Measurement. Prerequisite: One year high school algebra and one year high school geometry.

Each Semester, Each Year

MTH 142. MATHEMATICAL CONCEPTS II**THREE CREDIT HOURS**

Concepts necessary for an understanding of operations and structure of algebra and geometry. Elementary logic and sets; equations and inequalities. Informal geometry of the point, line, plane; definitions and properties of basic plane and solid figures; congruence, similarity, parallelism. Measurement of familiar figures and angles. Coordinate geometry; graphing of equations and inequalities. Prerequisite: MTH 141.

*Each Semester, Each Year***MTH 151. STRUCTURE OF THE REAL NUMBER SYSTEM I****THREE CREDIT HOURS**

Equivalent to MTH 141. Currently offered only under special auspices.

MTH 152. STRUCTURE OF THE REAL NUMBER SYSTEM II**THREE CREDIT HOURS**

Continuation of MTH 141. Mathematical Concepts related to the fundamental operations with irrational numbers and complex numbers and related topics in the history of mathematics. Supplementary material on the structures of the Real Number System as recommended by the School Mathematics Study Group. Currently offered only under special auspices. Prerequisite: MTH 151.

MTH 155. ELEMENTS OF ALGEBRA**THREE CREDIT HOURS**

This course designed only for those preparing to teach in the elementary schools. This course will follow the School Mathematics Study Group, Volume III, emphasizing the foundations of the subject and the structural properties of elementary algebraic systems. Currently offered only under special auspices. Prerequisite: One year of high school algebra and one year of high school geometry.

MTH 160. ELEMENTS OF GEOMETRY**THREE CREDIT HOURS**

This course designed only for those preparing to teach in the elementary schools. This course will follow the School Mathematics Study Group, Volume V, on concepts of informal geometry discussing sets, logic and geometry, abstractions and representations, non-metric geometry, measurement, accuracy and precision, congruence, parallels and metric properties of triangles, areas, volumes, and the theorem of Pythagoras, circles, cylinders, cones, the coordinate plane and graphs, and non-metric polyhedrons. Currently offered only under special auspices. Prerequisite: One year of high school algebra and one year of high school geometry.

MTH 201. DIFFERENTIAL AND INTEGRAL CALCULUS I **FOUR CREDIT HOURS**

Differentiation of algebraic and transcendental functions with applications to geometry and physics. Integration of polynomials with applications to geometry and physics. Fundamental theorem and integral calculus. Four class periods a week. Prerequisite: MTH 123.

Each Semester, Each Year—Evening

MTH 202. DIFFERENTIAL AND INTEGRAL CALCULUS II **FOUR CREDIT HOURS**
Continuation of MTH 201. Integration of algebraic and transcendental functions. Approximate integration; indeterminate forms, infinite series, multiple integrals, application to geometry and physics; partial differentiation. Four class periods a week. Prerequisite: MTH 201. *Each Semester, Each Year—Evening*

MTH 210-211. INTRODUCTORY MATHEMATICAL ANALYSIS

THREE-SIX CREDIT HOURS

Sets, systems of numbers, real plane, functions and the mapping process, sequences, limits, continuous functions, derivative function, exponential and logarithmic functions, definite integral, applications to life sciences and behavior sciences. Prerequisite: MTH 121 and consent of Chairman of Department of Mathematics. *First and Second Semesters, 1962-1963*

MTH 216. ANALYTIC GEOMETRY AND CALCULUS I **FIVE CREDIT HOURS**
Fundamentals of Analytic Geometry, differentiation of Algebraic Functions with applications to geometry and physics, indefinite and definite integrals with applications to geometry and physics. Five class periods a week. Prerequisite: MTH 117 or MTH 121 and 122. *Each Semester, Each Year*

MTH 217. ANALYTIC GEOMETRY AND CALCULUS II **FOUR CREDIT HOURS**
Conic Sections, differentiation of transcendental functions, polar coordinates, formal integration, further applications of the definite integral. Four class periods a week. Prerequisite: MTH 216. *Each Semester, Each Year*

MTH 218. ANALYTIC GEOMETRY AND CALCULUS III **FOUR CREDIT HOURS**
Improper integrals, infinite series, expansions of functions, solid analytic geometry, partial differentiation, multiple integrals. Four class periods a week. Prerequisite: MTH 217. *Each Semester, Each Year*

MTH 301. DIFFERENTIAL EQUATIONS **THREE CREDIT HOURS**
Equations of the first order and first degree, linear equations of higher order with constant coefficients, the method of Frobenius, Euler's equations and other special equations, application to physics, chemistry, and engineering. Three class periods a week. Prerequisite: MTH 202 or MTH 218. *First Semester, Each Year*

MTH 331. STATISTICS FOR ENGINEERS **THREE CREDIT HOURS**
Measure of central tendency, frequency distributions, dispersions, skewness and kurtosis, sampling and the determination of significant differences, correlation. Includes normal, chi-square, Student's, binomial, and Poisson distributions. Prerequisite: MTH 202 or 218. *First Semester, Each Year*

MTH 332. INDUSTRIAL AND ENGINEERING APPLICATIONS OF STATISTICS

THREE CREDIT HOURS

A study of the application of statistics to quality control, job evaluation, merit rating and wage determination, personnel selection and testing, time study,

design of experiments, and economic and market analysis. Prerequisite: MTH 332.
Second Semester, Each Year

MTH 341. ADVANCED ENGINEERING MATHEMATICS I THREE CREDIT HOURS
Differential equations of the first order and first degree, linear differential equations of higher order with constant coefficients, simultaneous differential equations, the Laplace transformation, applications to problems in engineering. Three class periods a week. Prerequisite: MTH 202 or MTH 218.
Each Semester, Each Year

MTH 342. ADVANCED ENGINEERING MATHEMATICS II THREE CREDIT HOURS
Fourier series, linear partial differential equations with solutions by classical and operational methods, introductions to vector analysis, applications to engineering. Three class periods a week. Prerequisite: MTH 341.
Each Semester, Each Year

MTH 343. ADVANCED ENGINEERING MATHEMATICS III THREE CREDIT HOURS
Infinite series and applications, special functions of mathematical physics, matrices, complex variables. Applications to engineering. Three class periods a week. Prerequisite: MTH 341.

MTH 361. INTRODUCTION TO ABSTRACT ALGEBRA THREE CREDIT HOURS
(Formerly MTH 441. Introduction to Higher Algebra)
The real number concept, sets, polynomial forms, matrices and linear transformations, introduction to the basic concepts of groups, rings, and fields. Three class periods a week. Prerequisite: MTH 202 or 218. *Second Semester, Each Year*

MTH 411. PROBABILITY AND STATISTICS I THREE CREDIT HOURS
Probability and combinatorial formulas, distributions and moments. Binomial, Poisson and normal distributions. Testing hypotheses and Bayes' theorem. Three class periods a week. Prerequisite: MTH 202 or MTH 218.
First Semester, 1962-1963

MTH 412. PROBABILITY AND STATISTICS II THREE CREDIT HOURS
Laws of large numbers and central limits. Sample distributions, Students and Chi-square distributions. Multivariate distributions, correlations, and factor analysis. Three class periods a week. Prerequisite: MTH 411.
Second Semester, 1962-1963

MTH 415. LINEAR PROGRAMMING AND GAME THEORY THREE CREDIT HOURS
An examination of the theories of games with two or more players. The minimax theorem. Geometrical interpretation of a two-person zero-sum game. Reduction of a game to a linear programming problem. Computational techniques for solving linear programming problems. Applications to problems of management. Three class periods a week. Prerequisite: MTH 202 or MTH 218.
First Semester, 1962-1963

MTH 417. NUMERICAL ANALYSIS**THREE CREDIT HOURS**

Finite differences, interpolation, numerical differentiation and integration, solutions of equations and differential equations, curve fitting by polynomials and trigonometric series. Three class periods a week. Prerequisite: MTH 202 or 218.

Second Semester, 1962-1963

MTH 421. ADVANCED CALCULUS I**THREE CREDIT HOURS**

The number system, sequences and series, functions of a real variable, functions of several variables. Three class periods a week. Prerequisite: MTH 202 or 218.

First Semester, Each Year

MTH 422. ADVANCED CALCULUS II**THREE CREDIT HOURS**

The definite integral, improper integrals, line integrals, multiple integrals, and uniform convergence. Three class periods a week. Prerequisite: MTH 421.

Second Semester, Each Year

MTH 431. VECTOR ANALYSIS**THREE CREDIT HOURS**

Vector algebra and vector calculus. Gradient, divergence, and curl. Applications to physics. Three class periods a week. Prerequisite: MTH 202 or 218.

Second Semester, Each Year

MTH 432. FOURIER SERIES AND BOUNDARY VALUE PROBLEMS**THREE CREDIT HOURS**

Fundamental definitions, partial differential equations of physics, orthogonal sets of functions, fundamental properties of Fourier series, uniqueness of expansions, Bessel functions, and Fourier-Bessel expansion. Three class periods a week. Prerequisite: MTH 202 or 218.

First Semester, Each Year

**MTH 461. INTRODUCTION TO THE THEORY OF FUNCTIONS OF A
COMPLEX VARIABLE****THREE CREDIT HOURS**

Fundamental concepts, Cauchy integral theorem, analytic functions, analytic continuation, conformal transformations, the calculus of residues, applications to physics and engineering. Three class periods a week. Prerequisite: MTH 202 or 218.

First Semester, 1962-1963

MTH 465. MODERN OPERATIONAL MATHEMATICS**THREE CREDIT HOURS**

The Laplace transformation and applications, partial differential equations, the inversion integral, applications to heat conduction, mechanical vibrations, and other problems. Three class periods a week. Prerequisite: MTH 202 or 218.

MTH 471. TOPOLOGY**THREE CREDIT HOURS**

Calculus of point sets. Hausdorff and other topological spaces. Completeness, compactness, metrics, Euclidean spaces, connectedness, partial ordering, axiom of choice, homomorphisms and continuous functions. Three class periods a week. Prerequisite: MTH 202 or 218.

Second Semester, Each Year

MECHANICAL ENGINEERING (MEE)

HAROLD NIELSEN, CHAIRMAN

Associate Professors: CSAKY, NIELSEN, WILDER, WRIGHT

Assistant Professors: ALDRICH, SMITH, THORNE

Part-time Instructors: ANDREWS, BICKERT, DEROZE, GALIN, GRADY,
KEATING, KNOBELOCK, KRETZLER, LAWSON,
MINARDI, NASH, ROTH, SCHWARTZ, VANKUREN,
VERGAMINI, WARE, WOLF, WURST

MEE 202. MECHANISMS ONE CREDIT HOUR
Kinematics of machinery; linkwork; cams; gearing; flexible connectors; intermittent motion mechanisms; trains of mechanisms. One class period a week. Prerequisites: MTH 217, PHY 206, MEE 206L; Corequisite: MEE 202L.

MEE 202L. MECHANISMS LABORATORY ONE CREDIT HOUR
Laboratory exercises based on the foregoing principles. One laboratory period a week. Corequisite: MEE 202.

MEE 206L. ENGINEERING GRAPHICS I TWO CREDIT HOURS
Free hand drawing and lettering exercises to develop accurate observation and skill in graphic representation and to develop the ability to read drawings. Study of the following is included: orthographic projection, isometric, oblique and perspective drawing; auxiliary and sectional views; detail and assembly drawing; use of drafting instruments. A special effort is made to teach the student to visualize and to represent his ideas clearly, accurately, neatly and rapidly. Two three-hour laboratory periods a week.

MEE 207L. ENGINEERING GRAPHICS II TWO CREDIT HOURS
The purpose of this course is to give thorough training in the analysis and graphic solution of fundamental problems involving three dimensions and to apply these principles and methods to the practical solution of engineering problems. Using the direction method, the course includes point, line and plane problems with applications. An introduction is given to the solution of vector problems. Two three-hour laboratory periods a week. Prerequisite: MEE 206L.

MEE 211. MATERIALS AND PROCESSES TWO CREDIT HOURS
Introduction to atomic structure, crystalline nature of solids, bonding and imperfections in crystals. Mechanics of metal cutting, wear in metal cutting and tool life, economics of machining. Cold working processes. Two class periods a week. Prerequisites: CHM 124, MEE 206L, PHY 206; Corequisite: MEE 211L.

MEE 211L. MATERIALS AND PROCESSES LABORATORY ONE CREDIT HOUR
Study of machining processes and machine tools: shaping and planing, drilling, turning, milling, broaching and grinding. Basic experiments in metal cut-

ting such as tool life test and measurement of forces in metal cutting. Experiments in workshop metrology, demonstration of work on machine tools and industrial trips. One three-hour laboratory period a week. Corequisite: MEE 211.

MEE 301-302. THERMODYNAMICS I AND II **SIX CREDIT HOURS**

The general laws of thermodynamics; properties and processes of gases, vapor, and gas-vapor mixtures; cycles; and the flow of fluids. The application of thermodynamics to machines such as engines, turbines and compressors. Three class periods a week. Prerequisites: MTH 218, PHY 208.

MEE 303. METALLURGY **TWO CREDIT HOURS**

Continuation of MEE 211 on atomic structure, crystal structure and crystal imperfections (applied to metallic materials). Phase diagrams, physical properties, steel and its heat treatment, casting, mechanical working, joining, powder metallurgy. Two class periods a week. Prerequisite: MEE 211; Corequisite: EGM 303.

MEE 303L. METALLURGY LABORATORY **ONE CREDIT HOUR**

Heat treatment, hardness testing, preparation of specimens for metallurgical examinations, use of the metallograph, examination of metallic structures, thermal analysis. One laboratory period a week. Corequisite: MEE 303.

MEE 305L. MECHANICAL ENGINEERING LABORATORY I **ONE CREDIT HOUR**

Basic experiments designed to teach theory, techniques of application and calibration of instruments for the measurement of pressure, temperature, volume, fluid flow and power. One laboratory period a week. Corequisite: PHY 208.

MEE 307. DYNAMICS OF MACHINERY **TWO CREDIT HOURS**

Analysis of displacement, velocity and acceleration including instant center method, relative velocity and relative acceleration method and theorem of Coriolis. Static and dynamic force analysis; work, energy and impulse. Study of balancing, gyroscopic effects, flywheels and governors. Three class periods a week. Prerequisites: EGM 301, MEE 202; Corequisites: MEE 301, MEE 307L.

MEE 307L. DYNAMICS OF MACHINERY LABORATORY **ONE CREDIT HOUR**

Laboratory exercises based on the foregoing principles. One laboratory period a week. Corequisite: MEE 307.

MEE 308. FLUID MECHANICS **THREE CREDIT HOURS**

Laws and theory relative to compressible and incompressible fluids; momentum relations for steady flow; resistance of immersed bodies; dynamic lift and propulsion; lubrication; pumps; turbines; fluid couplings; fluid power and control systems. Three class periods a week. Corequisite: MEE 301.

MEE 310. THERMAL ENGINEERING I **THREE CREDIT HOURS**

A general study of the equipment of steam and gas power plants, including history of development and study of modern plant facilities. Fuels, combustion

processes, energy balances and an introduction to nuclear engineering are covered. Three class periods a week. Prerequisites: CHM 124, CHM 124L, MEE 301, Corequisite: MEE 308.

MEE 406L. MECHANICAL ENGINEERING LABORATORY II TWO CREDIT HOURS
Tests of a boiler and steam turbine installation, steam engines, internal combustion engines and pumps and heat transfer devices. Two laboratory periods a week. Corequisite: MEE 417.

MEE 407-408. MACHINE DESIGN I AND II FOUR CREDIT HOURS
Application and extension of fundamental principles of scientific and engineering knowledge and mathematical techniques and analysis and design of machine members and mechanical systems. Development of creative ability and engineering judgment. Two class periods a week. Prerequisites: EGM 303, MEE 307; Corequisites: EGM 304, MEE 303, MEE 407L-408L.

MEE 407L-408L. MACHINE DESIGN LABORATORY I AND II TWO CREDIT HOURS
Design problems based on foregoing principles. One laboratory period a week. Corequisites: MEE 407-408.

MEE 410. HEAT TRANSFER THREE CREDIT HOURS
Laws of conduction, radiation and convection; heat transfer to boiling liquids and condensing vapors; steady state or variable flow; heat transfer. Three class periods a week. Prerequisites: MEE 301, MEE 308, MTH 341.

MEE 412L. FUELS AND LUBRICANTS ANALYSIS LABORATORY ONE CREDIT HOUR
Heating value of fuels; analysis of combustion products; determination of selected physical qualities of oils and lubricants; measurement of fluid flow. One laboratory period a week. Corequisite: MEE 302.

MEE 414. SEMINAR ONE CREDIT HOUR
Required of all junior and senior Mechanical Engineering students. One class period a week for Junior and Senior years.

MEE 417. THERMAL ENGINEERING II THREE CREDIT HOURS
A study of spark and compression ignition engines, reaction engines, gas turbine power plants and fuel requirements for each type power plant. Emphasis is placed upon the processes of combustion and energy release. Three class periods a week. Prerequisites: MEE 302, MEE 310; Corequisite: MEE 412L.

MEE 418. ADVANCED FLUID MECHANICS THREE CREDIT HOURS
Study of dynamics of fluid flow with emphasis on compressible fluids. Development of theorems of conservation of mass and momentum. Development of laws of thermodynamics as applied to fluid flow. One dimensional isentropic flow; normal shock; flow with friction; flow with heat transfer; generalized one dimensional flow. Three class periods a week. Prerequisites: MEE 301, MEE 308, MTH 341.

MEE 419. MECHANICAL ENGINEERING ANALYSIS **TWO CREDIT HOURS**

The application of mathematics to the solution of engineering problems. Two class periods a week. Prerequisites: EGM 303, MEE 307; Corequisites: MEE 410, MEE 418.

MEE 423. HEATING, AIR CONDITIONING AND REFRIGERATION**THREE CREDIT HOURS**

Determination of heating and cooling loads; warm air, steam and hot water heating systems. A study of measurement and control of temperature, humidity and purity of air. A study of refrigeration methods, processes and cycles used for domestic and commercial purposes. Three class period a week. Prerequisite: MEE 302.

*Mechanical Engineering Electives***MEE 416. MECHANICAL VIBRATIONS****TWO CREDIT HOURS**

Vibrations without damping; damped vibrations; vibration of systems with several degrees of freedom; vibration isolation and absorption; theory of balancing; mechanical and electrical models of vibration systems. Two class periods a week. Prerequisites: MEE 307, MTH 341.

MEE 416L. MECHANICAL VIBRATIONS LABORATORY**ONE CREDIT HOUR**

Laboratory exercises based on the foregoing principles. One laboratory period a week. Corequisite: MEE 416.

MEE 421. TURBO-MACHINERY**THREE CREDIT HOURS**

A study of the theory applicable to turbines, compressors and pumps. Main topics include: use of dimensional analysis concepts; energy transfer between fluid and rotor in centrifugal and axial flow turbines, compressors and pumps. Thermodynamic relationships in turbomachinery processes. Three class periods a week. Prerequisites: MEE 302, MEE 308.

MEE 431. ADVANCED DYNAMICS OF MACHINERY**THREE CREDIT HOURS**

Application of vector analysis to kinematics and dynamics. Advanced problems in mechanisms and dynamics of mechanical systems. Vibrations analysis. Three class periods a week. Prerequisites: EGM 303, MEE 307.

MEE 499. SPECIAL PROBLEMS IN MECHANICAL ENGINEERING**TWO TO SIX CREDIT HOURS**

Particular assignments to be arranged and approved by Chairman of the Department.

MEDICAL TECHNOLOGY (MET)

DR. ABRAMSON, CHAIRMAN (*St. Elizabeth Hospital*)DR. MCMILLAN, CHAIRMAN (*Good Samaritan Hospital*)DR. OOSTING, CHAIRMAN (*Miami Valley Hospital*)

The work of the senior year in Medical Technology is done at Miami Valley Hospital, St. Elizabeth Hospital or Good Samaritan Hospital. The courses are conducted by the respective hospital faculties.

MET 471. URINALYSIS AND RENAL FUNCTION THREE CREDIT HOURS

Instruction in various methods of performing these tests with interpretation based on anatomical and physiological functions of the organs. Repeated studies stress need for accuracy.

MET 472. HEMATOLOGY FIVE CREDIT HOURS

Instruction in various methods for studying the cellular components of the blood with practice to facilitate speed. Interpretation of findings based on anatomical and physiological functions of the cellular components of the blood.

MET 473. BACTERIOLOGY AND PARASITOLOGY SIX CREDIT HOURS

Instruction in various methods of bacteriological examination of various excreta or secretions of the human body; tests for reactions of the body to specific diseases; tests for and study of various parasites found as pathogenic organisms in the human body.

MET 474. CHEMISTRY AND GASTRIC ANALYSIS SEVEN CREDIT HOURS

Instruction in biological chemical analyses pertaining to blood and to various excreta of the human body.

MET 475. HISTOLOGY AND CYTOLOGY FOUR CREDIT HOURS

Instruction in various methods of preparation for sectioning and staining of tissues in preparation for microscopic examination.

MET 476. SEROLOGY AND SPINAL FLUIDS FOUR CREDIT HOURS

Instruction in the mechanism of and the performance of these tests, and some interpretation of the results.

MET 477. ELECTROCARDIOGRAPHY B.M.R. TWO CREDIT HOURS

The student familiarizes herself with the more commonly used machines, and masters the techniques of doing basal metabolisms and electrocardiograms.

MET 478. BLOOD BANK

TWO CREDIT HOURS

Instruction in blood typing and cross-matching of blood for administration of transfusions. Techniques in withdrawing blood from donors is included.

MILITARY SCIENCE AND TACTICS (MIL)

COLONEL CLOUGH, CHAIRMAN

Professor: CLOUGH

Assistant Professors: CANNON, CLARDY, HERLIHY, NOBLE, RAGAINS,
RAINEY, RIZZO, SAMPSON, SMITH, WHITMORE

Part-time Instructors: CREED, FEDKOW, HILL, JOHANNPETER, JONES,
MARTINEZ, MILLER, O'KEEFE, PERRY,
PIERCE, VICE

MIL 101-102. FIRST YEAR BASIC COURSE

FOUR CREDIT HOURS

Training is provided in those military subjects common to all branches of the Army, such as organization of the Army and the ROTC; American military history; individual weapons and marksmanship; school of the soldier and exercise of command.

Full Year Course, Each Year

MIL 201-202. SECOND YEAR BASIC COURSE

FOUR CREDIT HOURS

Continuation of the above course. Subjects include: crew-served weapons and gunnery; map and aerial photograph reading; school of the soldier and exercise of command. Prerequisite: MIL 101-102.

Full Year Course, Each Year

MIL 301-302. FIRST YEAR ADVANCED COURSE

FOUR CREDIT HOURS

Enrollment limited to students who have: 1) satisfactorily completed the Basic Course ROTC; 2) passed required physical examination; 3) been selected to continue military studies. Subjects include: small unit tactics and communications; organization, function and mission of the Arms and Services; military teaching methods; advanced training in leadership and command. Attendance at ROTC Summer Camp is required. Prerequisite: MIL 201-202.

Full Year Course, Each Year

MIL 401-402. SECOND YEAR ADVANCED COURSE

FOUR CREDIT HOURS

Continuation of the above course. Subjects include: logistics; operations; military administration and personnel management; service orientation. Commissions in the United States Army Reserve are awarded to qualified students. Branch in which commissioned is influenced by major course of study, demonstrated aptitude, and requirements of the Military Service. Prerequisite: MIL 301-302.

Full Year Course, Each Year

MUSIC (Mus)

MAURICE R. REICHARD, CHAIRMAN

Professor: REICHARD*Associate Professors:* TAGG, THOMAS, ZECH*Assistant Professors:* SCHNEIDER, WEAVER*Part-time Instructors:* BLAGG, ENOCH, HEISEY, KATZ, KLINE,
SR. M. EUNICE CHRISTOPHER, C.P.P.S.,
REGER, WIGGENHORN**MUS 102. MUSIC LITERATURE AND APPRECIATION** TWO CREDIT HOURS

A study of the masterpieces of music, with special reference to the listener; materials include compositions that have particular value for the classroom teacher. For students in elementary education. Not open to students who have credit for MUS 105. *Second Semester, Each Year*

MUS 105. MUSIC APPRECIATION TWO CREDIT HOURS

A study of the masterpieces of music, with special reference to the listener. Its aim is to develop a broader understanding and an intelligent discrimination of music. For music majors and students in Music Education. Not open to students who have credit for MUS 102. *Second Semester, Each Year*

MUS 111-112. FIRST YEAR HARMONY SIX CREDIT HOURS

Formation of Scales and Intervals; positions and progressions of triads, seventh chords and their inversions; simple modulations; voice leading. Prerequisite: Knowledge of the fundamentals of music and preparatory study of piano or other keyboard instrument. *Full Year Course, Each Year—Evening*

MUS 121-122. FIRST YEAR SIGHT SINGING AND EAR TRAINING

FOUR CREDIT HOURS

Acquiring of technique for hearing melodic, harmonic, and rhythmic elements of music as based on the styles of the 18th and 19th centuries; study of the types of triads and intervals derived from them; practice in rhythmic reading; harmonic, melodic and rhythmic dictation; modal scales, key feeling and modulation. Prerequisite: Knowledge of the fundamentals of music and preparatory study of the piano or other keyboard instrument. *—Evening*

MUS 141. INTRODUCTION TO MUSIC TWO CREDIT HOURS

Designed for the student with no previous experience with the theory of music. Reading and notation of music is developed along with key signatures and fundamental harmonic progression. Simple part-writing, easy sight singing and an introduction to the piano keyboard. Elementary ear training and dictation. *First Semester, Each Year*

MUS 151-152. FIRST YEAR THEORY**EIGHT CREDIT HOURS**

Formation of scales and intervals; positions and progressions of triads, seventh chords and their inversions; simple modulations; voice leading; acquiring of technique for hearing melodic, harmonic, and rhythmic elements of music as based on the styles of the 18th and 19th centuries; practice in rhythmic reading; harmonic, melodic and rhythmic dictation. Not open to students who have credit for MUS 111-112 or MUS 121-122. Prerequisite: Knowledge of the fundamentals of music and preparatory study of piano or other keyboard instrument.

*Full Year Course, Each Year***MUS 183. TEACHING MUSIC IN PAROCHIAL SCHOOLS—PRIMARY GRADES****THREE CREDIT HOURS**

Reading and notation of music is developed along with key signatures, sight singing in major and minor modes, ear training and dictation. Materials for grades 1, 2, 3, and their presentation.

MUS 211-212. SECOND YEAR HARMONY**SIX CREDIT HOURS**

Continuation of MUSIC 111-112. Further study of modulation; altered and mixed harmonies; melodic embellishment and figuration; analysis. Prerequisite: MUS 111-112.

*Full Year, Each Year—Evening***MUS 221-222. SECOND YEAR SIGHT SINGING AND EAR TRAINING****FOUR CREDIT HOURS**

Continuation of MUS 121-122. Addition of altered chords; practical application of non-harmonic tones in chorale-style harmonic dictation; contrapuntal dictation. Further practice in sight singing. Prerequisite: MUS 121-122.

*—Evening***MUS 231. TEACHING MUSIC IN GRADES 1, 2, AND 3****TWO CREDIT HOURS**

Materials to be used in music for the first three grades and their presentation; problems and possibilities of the primary school music program. Prerequisite: Knowledge of the fundamentals of music equivalent to MUS 141.

*First Semester, Each Year—Evening***MUS 232. TEACHING MUSIC IN GRADES 4, 5, AND 6****TWO CREDIT HOURS**

Materials to be used in music for the fourth, fifth and sixth grades and their presentation; problems and possibilities of the elementary school music program. Prerequisite: Knowledge of the fundamentals of music equivalent to MUS 141.

*Second Semester, Each Year—Evening***MUS 235-236. VOICE CLASS****FOUR CREDIT HOURS**

Discussion and demonstration of the principles of good singing; development of voice; vocal literature. The course may be repeated to a total of eight credit hours with permission of the instructor. Minimum of four students required for class. Prerequisite: Permission of the instructor. *Full Year Course, Each Year*

MUS 245-246. GREGORIAN CHANT**FOUR CREDIT HOURS**

An introduction to Gregorian Chant. Principles of free rhythm; modal char-

acteristics; fundamentals of choronomy. Offered only at Marianist College and at Regina Heights.
Full Year Course, Each Year

MUS 251-252. SECOND YEAR THEORY EIGHT CREDIT HOURS
Continuation of MUS 151-152; further study of modulation; altered and mixed harmonies; melodic embellishment and figuration; analysis; practical application of non-harmonic tones in chorale-style dictation; contrapuntal dictation. Further practice in sight singing. Not open to students who have credit for MUS 211-212 or MUS 221-222. Prerequisite: MUS 151-152 or equivalent.
Full Year Course, Each Year

MUS 283. TEACHING MUSIC IN PAROCHIAL SCHOOLS—
INTERMEDIATE GRADES THREE CREDIT HOURS
Continued note reading, modulation to dominant and subdominant, introduction to Gregorian Chant and to the piano keyboard, two and three-part singing. Materials for grades 4, 5, 6, and their presentation.

MUS 301. HISTORY OF MUSIC I THREE CREDIT HOURS
Development of music, instruments, forms, sacred and secular, from the earliest records through the Classical period. The relationship of music to the other arts and to broad movements in society and civilization.
First Semester, Each Year

MUS 302. HISTORY OF MUSIC II THREE CREDIT HOURS
Music of the nineteenth century; Romanticism; impressionism; nationalism; beginnings of the modern period. Relationship of music to social and cultural trends in Europe and America during the last one hundred and fifty years.
Second Semester, Each Year

MUS 303. MODERN MUSIC TWO CREDIT HOURS
A survey of contemporary music; its relationship to modernism in the other arts and to present-day society; American music.

MUS 311-312. EIGHTEENTH CENTURY COUNTERPOINT FOUR CREDIT HOURS
A study of the contrapuntal technique of the eighteenth century particularly as used in the instrumental works of Johann Sebastian Bach. Original compositions in the forms of the Invention and the Fugue. Prerequisite: MUS 251-252.
Full Year Course, 1963-1964

MUS 315. THE OPERA THREE CREDIT HOURS
A survey of operas written in classical, romantic, and modern periods; particular attention is given to works currently performed by major opera companies.

MUS 322. INSTRUMENTATION AND ORCHESTRATION THREE CREDIT HOURS
Scoring for string, reed, and brass instruments in small combinations and full orchestra and symphonic band; modern trends and techniques in arranging,

with emphasis on the needs of school music organizations. Prerequisite: Junior standing in music and permission of the instructor.

Second Semester, Each Year

MUS 325. STRINGED INSTRUMENTS

TWO CREDIT HOURS

Class instruction in stringed instruments; teaching of stringed instruments in the schools.

First Semester, Each Year

MUS 326. REED AND WOODWIND INSTRUMENTS

ONE CREDIT HOUR

Class instruction in reed and woodwind instruments; teaching of reeds and woodwinds in the schools.

First Semester, Each Year

MUS 327. BRASS INSTRUMENTS

ONE CREDIT HOUR

Class instruction in brass instruments; teaching brass instruments in the schools.

Second Semester, Each Year

MUS 328. PERCUSSION INSTRUMENTS

ONE CREDIT HOUR

Class instruction in percussion instruments; teaching of percussion instruments in schools.

Second Semester, Each Year—Evening

MUS 331. VOCAL MUSIC IN THE HIGH SCHOOL

TWO CREDIT HOURS

Materials used in the general music class and their presentation; glee club, choir, voice class, vocal ensembles. Prerequisite: Junior standing in Music Education.

First Semester, Each Year

MUS 332. THE SCHOOL BAND AND ORCHESTRA

TWO CREDIT HOURS

A general course in the organization and teaching of instrumental music in the schools; materials; survey of equipment and facilities necessary for the instrumental music program. Prerequisite: Junior standing in Music Education.

Second Semester, Each Year

MUS 335. MUSIC IN THE ELEMENTARY GRADES

THREE CREDIT HOURS

An introduction to the music education program in the elementary grades; materials and their presentation; problems and responsibilities of the music teacher. For music education students. Prerequisite: advanced standing in Music Education.

Second Semester, Each Year—Evening

MUS 341. CONDUCTING

THREE CREDIT HOURS

Methods of controlling tempo and the dynamic elements of musical performance groups; technique of the baton; techniques needed to secure interpretative values in vocal groups; rehearsal routine; practical experience in experimental campus organizations. Prerequisite: Junior standing in Music; permission of the instructor or chairman of the Music Department.

First Semester, Each Year

MUS 345. GREGORIAN CHANT PRINCIPLES

TWO CREDIT HOURS

A study of Gregorian notation, free rhythm and fundamentals of chironomy; the eight Church modes; the principal Masses of the Kyriale; for the student with little or no previous knowledge of the music of the Catholic Church.

Second Semester, Each Year—Evening

- MUS 383. TEACHING MUSIC IN PAROCHIAL SCHOOLS—
JUNIOR HIGH SCHOOL THREE CREDIT HOURS
Repertoire in three and four parts which exploits the musical skills developed in the first six grades. Procedure for handling the problem of the boy's changing voice.
- MUS 411-412. MUSICAL COMPOSITION FOUR CREDIT HOURS
Prerequisites: MUS 251-252, MUS 311-312 or MUS 417-418; other prerequisites to be determined in consideration of the aims and objectives of the student; permission of the instructor. *Full Year Course, Each Year*
- MUS 413-414. FORM AND ANALYSIS FOUR CREDIT HOURS
A study of the structural designs used in musical composition; a survey of all polyphonic, homophonic, and the larger forms. Prerequisite: MUS 151-152. *Full Year Course, Each Year*
- MUS 415-416. 19TH AND 20TH CENTURY STYLES FOUR CREDIT HOURS
Analysis of the harmonic and contrapuntal devices used after Bach with special emphasis on contemporary music and composers. Prerequisite: Junior standing in music; permission of the instructor. *Full Year Course, 1963-1964*
- MUS 417-418. SIXTEENTH CENTURY COUNTERPOINT FOUR CREDIT HOURS
A study of the medieval modes and the vocal polyphony of the motet and the Mass, up to and including five-part writing. Performance of sixteenth century polyphony and original student compositions. Prerequisite: Permission of instructor. *Full Year Course, 1962-1963*
- MUS 421-422. LABORATORY IN ORCHESTRATION FOUR CREDIT HOURS
Advanced work in orchestration; special problems in scoring for full orchestra, symphonic band or dance orchestra; transcription of orchestral works for band. Prerequisite: MUS 322, permission of instructor. *Full Year Course, Each Year*
- MUS 425-426. PROBLEMS IN INSTRUMENTAL MUSIC FOUR CREDIT HOURS
Practical problems and experience in instrumental music in actual teaching or other professional situations, approved by the Department of Music. Prerequisite: Senior standing in Music, or in Music Education; permission of the Chairman of the Department. *Full Year Course, Each Year*
- MUS 429. MARCHING BAND TECHNIQUES TWO CREDIT HOURS
Materials and methods of organization and instruction for the Marching Band. *Second Semester, Each Year—Evening*
- MUS 431-432. PROBLEMS IN VOCAL MUSIC FOUR CREDIT HOURS
Practical problems and experience in vocal music in teaching or other professional situations approved by the Department of Music. Prerequisites: Senior Standing in Music, or in Music Education; permission of the Chairman of the Department. *Full Year Course, Each Year*

APPLIED MUSIC

Credit for private instruction in piano, organ, violin, voice, stringed or wind instruments is allowed at the rate of two credit hours per lesson a week.

In order to register for credit toward a major in Applied Music, students must have studied sufficient preparatory material.

In piano, this should include ability to play major and minor scales in a moderate tempo in parallel motion, ability to play major and minor triads in arpeggio form in all keys. The student should have studied Hanon, Vol. I; Pischna; Czerny, Op. 299, or their equivalent; some of the Mozart and Haydn sonatas; Mendelssohn "*Songs Without Words*"; *Little Preludes and Fugues* or Two- and Three-part Inventions by Bach; "*Lyric Pieces*" by Greig, or their equivalent.

To study organ, the student should have previous study in piano amounting to the Two and Three-part Inventions by Bach; Sonata No. 1 in f Minor, Op. 2, by Beethoven; Nocturne in f Minor, Op. 55, by Chopin or their equivalent.

APPLIED MUSIC FEES:

*Piano, semester fee	\$20.00
*Organ, semester fee	20.00
*Voice, semester fee	20.00
Violin, semester fee	32.00 to 64.00
Reed, Woodwind Instruments, semester fee	40.00
Brass instruments, semester fee	32.00 to 40.00

*"Laboratory fees" (\$20.00) for instruction in piano, voice or organ apply to students in music or music education who are studying with full-time members of the Department of Music staff.

ENSEMBLES

Orchestra (Dayton Philharmonic Training Orchestra)

Band (Marching Band, Concert Band)

Choir (Mixed Chorus)

Glee Clubs (Men's Glee Club, Women's Glee Club)

Ensembles (Brass Choir, String, Woodwind Ensembles)

Credit may be earned in Orchestra, Band, Choir, and Glee Club by students enrolled in music courses. Credit will be allowed at the rate of one-half credit per semester in each organization, and is required of students majoring in Music or qualifying for degrees of Bachelor of Music or Bachelor of Science in Music Education. Students do not register for credit in musical ensembles and no

grades are given. Granting of such credit, however, will entail attendance at rehearsals and performances in conformity with policies applying to regular academic courses. The amount of credit required is to be determined by the needs and experience of the student, and/or State requirements in music education. Maximum: Toward Music major in B.A. degree, or as elective in other degrees: four credit hours; toward B.M. or B.S. in Music Education degrees, six credit hours. Prerequisite: permission of the Director.

NURSING (Nsg)

(MISS) ANN FRANKLIN, CHAIRMAN

Associate Professors: FRANKLIN, HERRIGAN

Part-time Instructors: MUIR, SILLS

All courses in nursing are restricted to registered professional nurses whose professional qualifications have been approved by the University of Dayton and the Department of Nursing.

Nsg 317. CURRENT TRENDS IN AMERICAN NURSING THREE CREDIT HOURS

This course is designed to enable the student to develop an appreciation of the goals and trends in nursing in relation to its historical and philosophical background. Correlation is made with social and cultural movements in order that the student may appreciate the interaction of nursing and other social forces.

Each Semester, Each Year

Nsg 340. PRINCIPLES OF TEACHING IN NURSING THREE CREDIT HOURS

This course is concerned with the nurse as a teacher of health. Communication skills and principles underlying learning and teaching are presented. Concepts of health guidance, and individual and group teaching methods are developed through the use of individual projects, group projects, discussion and role-playing.

Each Semester, Each Year

Nsg 350. COMPREHENSIVE MEDICAL-SURGICAL NURSING

THREE CREDIT HOURS

Principles of medical-surgical nursing are considered with special emphasis on total patient care. Opportunity is given the student to develop nursing plans for selected medical-surgical patients which include measures for meeting the socio-psychologic, mental, emotional, spiritual and physical needs of the patient, including health teaching and rehabilitation. *Second Semester, Each Year*

Nsg 350L. COMPREHENSIVE MEDICAL-SURGICAL NURSING LABORATORY

ONE CREDIT HOUR

Clinical nursing practice and observation in correlation with Nsg 350. Four hours a week. *Second Semester, Each Year*

NSG 360. COMPREHENSIVE MATERNAL-CHILD NURSING THREE CREDIT HOURS

Through a family centered approach this course is designed to aid the student in developing a deeper knowledge and appreciation of the total aspects of maternal-child health. Through conferences, projects and group discussion students have an opportunity to observe and participate with other health disciplines in a community plan of maternal-child care.

First Semester, Each Year

NSG 360L. COMPREHENSIVE MATERNAL-CHILD NURSING LABORATORY

ONE CREDIT HOUR

Clinical nursing practice and observation in correlation with NSG 360. Four hours a week.

First Semester, Each Year

NSG 370. COMPREHENSIVE PSYCHIATRIC NURSING THREE CREDIT HOURS

Study of the principles and concepts of psychiatric nursing. Consideration is given to the causes, management and rehabilitation of psychiatric conditions with particular emphasis on mental hygiene, the preventive aspects and their application to all fields of nursing.

First Semester, Each Year

NSG 370L. COMPREHENSIVE PSYCHIATRIC NURSING LABORATORY

ONE CREDIT HOUR

Clinical nursing practice and observation in correlation with NSG 370. Four hours a week.

First Semester, Each Year

NSG 420. PRINCIPLES OF ADMINISTRATION

THREE CREDIT HOURS

This course presents basic principles in nursing organization, administration and supervision. Through class discussion and projects the application of these principles is made to specific areas of nursing.

Each Semester, Each Year

NSG 491. PUBLIC HEALTH SCIENCE AND ADMINISTRATION

THREE CREDIT HOURS

This course includes epidemiology, preventive medicine, biostatistics and aspects of the administration of public health services. *Second Semester, 1962-1963*

NSG 492. PUBLIC HEALTH NURSING PRINCIPLES

THREE CREDIT HOURS

This course is designed to assist the student to further develop an appreciation and understanding of public health nursing. It includes the historical development, organization and administration of public health nursing, with special consideration to the functions and responsibilities of the nurse in family health services.

Second Semester, Each Year

NSG 493. PUBLIC HEALTH NURSING FIELD WORK

FOUR CREDIT HOURS

Includes health supervision of infants, preschool and school children, and adults. Observation and practice is provided to assist the nurse to gain increasing responsibility for health guidance with selected families in the community and to apply concepts of management and the team approach in a practice area. The experience is provided in a generalized public health nursing service.

To Be Announced

NSG 498. SENIOR SEMINAR

THREE CREDIT HOURS

Through senior conferences consideration is given to special projects and/or problems in the student's major area of interest. *Second Semester, Each Year*

PHILOSOPHY (PHL)

REV. EDMUND L. RHODES, S.M., CHAIRMAN

Professors: BAKER, ELBERT*Associate Professors:* HARKENRIDER, RHODES, SUMMERS*Assistant Professors:* BLOEMER, DIESKA, DOMBRO*Instructors:* BEDARD, CHRISMAN, HICKEY*Part-time Instructors:* HERLIHY, VIGLE

Courses required for a major: PHL 103, 207, 303, 306, 402, 403, 404, 406, 434, elective.

Courses required for a minor: PHL 103, 207, 306, 402, 403, 406 (Cath.), 404 (Non-Cath.).

Students should consult the chairman concerning electives.

Logic and philosophical psychology are prerequisites for all 300 and 400 courses.

PHL 101-102. LOGIC

FOUR CREDIT HOURS

See description for PHL 103. Offered only at Regina Heights.

PHL 103. LOGIC

THREE CREDIT HOURS

This course is designed to introduce the student to the science of logic and to help him to acquire habits of orderly thinking by giving him a working knowledge of the correct methods of defining and dividing concepts, analyzing propositions and their immediate implications and applying the rules for valid syllogistic inference. The student is also introduced to the general principles underlying induction and scientific methods, and to the more common fallacies of both deduction and induction. Required of all freshmen.

Each Semester, Each Year

PHL 207. PHILOSOPHICAL PSYCHOLOGY

THREE CREDIT HOURS

The nature of life in general and the essential difference between living and non-living beings; the plant soul and its powers; the brute animal soul and its powers; sensory and rational knowledge and appetite in man; the human intellect and will; intellectual and moral habits; the nature, origin and immortality of the human soul. Required of all sophomores.

Each Semester, Each Year

PHL 303. COSMOLOGY

THREE CREDIT HOURS

The nature and properties of mobile being; the hylomorphic theory of bodies; nature of quantity; the analysis of physical motion; qualities of bodies; space and time; origin and destiny of the universe.

Each Semester, Each Year

PHL 306. EPISTEMOLOGY

THREE CREDIT HOURS

A critical examination of the validity of sensory and intellectual knowledge; the problem of the trustworthiness of the senses; the problem of the universal; an appraisal of the claims made by various forms of skepticism, idealism and subjectivism.

Each Semester, Each Year

PHL 402. GENERAL METAPHYSICS

THREE CREDIT HOURS

An analysis of real being in terms of its principles and properties. The analogy of being; the transcendental attributes of being. The application of the theory of act and potency to the problems of essence and existence, substance and accident, the one and the many, causality; special classes of being. Prerequisite: PHL 306.

Each Semester, Each Year

PHL 403. NATURAL THEOLOGY

THREE CREDIT HOURS

The existence and nature of God as discoverable by natural reason; the divine causality; the relation of the universe to God; the problem of evil; criticism of the arguments advanced by the atheist and the agnostic. Prerequisite: PHL 402. Required of all non-Catholics.

Each Semester, Each Year

PHL 404. ETHICS

THREE CREDIT HOURS

Happiness and the ultimate end of man; the structure of the human act; norms and the determinants of morality; eternal and natural law; conscience; moral virtues; rights and duties. The application of moral principles to man as an individual and as a member of domestic and civil society, national and international. Required of all non-Catholics.

Each Semester, Each Year

PHL 406. HISTORY OF GREEK PHILOSOPHY

THREE CREDIT HOURS

A survey of the beginnings and later development of philosophical speculation by the Greek philosophers from Thales to Plotinus, with special emphasis on those doctrines of Plato and Aristotle which became incorporated in later Christian thought.

First Semester, 1963-1964

PHL 407. HISTORY OF MEDIEVAL PHILOSOPHY

THREE CREDIT HOURS

A survey of the course of philosophical thought from the Patristic Period to the end of the Scholastic era in the 14th century, with special emphasis on the great syntheses of Christian wisdom developed in the 13th century.

Second Semester, 1963-1964

PHL 408. HISTORY OF MODERN PHILOSOPHY

THREE CREDIT HOURS

A consideration of the rise and development of modern philosophic thought from the Renaissance to the 20th century. The nature of this development is revealed by analyzing the theories of the principal figures in this period, from Descartes and Hobbes to Hegel.

First Semester, 1962-1963

PHL 410. HISTORY OF POLITICAL PHILOSOPHY

THREE CREDIT HOURS

A study of the principal political opinions of the Western philosophers drawn from readings in the sources. The investigation begins with the political doctrines of Plato and Aristotle in ancient Greek philosophy, and continues

through the leading Roman and Medieval thinkers, extending to an analysis of the development of the modern political philosophies. Prerequisite: Permission of Chairman. Required of all political science majors.

First Semester, Each Year

PHL 413. PHILOSOPHY OF THE STATE

THREE CREDIT HOURS

A consideration, in the light of Christian thought, of the nature, origin, end, and functions of the state; the nature, forms, and functions of government; law and political authority; the rights and duties of citizens; patriotism, nationalism, and internationalism; the various kinds of political freedom.

Second Semester, Each Year

PHL 430. PHILOSOPHY OF PLATO

THREE CREDIT HOURS

The purpose of the course is to give an insight into the philosophy of Plato by reading, analyzing and commenting on four of Plato's dialogues: *Phaedo*, *Symposium*, *Protagoras* and the *Republic*.

Summer School, 1963

PHL 432. PHILOSOPHY OF ARISTOTLE

THREE CREDIT HOURS

Readings and classroom discussion of selections from the basic works of Aristotle, including the *Physics*, *Metaphysics*, *Ethics* and *Politics*.

Second Semester, 1963-1964

PHL 434. ST. THOMAS AQUINAS

THREE CREDIT HOURS

This course offers St. Thomas' teachings on God, Creation, Man, Law, Grace, Habit, Virtue and kindred subjects, derived from the *Summa Theologica* and the *Summa Contra Gentiles*.

First Semester, 1963-1964

PHL 450. PROBLEMS IN PHILOSOPHY

THREE CREDIT HOURS

The objective of this seminar is to gain insight into the perennial and contemporary problems of philosophy. Permission to take this course must be obtained from the instructor.

Second Semester, 1962-1963

HEALTH AND PHYSICAL EDUCATION (PHE)

HENRY L. FERRAZZA, CHAIRMAN

Associate Professors: BAUJAN, HERRIGAN

Assistant Professors: BLACKBURN, DREES, FERRAZZA, FORT,
LAVANCHE

Instructor: ZAJDEL

Part-time Instructors: DOUGLAS, SHARP

PHE 101. PHYSICAL EDUCATION

ONE-HALF CREDIT HOUR

The teaching of fundamental skills in various individual sports and recreational activities, while aiming to promote vigorous health through large-muscle activities. Required of freshman men and women. Two activity periods a week.

First Semester, Each Year, for Women; Each Semester, Each Year, for Men

PHE 102. PHYSICAL EDUCATION**ONE-HALF CREDIT HOUR**

Continuation of PHE 101. Required of freshman women. Two activity periods a week.

Second Semester, Each Year

PHE 103. HEALTH**ONE CREDIT HOUR**

The course aims to establish and promote individual health and proper health habits through a study of the fundamentals of physical well being. Required of freshman men and women. One lecture period a week. *First Semester, Each Year*

PHE 104. HEALTH**ONE CREDIT HOUR**

Continuation of PHE 103. For freshman women. One lecture period a week.

Second Semester, Each Year

PHE 107-108. PHYSICAL EDUCATION ACTIVITIES (WOMEN)**TWO CREDIT HOURS**

Fundamentals of physical education activities. Development of skills necessary to good teaching in archery, badminton, basketball, bowling, fencing, golf, hockey, softball, swimming, tennis, and volleyball. Four activity periods a week.

Full Year, 1962-1963

PHE 119. THEORY AND TECHNIQUES OF OFFICIATING (MEN)**ONE CREDIT HOUR**

A development of knowledge of rules of football, basketball, baseball, and track, and the application of the knowledge to actual game situations. Students are required to officiate intramural sports. Two lab periods a week.

First Semester, Each Year

PHE 120. THEORY AND TECHNIQUES OF OFFICIATING (MEN)**ONE CREDIT HOUR**

Continuation of PHE 119. Two lab periods a week.

Second Semester, Each Year

PHE 201-202. PHYSICAL EDUCATION (WOMEN)**ONE CREDIT HOUR**

Continuation of PHE 101-102. Two activity periods a week.

Full Year Course, Each Year

PHE 205-206. HUMAN ANATOMY AND PHYSIOLOGY**SIX CREDIT HOURS**

(See BIO 205-206)

Full Year Course, Each Year

PHE 207-208. TECHNIQUES OF OFFICIATING (WOMEN)**TWO CREDIT HOURS**

Rules and techniques of officiating hockey, volleyball, basketball, tennis, and softball. Two lab periods a week.

Full Year, 1963-1964

PHE 212. COACHING BASEBALL AND TRACK**TWO CREDIT HOURS**

One-half the time will be spent on the theory and practice of each sport. Form and not athletic achievement will be stressed considering the abilities to be ac-

quired. All events and positions will be given due consideration. Two lecture periods a week.
Second Semester, Each Year

PHE 213. PRINCIPLES OF PHYSICAL EDUCATION TWO CREDIT HOURS
A study of the aims, scope, and biological aspects of physical education with special treatment of its place in education. Two lecture periods a week.
First Semester, Each Year

PHE 216. METHODS IN MINOR SPORTS (MEN) TWO CREDIT HOURS
This course deals with instruction in the skills and methods in some of the so-called minor sports such as soccer, speedball, volleyball, touch football, archery. One lecture and two activity periods a week.
Each Semester, Each Year

PHE 217. TEAM SPORTS (WOMEN) THREE CREDIT HOURS
Skills and methods needed to teach hockey, soccer, speedball, volleyball, softball, and basketball. Two lecture and two activity periods a week.
First Semester, 1963-1964

PHE 219. COMMUNITY HYGIENE TWO CREDIT HOURS
Health and prevention of disease in the family, school, and community; relation of community health to disease control; important communicable diseases and their control. Two lecture periods a week.
First Semester, Each Year

PHE 245. MODERN DANCE (WOMEN) TWO CREDIT HOURS
Techniques involved in modern dance with emphasis on composition. The study of dance as an art. Offered every other year. One lecture and two activity periods a week.
First Semester, 1962-1963

PHE 250. PRINCIPLES AND ADMINISTRATION OF HEALTH EDUCATION TWO CREDIT HOURS
Problems related to the organization and administration of the School Health education including the setting up of a school health council and the school community relationships. Selling the program of Health Education to the community. Two lecture periods a week.
Second Semester, Each Year

PHE 308. TEACHING OF HEALTH THREE CREDIT HOURS
Application of principles of methodology to health education in the elementary and secondary schools. Develops standards and techniques for selecting suitable source material to be used in health teaching. Application of scientific knowledge to the solution of school health problems. Observation of teaching in area schools required for completion of course. Three lecture periods a week.
First Semester, Each Year

PHE 309. TEACHING OF PHYSICAL EDUCATION THREE CREDIT HOURS
Application of principles of methodology to physical education; analysis and study of the techniques of measurement devices for grading and classifying students, program building; tests and measurements. Practice will be given

in leadership in physical education activities. Observation of teaching in area schools required for completion of course. Three lecture periods a week.

Second Semester, Each Year

PHE 311. COACHING FOOTBALL AND BASKETBALL TWO CREDIT HOURS

Study of theory, strategy, generalship, styles of offense and defense, methods of organizing practice and handling men. Demonstration and practice in fundamentals for all positions. Two lecture periods a week. *First Semester, Each Year*

PHE 326. GAMES AND FUNDAMENTAL RHYTHMS THREE CREDIT HOURS

Learning game activities through participation and teaching; relating the needs and abilities of children and youth to the games program. Teaching of fundamental rhythms and folk dancing in the elementary and secondary schools. Two lecture and two activity periods a week. *Second Semester, Each Year*

PHE 330. RECREATIONAL ACTIVITIES (MEN) TWO CREDIT HOURS

Teaching of the skills and methods of presenting individual activities such as golf, badminton, bowling, handball, etc. Four activity periods a week.

Each Semester, Each Year

PHE 334. INDIVIDUAL SPORTS (WOMEN) THREE CREDIT HOURS

Skills and methods needed to teach archery, bowling, badminton, tennis, golf and fencing. Two lecture and two activity periods a week.

Second Semester, 1962-63

PHE 335. CARE AND PREVENTION OF INJURIES THREE CREDIT HOURS

Diagnosis, interpretation, and treatment of injuries. Includes first aid for injuries in the home, school, and community. Qualifying for the Red Cross First Aid Instructor's Certificate is a requirement of the course. Three lecture periods a week.

Second Semester, Each Year

PHE 346. PROBLEMS IN PHYSICAL EDUCATION FOR WOMEN

TWO CREDIT HOURS

An investigation of the problems involved in teaching and administering women's physical education, cheerleading, posture; policies, public relations, types of competition; award systems, and sponsorship of athletic associations. Two lecture periods a week.

First Semester, 1963-1964

PHE 347. CAMPING AND PLAYGROUNDS

TWO CREDIT HOURS

Study of facilities, programs and leadership of summer camps and playgrounds. Camp standards, program making and cabin counseling will be studied. Two lecture periods a week.

Second Semester, Each Year

PHE 402. ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION

TWO CREDIT HOURS

Problems of organization and administration of physical education with added emphasis on the supervision of required and elective courses, intramural athletics and interschool athletics. Two lecture periods a week.

First Semester, Each Year

PHE 405. TESTS AND MEASUREMENTS IN PHYSICAL EDUCATION

TWO CREDIT HOURS

Critical analysis of existing testing methods in physical education. Study of current tests from the practical and theoretical viewpoint. The use of tests in the physical education program. Application of the principles of test construction to specific problems in physical education. Two lecture periods a week.

First Semester, Each Year

PHE 407. MODERN PROBLEMS IN PUBLIC HEALTH

TWO CREDIT HOURS

Detailed study of current public health problems; introduction to seminar study of preventive medicine, epidemiology and community organization for health. Special emphasis on prevention of water and milk borne epidemics; current cultural emphasis on depressants; public health efforts to control the leading causes of death. Two lecture periods a week.

First Semester, Each Year

PHE 408. PHYSIOLOGY OF EXERCISE

TWO CREDIT HOURS

Detailed study of the effects of exercise on the respiratory, circulatory, and muscular systems. Specific consideration will be given to the physiology of fatigue, staleness, training, and conditioning. Two lecture periods a week.

First Semester, Each Year

PHE 409. CORRECTIVE PHYSICAL EDUCATION

TWO CREDIT HOURS

This course deals with the corrective or remedial measures to be used in providing proper exercises and procedures in handling individuals with handicapped conditions. Two class periods a week. Prerequisite: PHE 408.

Second Semester, Each Year

PHE 413. HEALTH IN ELEMENTARY SCHOOL

THREE CREDIT HOURS

This course is designed to help teachers understand the health services the school should provide, the kind of physical and social environment essential for maintaining and promoting the growth and well-being of the elementary student, and the nature of the problems which should be studied in health and other related fields. Includes also first aid instruction. Observation in area schools required. Three lecture periods a week.

First Semester, Each Year

PHE 414. PHYSICAL EDUCATION IN ELEMENTARY SCHOOL

THREE CREDIT HOURS

Designed to equip the classroom teacher with methods and activities for conducting an educational program of physical and recreational skills. Emphasis will be on games, relays, skill drills, and lead-up activities; creative rhythms; folk and square dancing; elementary stunts; development of a progressive curriculum in physical education. Observation in area schools required. Three class periods a week.

Second Semester, Each Year

PHE 433. PHYSICAL EDUCATION ACTIVITIES (MEN)

THREE CREDIT HOURS

Conditioning, tumbling, horses, bucks, low and high bar, pyramid building,

wrestling, trampoline, stunts with and without equipment. Two lecture and two activity periods a week.

Each Semester, Each Year

PHE—CORRECTIVE THERAPY CLINICAL TRAINING

NO CREDIT

Corrective therapy clinical training program is offered students who major in health and physical education. Involves 250 clock hours of directed clinical training at the Veterans Administration Center, Dayton. Satisfactory completion of the program qualifies the student for national certification as a Corrective Therapist. Passing the A.M.A. examination required for national certification. Offered continuously through each semester and in the summer.

PHYSICS (PHY)

DR. LEONARD A. MANN, S.M., ACTING CHAIRMAN

Professors: BUECHE, GRANDY, MANN, RAMBAUSKE

Associate Professors: MARTIN, SCHICK

Assistant Professors: CRIVELLO, HIEBER

Part-time Instructors: ENGLER, KESTER, ULLMAN

A major in physics consists of 24 credit hours, exclusive of PHY 206-207-208. A student intending to specialize in this field should consult with the chairman of the department to arrange his courses.

PHY 105. THE PHYSICAL SCIENCES

FOUR CREDIT HOURS

Applies the fundamental principles of physics to such fields as physics, chemistry, astronomy, meteorology. Endeavors to give the student a basic background and broad understanding of those phases of man's physical environment that are of everyday interest and usefulness. Four class periods per week.

Each Semester, Each Year

PHY 151. GENERAL PHYSICS

THREE CREDIT HOURS

This course is designed to give (non-science) students an appreciation of physics, and approaches mechanics and heat from a point of view with a minimum of mathematics. Three class periods per week. Prerequisite: Elementary algebra.

First Semester, Each Year

PHY 152. GENERAL PHYSICS

THREE CREDIT HOURS

This course is a continuation of PHY 151 and includes electricity, light and sound with some discussion of the most recent developments of physics. Three class periods per week. Prerequisite: PHY 151.

Second Semester, Each Year

PHY 201. GENERAL PHYSICS

THREE CREDIT HOURS

This course, especially adapted to the needs of pre-medical and pre-dental students, covers the field of mechanics and heat. Three class periods per week.

First Semester, Each Year

PHY 201L. GENERAL PHYSICS LABORATORY ONE CREDIT HOUR

Accompanying laboratory course to PHY 201. Designed to verify and apply theory, and to teach scientific techniques. One two-hour period per week.

First Semester, Each Year

PHY 202. GENERAL PHYSICS THREE CREDIT HOURS

A continuation of PHY 201, covering the fields of magnetism, electricity, sound and light. Three class periods per week. Prerequisite: PHY 201.

Second Semester, Each Year

PHY 202L. GENERAL PHYSICS LABORATORY ONE CREDIT HOUR

A continuation of PHY 201L, with experiments in magnetism, electricity, sound and light. One two-hour period per week. Prerequisite: PHY 201L.

Second Semester, Each Year

PHY 206, 207, 208. GENERAL PHYSICS NINE CREDIT HOURS

This is a three-semester course in the fundamentals of physics intended for students preparing to major in chemistry, engineering, mathematics or physics. Three periods per week. Co-requisite: MTH 216 or 201.

Each section taught each semester

PHY 206L, 207L, 208L. GENERAL PHYSICS LABORATORY THREE CREDIT HOURS

These courses are required concurrently with the lecture courses PHY 206, 207, 208. One two-hour period per week.

Each section taught each semester

PHY 301. THERMODYNAMICS THREE CREDIT HOURS

The general laws of the thermodynamics; entropy, isothermal and adiabatic processes, the cycles; flow of fluids. Three class periods per week. Prerequisites:

MTH 218; PHY 208. *First Semester, Each Year*

PHY 303. INTERMEDIATE MECHANICS I THREE CREDIT HOURS

The fundamental concepts of mechanics are discussed and applied to physical systems. Vector notation is employed. The topics covered include virtual work, kinematics, and particle dynamics. Three class periods per week. Prerequisites:

PHY 206, 207, 208, MTH 218. *First Semester, Each Year*

PHY 304. INTERMEDIATE MECHANICS II THREE CREDIT HOURS

A continuation of PHY 303. Topics discussed include the dynamics of systems of particles, rigid bodies, central forces, accelerating systems, generalized coordinates, and the mechanics of continua. Three class periods per week. Prerequisites: PHY 303.

Second Semester, Each Year

PHY 311. ATOMIC PHYSICS THREE CREDIT HOURS

This course treats the electron, photoelectric and thermionic emission of electrons, atomic and molecular structure and spectra, X-rays, and an introduction to the quantum theory and wave mechanics. Three class periods per week.

Prerequisites: PHY 206, 207, 208. *First Semester, Each Year*

PHY 313-313L. ELECTRICAL MEASUREMENTS (ELE 307-307L)**FOUR CREDIT HOURS**

A lecture and laboratory course. Prerequisite: PHY 207.

*Each Semester, Each Year***PHY 314. ELECTRONICS IN PHYSICAL RESEARCH****THREE CREDIT HOURS**

Treatment of terminal behavior of vacuum tube and semi-conductor devices, and the application of these devices to control instrumentation problems in the physical sciences. Basic rectifier, amplifier, oscillator, control and indicator circuits are considered, along with the application of these circuits to laboratory devices such as vacuum tube voltmeters oscilloscopes, particle counters, feedback amplifiers, magnetic recorders, computer elements, and other circuits appearing in the current literature. Prerequisite: PHY 208, MTH 301 or 341. Corequisite: PHY 314L.

PHY 314L. ELECTRONICS IN PHYSICAL RESEARCH LABORATORY**ONE CREDIT HOUR**

A prescribed set of thirty experiments concerned with the building and testing of basic electron tube and transistor circuits is followed, and in addition each student completes an individual advanced electronic project in some area of special interest to him. Corequisite: PHY 314.

PHY 321. NUCLEAR PHYSICS**THREE CREDIT HOURS**

Primarily a descriptive course introducing nuclear physics. It discusses radioactivity, particle accelerators, the interaction of nuclear radiation with matter, particle detection, fission, and cosmic rays from the phenomenological point of view. Three class periods a week. Prerequisites: MTH 218, PHY 206, 207, 208.

*Second Semester, Each Year***PHY 351. INTRODUCTION TO ASTRONOMY****THREE CREDIT HOURS**

History of astronomy, apparent motions of celestial bodies, coordinate systems, Kepler's laws, Gaussian orbital elements, the planetary system, photometry, black body radiation, Wien's and Planck's laws, star magnitudes, colorimetry, spectra and spectral classifications, proper motions, binary and multiple systems, variable stars, novae and gaseous nebulae, star clusters, cosmic dust, spiral nebulae, description of the structure of the Universe. Three class periods per week. Prerequisites: MTH 202 or MTH 218, PHY 206, 207, 208.

*First Semester, 1962-1963***PHY 402. WAVE THEORY****THREE CREDIT HOURS**

The general theory of wave motion is formulated with applications to mechanical, thermal, acoustical, electrical and optical systems. More general considerations outline the foundations of wave mechanics. Fourier analysis is developed, as well as Bessel functions and Legendre polynomials. Three class periods per week. Prerequisites: MTH 301, PHY 206, 207, 208. *First Semester, 1962-1963*

PHY 403. GEOMETRICAL OPTICS**THREE CREDIT HOURS**

This course discusses the rectilinear propagation of light, ray tracing, and first

order theory, optical systems and their aberrations, theory of aperture stops, image brightness and photometry. Three class periods per week. Prerequisites: MTH 201, 202, PHY 206, 207, 208.

PHY 404. PHYSICAL OPTICS

THREE CREDIT HOURS

This course discusses the wave theory of light, interference, diffraction, dispersion, polarization, velocity of light and electromagnetic theory of light. Three class periods per week. Prerequisites: MTH 218, PHY 206, 207, 208.

Second Semester, Each Year

PHY 408. ADVANCED ELECTRICITY AND MAGNETISM I THREE CREDIT HOURS

A study of the electric field, electrostatic energy and capacitance, conduction, magnetic fields and magnetic materials. The Maxwell equations and plane electromagnetic waves are considered. Three class periods per week. Prerequisites: PHY 206, 207, 208, MTH 431 or 342. *First Semester, Each Year*

PHY 409. ADVANCED ELECTRICITY AND MAGNETISM II THREE CREDIT HOURS

A continuation of PHY 408. This course is designed especially for students majoring in Physics. It considers alternating current theory, Kirchoff's laws, the theory of precision instruments, bridges, galvanometers, and magnetic circuits. Prerequisite: PHY 408. *Second Semester, Each Year*

PHY 411. THEORETICAL PHYSICS

THREE CREDIT HOURS

LaPlace's equation, coordinate systems, vectors, LaGrange's equations. Hamilton's equation, heat flow, Schrodinger's equation and the hydrogen atom. Three class periods per week. Prerequisites: PHY 206, 207, 208, 303, MTH 301.

First Semester, 1963-1964

PHY 420. INTRODUCTION TO SOLID STATE

THREE CREDIT HOURS

A general classification of solids is followed by a definition of crystals and crystal structures, and a survey of lattice properties. The free electron theory and band theory of solids, semiconductors and crystal imperfections are discussed. Three class periods per week. Prerequisite: PHY 311.

Second Semester, 1963-1964

PHY 431. ADVANCED LABORATORY I

TWO CREDIT HOURS

A laboratory course in which the student performs experiments in optics, mechanics, electricity and magnetism, and modern physics at a level beyond that of the elementary laboratory. He uses interferometers, spectrometers, measures absorption of light and x-rays, the charge on the electron and e/m of the electron, learns how to use the cathode ray oscilloscope and does other experiments with high grade apparatus. One four-hour period per week. Corequisite: an advanced course in physics.

First Semester, Each Year

PHY 432. ADVANCED LABORATORY II

TWO CREDIT HOURS

A continuation of PHY 431 but may be taken without having had PHY 431. One four-hour period per week. Corequisite: an advanced course in physics.

Second Semester, Each Year

PHY 433. ADVANCED LABORATORY III**TWO CREDIT HOURS**

A continuation of PHY 431, 432, but may be taken without having had either. One four-hour period per week. Corequisite: an advanced course in physics.

Each Semester, Each Year

PHY 440. X-RAYS**THREE CREDIT HOURS**

This course deals with the nature, production and properties of x-rays and their interaction with matter. Some consideration is also given to applications and x-ray spectroscopy. Three class periods per week. Prerequisites: MTH 218, PHY 206, 207, 208. Recommended previous course: PHY 311.

Second Semester, 1963-1964

PHY 450. ADVANCED ASTRONOMY**THREE CREDIT HOURS**

Orbits of planets, comets, satellites, elements of celestial mechanics, accuracy of observations, spectroscopic theory and analysis, ionization theory, radiation transfer, nuclear reactions, atmospheres and star models, selected chapters about modern astrophysics and the structure of the Universe. Three class periods per week. Prerequisites: MTH 301, PHY 301, 303, 311, 351.

Second Semester, 1962-1963

PHY 460. SEMINAR

Weekly meetings of students and members of the staff for the presentation of papers by students and lectures by invited physicists. One class period per week for Junior and Senior years.

PHY 499. SPECIAL PROBLEMS**ONE-THREE CREDIT HOURS**

Laboratory or library work in various topics of physics. Given with the permission of the chairman of the department.

Every Semester

PHY 505. MODERN PHYSICS FOR ENGINEERS**THREE CREDIT HOURS**

This is a course designed to give the engineer a greater familiarity with selected topics in physics. The topics include special relativity, atomic and molecular structure and spectra introduction to the solid state, the atomic nucleus and radioactivity, elements of plasma physics.

Offered as Needed

POLITICAL SCIENCE (POL)

BRO. ALBERT H. ROSE, S.M., CHAIRMAN

Professor: ROSE

Associate Professors: LIEBLER, SUMMERS

Instructors: BIGGS, HURLEY

Required courses for a major in Political Science are: POL 201, 302, 314, 412, 417, (Take PHL 410), 421.

POL 201. AMERICAN GOVERNMENT—NATIONAL**THREE CREDIT HOURS**

A functional study of the origin, organization, and operations of the national

government with a rapid survey of the American system of state and local governments. Not open to freshmen. *Each Semester, Each Year*

POL 301. INTRODUCTION TO LAW **THREE CREDIT HOURS**

This course, open only to prospective law students beyond the freshman year. Designed to bring the student into personal relationship with the profession of Law. Guest lecturers from the Bar Association, the Courts, and Schools of Law. Visits to the Courts. *Second Semester, Each Year*

POL 302. OHIO GOVERNMENT-STATE AND LOCAL **THREE CREDIT HOURS**

An examination of the state, and local governments of Ohio with special reference to Montgomery County and the City of Dayton. *Each Semester, Each Year*

POL 303. GOVERNMENT OF URBAN AREAS **THREE CREDIT HOURS**

A study of the organization of local governments in urban areas of the United States. Special emphasis on the adequacy of municipal and county governments to perform essential services in metropolitan areas. *First Semester, Each Year*

POL 304. COMPARATIVE GOVERNMENT **THREE CREDIT HOURS**

A comparison of the governments of the United Kingdom, France, Germany, USSR, and lesser powers in their historical and modern setting. Party systems and the organization and operation of legislative, administrative and judicial institutions. *First Semester, 1963-1964*

POL 306. INTERNATIONAL LAW **THREE CREDIT HOURS**

An analysis of the development of international law, its theory and application to the various phases of international relations. *First Semester, Each Year*

POL 310. POLITICAL PARTIES **THREE CREDIT HOURS**

A descriptive analysis of the nature and interaction of parties, pressure groups, and the functioning of public opinion on the national and state level. *First Semester, Each Year*

POL 312. NATIONAL LEGISLATIVE PROCESS **THREE CREDIT HOURS**

A detailed treatment of the organization, powers, functions, procedures of, and influences of Congress on federal legislation. *Second Semester, 1963-1964*

POL 314. INTERNATIONAL RELATIONS **THREE CREDIT HOURS**

An exposition of the dynamic forces influencing nations in their conduct of world affairs. *Each Semester, Each Year*

POL 315. THE UNITED NATIONS IN ACTION **THREE CREDIT HOURS**

A study of the actual achievements of the various organizations and specialized agencies operating under the United Nations. *Second Semester, Each Year*

POL 331. BASIC ENGLISH AND AMERICAN DOCUMENTS **THREE CREDIT HOURS**

An analysis and appreciation of the great political documents. Prerequisite: Hst 251 and 252. *First Semester, Each Year*

POL 401. THE AMERICAN PRESIDENCY**THREE CREDIT HOURS**

An expository approach to the United States Presidency, as the most powerful elective political office in the world today. *First Semester, 1963-1964*

POL 405. WORLD PROBLEMS OF THE UNITED STATES **THREE CREDIT HOURS**

A critical examination of the development of the communist front in the European, Asian, African, and Latin American areas and the attempt of the United States and other nations to meet this situation. *Each Semester, Each Year*

POL 408. AMERICAN FOREIGN POLICY**THREE CREDIT HOURS**

An analytic study of policies and methods followed by the State Department in its relations with other countries, in its conducting of United States relations. *First Semester, Each Year*

POL 409. GOVERNMENT REGULATION OF BUSINESS **THREE CREDIT HOURS**

Constitutional basis for the regulation of business activities. Governmental methods or regulation of commerce, transportation, monopoly, unfair competition, trade practices, labor relations, security exchanges, agriculture, production, and price fixing. *Second Semester, 1962-1963*

POL 410. PUBLIC ADMINISTRATION**THREE CREDIT HOURS**

A study of the operations of local and national departments and bureaus of the Public Administrative service. *Each Semester, Each Year*

POL 411. ADMINISTRATIVE LAW**THREE CREDIT HOURS**

A study of the general nature of administrative law and of the types of administrative actions and enforcement made by governmental regulatory boards and commissions. An analysis of rule making and adjudication. The study of administrative due process. Analysis of judicial review and review of Administrative Tribunal decisions. *Second Semester, 1963-1964*

POL 412. CONSTITUTIONAL LAW**THREE CREDIT HOURS**

An exposition of the fundamental principles inherent in the Constitution, Common Law, delegated powers of government, and other areas, with application to contemporary situations. *Each Semester, Each Year*

POL 413. PHILOSOPHY OF THE STATE**THREE CREDIT HOURS**

A consideration, in the light of Christian thought, of the nature, origin, end and functions of the state; the nature, forms and functions of government; law and political authority; the rights and duties of citizens; patriotism, nationalism and internationalism; the various kinds of political freedom. Accredited in Philosophy. *Second Semester, Each Year*

POL 415. PAN AMERICAN RELATIONS**THREE CREDIT HOURS**

An examination of the social, cultural, and political relations among the American states with special consideration of recent developments. *Second Semester, Each Year*

POL 417. HISTORY OF POLITICAL PHILOSOPHY **THREE CREDIT HOURS**

A study of the principal political opinions of the Western philosophers drawn from readings in the sources. The investigation begins with the political doctrines of Plato and Aristotle in ancient Greek philosophy, and continues through the leading Roman and Medieval thinkers, extending to an analysis of the development of the modern political philosophies. Prerequisite: Permission of Chairman. Accredited in Philosophy. *First Semester, Each Year*

POL 421. GOVERNMENT SEMINAR **THREE CREDIT HOURS**

Group discussions and projects on pertinent topics. Only for seniors majoring in Political Science. *Each Semester, Each Year*

POL 422. READINGS AND PROBLEMS IN NATIONAL GOVERNMENT**THREE CREDIT HOURS**

This is essentially a course to supplement the other courses in the national field. Prerequisite: POL 201. *First Semester 1962-1963*

POL 435. LEGAL RESEARCH**THREE CREDIT HOURS**

Open to Pre-Law students only. A direct preparation for admission to law school. Students are assigned to local law offices and to judicial chambers to learn procedures and to do research. Prerequisite: Permission of chairman. *Each Semester, Each Year*

PSYCHOLOGY (Psy)**ROBERT L. NOLAND, ACTING CHAIRMAN***Professor: ROESCH**Associate Professors: NOLAND, RANCURELLO, SCHEIDLER**Assistant Professors: GALLICO, MOYLAN**Part-time Instructors: ANDERSON, CHRISTENSEN, DAVIS, RILEY*

Required courses for a major in Psychology are: PSY 204, 302, 305, 308, 309, 315, 402, 408, 409, and 480. Also required are BIO 101-102 or BIO 113 and CHM 110. Suggested courses for a related minor are available in the Psychology office. Students intending to major in Psychology are urged to consult with the Departmental Chairman as early as possible.

PSY 201. INTRODUCTORY PSYCHOLOGY**THREE CREDIT HOURS**

Studies man as an integrated personality including development, motivation, emotion, adjustment, learning, perception, thinking, and the general application of psychological principles to personal, social, educational and industrial problems. To be replaced by PSY 204 for students majoring in Psychology and all others who also desire the inclusion of the physiological aspect of psychological phenomena. If taken by Psychology Majors it must be followed by PSY 300. *Each Semester, Each Year*

PSY 204. GENERAL PSYCHOLOGY**THREE CREDIT HOURS**

Basic principles for major fields in psychology. Physiology of nervous system and sense organs, sensation, perception, imagery, thought, intelligence, learning and volition are studied. Recommended that this course be followed by Elementary Statistics and Experimental Psychology. Required of majors in psychology, nursing and pre-medical programs; recommended for engineers.

*Each Semester, Each Year***PSY 205. APPLIED PSYCHOLOGY****THREE CREDIT HOURS**

Emphasizes practical applications of psychology in mental hygiene, education, society and industry pertinent to the needs of the class. Utilizes the concept of human adjustment as a frame of reference. Intended primarily for students working toward associate degrees in technology or business. It is not equivalent to PSY 201 or 204.

*Each Semester, Each Year***PSY 300-301. READINGS IN GENERAL PSYCHOLOGY****TWO CREDIT HOURS**

Intended primarily for those Psychology Majors who have not taken PSY 204—General Psychology. May be taken by Psychology Minors also.

*Each Semester, Each Year***PSY 302. ELEMENTARY STATISTICS****THREE CREDIT HOURS**

Measures of central tendency, deviation, correlation, probability and theory of errors are approached through problems and discussion. No exceptional mathematical ability or training beyond high school algebra is necessary. Required of all students majoring in psychology. Recommended for Minors.

*Each Semester, Each Year***PSY 304. ADOLESCENT PSYCHOLOGY****THREE CREDIT HOURS**

Treats the interrelated physical, mental, social, emotional, moral and aesthetic development of adolescents, alerting the student to causal factors in preparing him to accept and to guide their interests, ideals and adjustments. Child Psychology is recommended as a prerequisite, though not required.

*Each Semester, Each Year***PSY 305. MENTAL HYGIENE****THREE CREDIT HOURS**

Explains the adjustment process through the study of basic needs, emotional maladjustment, psychological mechanisms and psychoneurotic responses. Establishes normal and neurotic criteria of mental health. Prerequisite for Abnormal Psychology.

*Each Semester, Each Year***PSY 306. CHILD PSYCHOLOGY****THREE CREDIT HOURS**

A longitudinal study of childhood development explaining genetic sequences in life of child, e.g. prenatal growth trends, motor development, sociability, language, intelligence, and imaginative life. Shows how discipline or training should be dependent upon these growth patterns.

Each Semester, Each Year

PSY 307. PSYCHOLOGY OF EXCEPTIONAL CHILDREN THREE CREDIT HOURS

Deals with an understanding, psychologically, of those children who are handicapped either physically, mentally, socially or emotionally. Concentrates on early years in so far as adjustment at this level is preparatory to adjustment in adult life. Forms of psychotherapy will be discussed. Prerequisite: PSY 306.

PSY 308-309. EXPERIMENTAL PSYCHOLOGY I-II FOUR CREDIT HOURS

Deals with the study of scientific methodology generally, and with the methods of experimentation in particular. Aim is to acquaint student with methods of experimental psychology as applied to the whole of psychology—clinical, industrial, social, military, etc. Prerequisites: PSY 204, 302. *Each Year*

PSY 308L-309L. EXPERIMENTAL PSYCHOLOGY I-II LABORATORY

TWO CREDIT HOURS

Course to accompany PSY 308-309. One two-hour laboratory period each week. *Each Year*

PSY 312. ABNORMAL PSYCHOLOGY

THREE CREDIT HOURS

Explains the various types of mental aberrations, whether influenced directly or indirectly by physical causes. Describes the syndrome, etiology and treatment of the neuroses, psychoses, mental deficiencies, epilepsy and personality disorders. Various types of psychotherapies are discussed from an eclectic point of view. Prerequisite: Mental Hygiene. *Second Semester, 1962-1963*

PSY 315. PERSONALITY

THREE CREDIT HOURS

An investigation into the determinants and structure of personality and an exploration of the dynamics and expressive style of personality development. The approach to be made through a critical evaluation of current theories and a discussion of both clinical and experimental findings. Prerequisite: Mental Hygiene. *First Semester, Each Year*

PSY 401. ADVANCED STATISTICS

THREE CREDIT HOURS

A seminar-type course presenting some concepts of advanced psychological statistics, including analysis of variance, multiple correlations, partial correlation, factor analysis, regression and prediction, and advanced correlation techniques. Prerequisite: Elementary statistics. *Second Semester, 1963-1964*

PSY 402. PSYCHOLOGICAL TESTS AND MEASUREMENTS

THREE CREDIT HOURS

Opens with discussion of historical background of testing and the ethics involved in this field. Concentration is given to the requirements of tests in general. Study is made of the principal tests of intelligence, personality, aptitude, achievement and rating scales. An appreciation of the projective technique is included. Prerequisite: Elementary Statistics. *First Semester, Each Year*

PSY 408. SOCIAL PSYCHOLOGY

THREE CREDIT HOURS

Presents a systematic, dynamic treatment of social forces affecting human behavior. Discusses methods of social psychology, social learning, and motivation,

attitude testing, opinion polling, propaganda, communication analysis, rumor, group psychology, and social norms. Basic principles and contemporary readings will be critically discussed.

Each Semester, Each Year

PSY 409. HISTORY OF PSYCHOLOGY

THREE CREDIT HOURS

Aims at a clearer view of modern psychology by pointing out its origins in philosophy and science and by tracing its vigorous development through the numerous schools of psychological thought. Emphasizes an evaluation of the systems forming the foundation of today's psychology. Prerequisite: Senior standing.

Second Semester, Each Year

PSY 412. INTERVIEWING AND COUNSELING PROCEDURE

THREE CREDIT HOURS

Techniques, theories and levels of interviewing and counseling are discussed and evaluated. Practice provided by role playing and by study of actual counseling situations. Recommended also for school counselors, social and personnel workers, teachers, and other professional advisers. Permission of the instructor or department chairman is required.

Second Semester, Each Year

PSY 420. INDUSTRIAL PSYCHOLOGY

THREE CREDIT HOURS

Introduction to modern psychological efforts to improve human performance in an industrial organization and society. Studies the selection and placement of all classes of employees, the factors which favor optimum adjustment and efficiency under working conditions, including morale, training, incentive, and merit rating. Discusses also the psychology used in human engineering studies and accident prevention. Prerequisite: PSY 201; recommended PSY 302, 402.

First Semester, Each Year

PSY 454. PHYSIOLOGICAL PSYCHOLOGY

THREE CREDIT HOURS

Study of neurological structure and function as applied to human experience and behavior. Acquaints the student with the role of the nervous and glandular systems in sensation, perception, learning and adjustment. Prerequisite: Human Anatomy or Physiology. Accredited also in Biology.

Second Semester, 1963-1964

PSY 480. SEMINAR

ONE CREDIT HOUR

The objective of this seminar is to gain acquaintance with the current status of psychological thought. Emphasis will be upon trends in methods and in theoretical integration as these appear in the professional journals. All students are required to take a comprehensive examination as a part of course requirements. Required of Psychology Majors.

Second Semester, Each Year

PSY 490. SPECIAL PROBLEMS IN PSYCHOLOGY

TWO CREDIT HOURS

Research problems of special interest to the student are investigated under direction of psychology staff members. Permission of department chairman is required prior to registration for the course.

Each Semester, Each Year

PSY 491-492. READINGS IN PSYCHOLOGY

TWO CREDIT HOURS

Directed readings in some specific phase of Psychology are done under the supervision of a staff member. A written or oral report will be required.

Each Semester, Each Year

RETAILING (RET)

CHARLES W. WHALEN, JR., CHAIRMAN

Professor: WHALEN

Associate Professors: COMER, MURPHY

Eco 201-202 is prerequisite for all advanced courses in Retailing.

RET 310. RETAIL SALESMANSHIP

THREE CREDIT HOURS

Responsibilities of the sales-person; retail selling techniques, meeting the customer, developing the sales presentation, obtaining conviction, how to make the merchandise speak for itself, increasing the average sale. Students have the opportunity to analyze practical selling situations and to participate in demonstration sales.

First Semester, Each Year

RET 313. RETAIL ADVERTISING AND SALES PROMOTION

THREE CREDIT HOURS

An analysis of the principles and practices of retail advertising and other sales promotion activities; where, when, and what to promote; budgeting and planning of sales promotions, special events and activities; emphasis upon the coordination of sales promotion activities.

Second Semester, Each Year

RET 318. RETAIL PERSONNEL RELATIONS

THREE CREDIT HOURS

Evaluation of personnel problems and policies; planning manpower needs, job analysis and evaluation, sources of labor supply, selection and placement, training plans and procedures, personnel ratings and reviews, wages and wage stabilization, employee activities, labor relations, current legislation, supervisory techniques.

Second Semester, Each Year

RET 409. RETAILING ORGANIZATION AND OPERATION

THREE CREDIT HOURS

Devoted to principles of store management and their application by successful stores. Such factors as store location, buildings and equipment, store organization, expense center accounting, receiving and marking, store protection, and coordination of retail store activities are studied. Prerequisite: BUS 305.

Second Semester, Each Year

RET 410. RETAIL BUYING AND MERCHANDISING MATHEMATICS

THREE CREDIT HOURS

Considers the work of the buyer. Covers the types of buyers and the various buying organization plans of independent and multi-unit stores. Includes such activities as determining what to buy, how much, market resources, and model

stocks, as well as the mathematic principles involved in purchase planning, planning initial markup, terms and dating, stockturn, inventory methods (cost, retail, and LIFO). Drill is provided in the mathematical problems.

First Semester, Each Year

RET 420-421. RETAILING LABORATORY AND SEMINAR

ONE AND ONE-HALF CREDIT HOURS

One class hour per week during each semester of the Senior Year plus a minimum of three hundred hours of approved work experience during the year. Student will participate in a variety of both selling and non-selling work as provided in the training program worked out with the cooperating store. Success in the store will be evaluated by the store's supervisory personnel as well as periodic reports and assignments at the weekly class meeting.

Each Semester, Each Year

SECRETARIAL STUDIES (SEC)

(MRS.) VELMA M. MILLER, CHAIRMAN

Associate Professors: CIVILLE, KRIEGBAUM, MILLER

Part-time Instructor: FULWILER

During registration week, the department of Secretarial Studies offers tests in both shorthand and typewriting to assist in proper placement of students desiring to continue work in either or both fields. These tests are required of all students who have had prior work in shorthand or typewriting and expect to continue in these fields, whether for teaching purposes, professional reasons, or personal use.

SEC 101. ELEMENTARY SHORTHAND

THREE CREDIT HOURS

Gregg Shorthand is the system employed in this course. Using the simplified functional method, the entire theory is covered during the first semester. Transcription is introduced. Five class periods a week. *First Semester, Each Year*

SEC 102. INTERMEDIATE SHORTHAND

THREE CREDIT HOURS

Gregg theory is reviewed. Reading practice continues but transcription is emphasized. Five class periods a week. *Second Semester, Each Year*

SEC 103. ELEMENTARY TYPEWRITING

THREE CREDIT HOURS

The keyboard is memorized. Drill is given in the function and care of the machine. The ability to produce straight copy work is the aim of this course. Five class periods a week. For use of typewriter, \$5.00 per semester.

First Semester, Each Year

SEC 104. INTERMEDIATE TYPEWRITING

THREE CREDIT HOURS

The aim is to develop further skill in the use of the typewriter and to provide experience in letter arrangement and simple tabulations. Five class periods a week. For use of typewriter, \$5.00 per semester. *Second Semester, Each Year*

SEC 105. SECRETARIAL ACCOUNTING THREE CREDIT HOURS

A short course in accounting especially designed for private secretaries; covers the fundamental principles of accounting as applied to mercantile and personal service enterprises operated by sole proprietors. Three class periods a week.

First Semester, Each Year

SEC 106. SECRETARIAL ACCOUNTING THREE CREDIT HOURS

This course develops further the accrual basis of accounting for mercantile enterprises, with emphasis on partnership transactions, but with an introduction to corporation accounting. Three class periods a week.

Second Semester, Each Year

SEC 107. PERSONAL TYPEWRITING TWO CREDIT HOURS

The aim is to familiarize the students with the keyboard and the various parts of the machine. Personal typing problems are studied, such as manuscript writing, outlines, postal card messages, business letters, etc. Continued emphasis is placed on the improvement of skill so that vocational typewriting power may be developed for those students who will continue in other typewriting classes. Three class periods a week. For use of typewriter, \$3.00 per semester.

Each Semester, Each Year

SEC 110. SECRETARIAL MATHEMATICS THREE CREDIT HOURS

Review and practice of the more common mathematical usages found in business offices; development of proficiency in these functions. Three class periods a week.

First Semester, Each Year

SEC 201. DICTATION AND TRANSCRIPTION THREE CREDIT HOURS

Gregg principles are reviewed. Rapid reading is emphasized. Sustained writing periods are increased. Practical office dictation speeds are employed. Five class periods a week.

First Semester, Each Year

SEC 202. ADVANCED DICTATION AND TRANSCRIPTION THREE CREDIT HOURS

Phraseology of a technical nature is taken up. Industrial and civil service testing programs are studied. Rapid dictation and transcription. Five class periods a week.

Second Semester, Each Year

SEC 203. ADVANCED TYPEWRITING THREE CREDIT HOURS

Advanced practice in various office skills. Survey of all letter forms, tabulation, manuscripts, and rough drafts. Five class periods a week. For use of typewriter, \$5.00 per semester.

First Semester, Each Year

SEC 204. PRODUCTION TYPEWRITING THREE CREDIT HOURS

Designed to develop practice in business forms, more complicated tabulations, legal typing, etc., with emphasis upon office production standards; speed work. Five class periods a week. For use of typewriter, \$5.00 per semester.

Second Semester, Each Year

SEC 205. SECRETARIAL PRACTICE THREE CREDIT HOURS

A study of the duplicating processes, including ditto and mimeograph. Practice

in the use of dictaphone, ediphone, and soundscriber machines. Four class periods a week.

First Semester, Each Year

SEC 206. ADVANCED SECRETARIAL PRACTICE THREE CREDIT HOURS

Advanced training in duplication processes, dictating machines, filing techniques, and communications. Four class periods a week.

Second Semester, Each Year

SEC 207. BUSINESS MACHINES THREE CREDIT HOURS

Purposes to give students the opportunity to become acquainted with and to use correctly the machines commonly found in offices today. Such machines include two principal types of adding machines, three principal types of calculators and accounting mechanisms. Three class periods a week.

Second Semester, Each Year

SOCIOLOGY (Soc)

DR. EDWARD A. HUTH, CHAIRMAN

Professors: HUTH, SEEBOLD

Instructor: WEIR

Majors and Minors in Sociology should consult the Chairman of the Department in planning their course programs. Majors must complete 30 semester hours, including Soc 201, 202, 401, and 414; Minors are required to complete 15 hours in Sociology, including Soc 201 and 202.

A program of courses is offered which is designed to prepare students for a broad liberal education concerning society and its problems. Sociology is an important subject in training for education, law, medicine, nursing, personnel relations, business administration, social work and government.

The Department of Sociology is a Constituent Member of the Council on Social Work Education. The CSWE gives leadership in the United States and Canada to the efforts of the total social work profession and to citizens interested in the welfare of their own families and their communities to increase the number of professionally qualified social workers, and at the same time, to improve the quality of their education for social work.

Pre-Professional Major in Social Work. This major includes courses in social welfare subjects for students who desire to enter employment with social agencies which require only a Bachelor's degree for beginning social workers. Students in this program must complete 30 semester hours in Sociology, including Soc 201, 202, 305, 312, 401 and 418.

As a result of twentieth century social, economic and political events, there has been a tremendous expansion of local, state, national and international activity in the field of social welfare work. Most of the new functions seem

likely to remain as a permanent part of the future public welfare policy of the United States. There has never been an adequate supply of social workers. Many more must be recruited to prepare for the years that lie ahead.

SOC 201. GENERAL SOCIOLOGY

THREE CREDIT HOURS

The basic course in the principles of sociology; an introduction to the fundamental concepts of modern sociology. A systematic explanation of man's social nature, types of groups and institutions, social processes, and social change. A prerequisite for specialized courses in sociology. *Each Semester, Each Year*

SOC 202. SOCIAL PROBLEMS

THREE CREDIT HOURS

This course deals with the facts of social pathology, the maladjustments of society. The aim is to provide a clear understanding of the causes, extent, treatment, mitigation, and prevention of abnormal conditions affecting society. Required for advanced courses in sociology. *Each Semester, Each Year*

SOC 301. MARRIAGE AND THE FAMILY

THREE CREDIT HOURS

A general survey of the social nature of the family; its organization through courtship, marriage, and parenthood; its primary role in the development of personality; the influence of social and economic changes; means of ensuring family integrity; programs for the improvement and reconstruction of family life. *Each Semester, Each Year*

SOC 303. POPULATION

THREE CREDIT HOURS

A study of the growth, decline, distribution and classification of population; analysis of population theories; birth, morbidity and death rates; relation of numbers to resources; human migration; future growth of population in the United States and its consequences; world population problems.

First Semester, 1963-1964

SOC 305. INTRODUCTION TO SOCIAL WORK

THREE CREDIT HOURS

This course is designed for pre-professional students in social work. Among the subjects discussed are: social casework, social group work, community welfare organization; social research; social administration; and social action. Students who expect to become civic leaders will find this an invaluable course. Required of Majors in Social Work. *First Semester, Each Year*

SOC 307. CRIMINOLOGY AND PENOLOGY

THREE CREDIT HOURS

A review of the etiology, extent, treatment, and means for the prevention of crime; history and methods of punishment; administration of criminal law; police systems; prisons and prison reform; indeterminate sentence, probation, parole, and pardon; objectives of the new penology. *First Semester, Each Year*

SOC 308. ANTHROPOLOGY

THREE CREDIT HOURS

An introductory course in cultural and physical anthropology; the social, economic, political, religious, and artistic life of primitive people in relation to contemporary civilization. The nature of culture; its relation to society; culture

and race; culture and nationality; culture and language. Origin of culture; types of cultures; culture areas; culture patterns; historic culture centers. Scope and nature of physical anthropology. *Second Semester, Each Year*

SOC 312. PRINCIPLES OF SOCIAL CASE WORK **THREE CREDIT HOURS**

The basic aspects of social casework. The theory and application of the technical processes of social study, diagnosis, and treatment of the individual and family concerning their psychosocial problems. Emphasis is on understanding the applicant, the family of which he is a member, the request and the problem, as they relate to agency function and community resources to be used in treatment. Required of Majors in Social Work. *Second Semester, Each Year*

SOC 313. JUVENILE DELINQUENCY **THREE CREDIT HOURS**

This is a study of the causes, extent, treatment, and prevention of juvenile delinquency. Among the topics considered are: the home, school, church, state, police, and juvenile court; child guidance clinics; bureaus of juvenile research; probation and parole; correctional institutions for juvenile delinquents. *Second Semester, Each Year*

SOC 315. INDUSTRIAL SOCIOLOGY **THREE CREDIT HOURS**

A study of the industrial plant as a social system; sociological aspects of labor-management relations; the impact of industry on the community and society; social controls of industry. Analysis of work situations, the labor movement, industrial leadership, and morale. *First Semester, Each Year*

SOC 318. ETHICAL HUMAN RELATIONS **THREE CREDIT HOURS**

The purpose of this course is to examine the facts and trends of contemporary social and economic life in their moral and immoral manifestations, and to show their agreement or disagreement with sound principles of social welfare. It deals with the forces of disorganization and of evil which beset man; and the means for protecting and promoting his general welfare. *Second Semester, Each Year*

SOC 401. SOCIAL RESEARCH AND SOCIAL STATISTICS **THREE CREDIT HOURS**

The problems and methods of research and statistics in sociology and in social work. Methods of observation, collection, recording, classifying, interpreting, and presenting social data statistically; planning and completing reports. Students are prepared both for understanding data arranged statistically and for active compilation and interpretation of statistical research work. Required of majors in sociology and social work. *Second Semester, Each Year*

SOC 403. HISTORY OF SOCIAL THOUGHT **THREE CREDIT HOURS**

A consideration of the development of social thought from Plato to the present. An examination of social theory in terms of its logical rigor and empirical validity. Emphasis will be on modern social philosophers with attention to the ideas of United States social scientists, especially upon their contributions to present day sociological thought. *First Semester, Each Year*

SOC 409. SOCIAL CONTROL**THREE CREDIT HOURS**

Means of control in primitive and advanced societies. The role of the family, school, and church; propaganda, indoctrination, advertising, campaign strategy; informal and formal phases of human control. Group valuations, praise, rewards, symbols, slogans, ridicule, and intimidation in relation to individual behavior.

*First Semester, 1962-1963***SOC 412. SCHOOL AND SOCIETY****THREE CREDIT HOURS**

(Formerly Educational Sociology)

The relationship of the school to the total cultural pattern and the development of interaction between school and community are appraised and concrete suggestions are presented. The nature of the individual child and his relations with his society and culture; the special culture of the school and its accompanying social world; school, teacher, and community relations are given attention.

*Second Semester, Each Year***SOC 414. SEMINAR IN SOCIOLOGY****THREE CREDIT HOURS**

A systematic study of certain topics in such areas as: Marriage and the Family; Juvenile Delinquency; Criminology and Penology; Social Problems; Population; Rural Community and Farm Problems; Urban and Metropolitan Conditions; Social Theory; Collective Behavior; and Social Work. Required of Majors in Sociology.

*Second Semester, Each Year***SOC 418. COMMUNITY ORGANIZATION****THREE CREDIT HOURS**

Methods of achieving social change through motivating and mobilizing community agencies, citizens' organizations, groups, and individuals to take appropriate social action to meet community welfare needs, including an understanding of underlying philosophy and the differential use of communication methods and skills. An analysis of the methods of developing, maintaining, extending, and coordinating the social welfare resources of the community. Required of Majors in Social Work.

*Second Semester, Each Year***SOC 433. URBAN-RURAL SOCIOLOGY****THREE CREDIT HOURS**

Urban-rural physical and social characteristics; emphasis upon the origin, development, nature and importance of urban communities; ecology of urban life; population characteristics; slums and blighted areas, urban planning and renewal; major problems of cities. Attention will be given suburbia and to the changing trends in American rural life. Rural institutions and social processes, fundamental differences between rural and urban areas.

*First Semester, Each Year***SOC 540. CATHOLIC SOCIAL THOUGHT****THREE CREDIT HOURS**

A reading and research course designed to give the student a survey of the development of Catholic social thought from the time of St. Thomas Aquinas to the present, with emphasis on the contribution of Catholic social thinkers to the solution of the many phases of the social problem as we find it in today's society. Offered at Mount St. John.

Second Semester, Each Year

SPEECH (SPE)

GEORGE MCCARTY, CHAIRMAN

Assistant Professors: BAXTER, BIRSACK, GEYER*Instructors:* GILVARY, MULLINS

Majors must have SPE 101 plus 24 hours of 300 and 400 courses. Speech Education Majors see Education Program VI.

Minors in Speech must have SPE 101 plus 12 hours from the following: 201, 301, 302, 307, 310, 312, and 401.

The Department sponsors two co-curricular activities, the *University Players* and the *University Debaters*.

Courses marked with an asterisk are given every other year; those marked with a double asterisk, every third year.

SPE 101. FUNDAMENTALS OF EFFECTIVE SPEAKING THREE CREDIT HOURS

An introductory course in the fundamental skills of speaking. Self-confidence is developed through speaking opportunities, with special attention given to poise, vocal variety, physical animation, fluency, and the communication of ideas.

Each Semester

SPE 201. PUBLIC SPEAKING I THREE CREDIT HOURS

Covers the area of oral communication in professional situations. Adapts the principles of effective speaking to specific audiences and occasions. The student prepares and delivers informational, problem-solving, good-will, courtesy and special occasion speeches intended for a wide variety of audiences.

Each Semester

SPE 204. INTRODUCTION TO THE THEATER* THREE CREDIT HOURS

Investigates the selection, analysis, casting, rehearsal, and staging of a play. Emphasizes the interpretation of the play in terms of the visual and auditory factors of the stage. Backstage organization, promotion, and publicity are discussed. A three-act play serves as a workshop production.

Second Semester, 1963-1964

SPE 300. VOICE AND DICTION THREE CREDIT HOURS

A course treating the four phases of speech production: proper breathing, phonation, resonance, and articulation. Projection, quality, and clarity of speech are emphasized. The student's voice is analyzed through tape recording and a program of exercises.

Second Semester, Each Year

SPE 301. SPEECH COMPOSITION* THREE CREDIT HOURS

The study of speech structure and composition. Critical analysis of model speeches, in conjunction with the preparation and presentation of original speeches on current public questions.

Second Semester, 1963-1964

SPE 302. FUNDAMENTALS OF DEBATE

THREE CREDIT HOURS

Application of the principles of argument through extensive practice in several forms of debate. Consideration of analysis, evidence, reasoning, inference and fallacy. Required for intercollegiate debate, or by permission of the instructor.

First Semester, Each Year

SPE 306. RADIO FUNDAMENTALS

THREE CREDIT HOURS

A workshop course in microphonic technique, especially as applied to straight announcing, commercials, and newscasting. Development of articulation and tone for broadcasting purposes is emphasized. Station and network organization is discussed. Extensive use of tape recording.

First Semester, Each Year

SPE 307. CONFERENCE AND DISCUSSION*

THREE CREDIT HOURS

A presentation of the guiding principles used by participants and leaders in the preparation and conducting of conferences and discussions. Exploratory, problem-solving, and policy-making conferences are staged under the form of the committee meeting, the round table, the panel, and the forum. Particularly for those anticipating teaching the social sciences and speech or engaging in administrative work.

Second Semester, 1963-1964

SPE 309. FUNDAMENTALS OF TELEVISION

THREE CREDIT HOURS

Deals with principles and practices of television broadcasting, studio layout, equipment, personnel, organization of channels, and networks, WHF and UHF, educational and closed circuit television. Students participate in various programming projects.

Second Semester, Each Year

SPE 310. INTERPRETATIVE READING I

THREE CREDIT HOURS

A fundamental course in oral interpretation of poetry and prose. Combines a study of vocal modulations, pitch, inflection, tone color, tempo, and volume with intellectual and emotional analysis of selections to develop a deeper appreciation of literature.

Second Semester, Each Year

SPE 312. PERSUASION*

THREE CREDIT HOURS

Principles and techniques of attention and suggestion. The use of emotional appeals in the ethical responsibility of advocacy. Bases of belief and action in persuasive speaking. Delivery of speeches in the application of the theory. Prerequisites: SPE 201, 302 or permission.

Second Semester, 1962-1963

SPE 313. ACTING I

THREE CREDIT HOURS

Affords study and practice in the fundamentals of acting, with stress upon the physical, mental, and emotional background of characterization. Includes exercises to develop the imagination and expressiveness of bodily movement. Students participate in the productions of the *University Players*.

First Semester, Each Year

SPE 316. RADIO WORKSHOP*

THREE CREDIT HOURS

Designed to develop voice, articulation, and reading skills. Exercises in micro-

phone techniques. Development of radio stations' staff requirements and responsibilities. Project shows are taped for analysis. *Second Semester, 1962-1963*

SPE 320. INTERPRETATIVE READING II*

THREE CREDIT HOURS

A continuation of SPE 310, with a deeper penetration into the field of oral interpretation. Individual problems are given more particular attention. The course also stresses dramatic characterization, the use of dialect, and impromptu reading. Prerequisite: SPE 310, or with permission. *First Semester, 1962-1963*

SPE 323. ACTING II*

THREE CREDIT HOURS

A further development and practice of the fundamental principles set down in the elementary course in acting, SPE 313. Emphasis is placed on more specialized character portrayal through selective details of business, voice, and speech. Group interaction is studied in excerpts from outstanding plays. Prerequisite: SPE 313, or with permission. *Second Semester, 1963-1964*

SPE 400. SPEECH CORRECTION*

THREE CREDIT HOURS

Investigates the theory of speech and hearing handicaps in elementary and secondary school pupils. Examples of such defects are explored clinically and methods of correction applied. Includes demonstrations with children. *Second Semester, 1963-1964*

SPE 401. PUBLIC SPEAKING II*

THREE CREDIT HOURS

A more intensive development of the goals sought in SPE 201. Students are required to demonstrate facility in holding audience attention through longer speeches. Those who qualify may be privileged to address off-campus audiences. Prerequisite: SPE 201 or 301, or permission. *Second Semester, 1962-1963*

SPE 402. FORENSICS

THREE CREDIT HOURS

A course designed to employ the values inherent in intercollegiate competitive speaking, and to relate those values in an alert, aggressive citizenship. Application of the theory of argument in the ethical use of evidence. Classroom experience in the various forms of debate, discussion, original oratory and extempore speaking. Prerequisite: SPE 302, or with permission. *Second Semester, 1962-1963*

SPE 409. TELEVISION PRODUCTION

THREE CREDIT HOURS

Intensive practice in the preparation and production of TV programs. Camera technique, lighting procedure, floor set-ups, and the direction of crews and talent are demonstrated through actual participation in TV shows. Prerequisite: SPE 309, or with permission. *First Semester, Each Year*

SPE 414. STAGECRAFT AND LIGHTING*

THREE CREDIT HOURS

Presents the fundamentals of designing, constructing, and painting stage scenery, as well as exploring the basic applications of stage lighting. Includes the construction of scenery and the plotting of lighting charts for specific plays. *First Semester, 1963-1964*

SPE 415. HISTORY OF THE THEATER I** **THREE CREDIT HOURS**
 A survey of the theater from the Greeks to Shakespeare, with emphasis on the staging, interpretation, costuming, and allied aspects of theatrical production in the classical, medieval, and Elizabethan periods. Projects include mock-up theaters, designs of staging, production of masks, and collections of costume plates.
First Semester, 1964-1965

SPE 420. SECONDARY SCHOOL METHODS IN SPEECH** **THREE CREDIT HOURS**
 A course to prepare beginning teachers for speech work on the high school level. Demonstrates how to arrange syllabi and prepare and administer assignments that will enrich speech training classes. Experience is gained in the presentation of assembly programs, the production of school plays, and the directing of forensic activities.
Second Semester, 1964-1965

SPE 424. PLAY DIRECTING* **THREE CREDIT HOURS**
 Treats the basic functions of a Director in the production of a play: blocking of scenes, timing, characterization, and continuity. Includes selection of script, methods of casting, and rehearsal schedules.
Second Semester, 1963-1964

SPE 425. HISTORY OF THE THEATER II** **THREE CREDIT HOURS**
 The development of the theater from Shakespeare to television. The great movements in the English, Irish, Continental, and American theaters, with emphasis on the acting and staging traditions that lead up to the representational theater of today. Prerequisite: SPE 415, or with permission.
Second Semester, 1964-1965

SPE 430. SEMINAR IN THE SPEECH ARTS **THREE CREDIT HOURS**
 Individual research and report on a problem in the field of communication, speech science, or dramatics. The students develop projects in the area of their interests, e.g., Business students, in brain storming and role playing techniques; Education students, in high school forensics; and Arts students, in American public address. With permission.
Second Semester, by Appointment

TECHNICAL INSTITUTE (DONALD C. METZ, DIRECTOR)

CHEMICAL TECHNOLOGY (CTI)

Assistant Professor: LOUGHRAN

Part-time Instructors: MONTELLO, RECHER

CTI 101. INORGANIC CHEMISTRY **THREE CREDIT HOURS**
 A comprehensive treatment of the fundamentals of general chemistry, with emphasis on their application to the essential groups of elements in the periodic table. Laboratory work is devoted to semi-micro qualitative analysis. Three hours of class a week. Prerequisite: STI 121.

CTI 101L. INORGANIC CHEMISTRY LABORATORY **ONE CREDIT HOUR**

To accompany CTI 101. Three hours of laboratory a week.

CTI 202. QUANTITATIVE ANALYSIS **THREE CREDIT HOURS**

The fundamental principles and techniques involved in exact analysis are presented. Gravimetric, volumetric, and colorimetric analyses are stressed along with the techniques that accompany these operations such as weighings and separations. Three hours of class a week. Prerequisite: CTI 101.

CTI 202L. QUANTITATIVE ANALYSIS LABORATORY **TWO CREDIT HOURS**

To accompany CTI 202. Six hours of laboratory a week.

CTI 203. PHYSICAL CHEMISTRY **THREE CREDIT HOURS**

A short course for industrial technicians. Discussion of the properties of laws of matter in its different states and in solution, chemical equilibrium; thermochemistry, electro-chemistry; reaction kinetics; phase rule. The laboratory work includes physiochemical methods and their applications. Three hours of class a week. Prerequisites: CTI 101, STI 104.

CTI 203L. PHYSICAL CHEMISTRY LABORATORY **ONE CREDIT HOUR**

To accompany CTI 203. Three hours of laboratory a week.

CTI 204. ORGANIC CHEMISTRY **THREE CREDIT HOURS**

A systematic study of the organic compounds containing carbon with special emphasis on the aliphatic and aromatic classes. Special emphasis will be placed on the role of organic chemistry in industry. Three hours of class a week. Prerequisite: CTI 101.

CTI 204L. ORGANIC CHEMISTRY LABORATORY **ONE CREDIT HOUR**

To accompany CTI 204. Three hours of laboratory a week.

CTI 206. INSTRUMENTATION **THREE CREDIT HOURS**

Study of various specialized instruments used in industry for analysis. Three hours of class a week. Prerequisite: CTI 202.

CTI 207L. APPLIED CHEMISTRY **ONE CREDIT HOUR**

Practical applications of chemistry in various industries. Emphasis will be placed on plastics, powdered metallurgy, paper and other units as required. Three hours practicum a week. Prerequisites: Should be taken after other required CTI Courses are completed.

ELECTRICAL TECHNOLOGY (ETI)

RICHARD R. HAZEN, CHAIRMAN

Assistant Professors: HANNEMAN, HAZEN, MAUGER, PETERSON*Part-time Instructors:* W. J. BROWN, FEIST, FRANK, GINN,
PICKLESIMER, SHUMAKER

ETI 101L. ELECTRICAL CIRCUITS LABORATORY ONE CREDIT HOUR
Fundamental D.C. and A.C. circuit experiments. Three hours of laboratory a week. Corequisite: ETI 103.

ETI 102. ELEMENTS OF ELECTRICAL TECHNOLOGY I THREE CREDIT HOURS
Practical concepts of D.C. Circuits; resistance, resistivity, power and magnetism. Circuit calculations using basic formulas. Three hours of class a week.

ETI 103. ELEMENTS OF ELECTRICAL TECHNOLOGY II THREE CREDIT HOURS
Practical concepts of A.C. Circuits; inductance, capacitance, reactance, impedance, phase, power and power factor. Circuit calculations utilizing vectors and complex quantities. Three hours of class a week. Prerequisite: ETI 102.

ETI 107. ELECTRICAL CODE ONE CREDIT HOUR
A study of the National Electrical Code to provide safe practices in the installations of electrical equipment in buildings. One hour of class a week.

ETI 202. ELECTRONICS THREE CREDIT HOURS
Principles of operation of the more common types of vacuum and gas tubes, thyratrons, photoelectric cells and simple circuits used with them. Three hours of class a week. Prerequisite: ETI 101 or ETI 103.

ETI 202L. ELECTRONICS LABORATORY ONE CREDIT HOUR
To accompany ETI 202. Three hours of laboratory a week.

ETI 203. ELECTRICAL MEASUREMENTS THREE CREDIT HOURS
Fundamentals of direct and alternating current measuring instruments and methods of measurement, with particular emphasis on industrial applications. Three hours of class a week. Prerequisite: ETI 101 or ETI 103.

ETI 203L. ELECTRICAL MEASUREMENTS LABORATORY ONE CREDIT HOUR
To accompany ETI 203. Three hours of laboratory a week.

ETI 210. ELECTRICAL MACHINERY THREE CREDIT HOURS
Fundamentals of the construction and application of direct current and alternating current machines and apparatus to industrial uses. Three hours of class a week. Prerequisite: ETI 101 or ETI 103. Evening classes only.

ETI 210L. ELECTRICAL MACHINERY LABORATORY ONE CREDIT HOUR
To accompany ETI 210. Three hours of laboratory a week. Evening classes only.

ETI 211. MOTOR CONTROL THREE CREDIT HOURS
Industrial uses of standard controllers for electric motors. Three hours of class a week. Prerequisite: ETI 210. Evening classes only.

ETI 211L. MOTOR CONTROL LABORATORY ONE CREDIT HOUR
To accompany ETI 211. Three hours of laboratory a week. Evening classes only.

ETI 212L. ELECTRICAL BLUEPRINTS AND DIAGRAMS ONE CREDIT HOUR
Standards and symbols used on electrical blueprints and wiring diagrams primarily for control circuits. Three hours of laboratory a week. Prerequisite: MTI 101. Evening classes only.

ETI 213L. ELECTRICAL BLUEPRINTS AND DIAGRAMS TWO CREDIT HOURS
An introduction to drawing with emphasis upon standards and symbols used on electrical blueprints and wiring diagrams primarily for control circuits. Six hours of laboratory a week. Evening classes only.

ETI 222L. ELECTRONIC CIRCUIT DIAGRAMS ONE CREDIT HOUR
Standards and symbols used on electronic circuit diagrams. Three hours of laboratory a week. Prerequisite: MTI 101.

ETI 223. SEMI-CONDUCTOR FUNDAMENTALS THREE CREDIT HOURS
Fundamentals of barrier-layers (junction and point contact) diodes, transistors and transistor circuits. Three hours of class a week. Prerequisite: ETI 202.

ETI 223L. SEMI-CONDUCTOR FUNDAMENTALS LABORATORY ONE CREDIT HOUR
To accompany ETI 223. Three hours of laboratory a week.

ETI 224. DIGITAL COMPUTER FUNDAMENTALS THREE CREDIT HOURS
Fundamental theory and techniques of electronic data-processing to include binary arithmetic, switching theory (Boolean algebra) and basic circuitry (gates, adders, registers and memory). Three hours of class a week. Prerequisite: ETI 202.

ETI 224L. DIGITAL COMPUTER LABORATORY ONE CREDIT HOUR
To accompany ETI 224. Three hours of laboratory a week.

ETI 225. RADIO AND TV FUNDAMENTALS THREE CREDIT HOURS
Elementary principles of operation and structural details of fundamental units of radio apparatus and basic television equipment with primary emphasis on receivers. Three hours of class a week. Prerequisite: ETI 202.

ETI 225L. RADIO AND TV LABORATORY ONE CREDIT HOUR
To accompany ETI 225. Three hours of laboratory a week.

ETI 226. INTRODUCTION TO ANALOG COMPUTERS AND SERVOMECHANISMS
THREE CREDIT HOURS

Fundamentals and design of synchros and related error detectors, rate generators, magnetic amplifiers and friction dampers. Three hours of class a week. Prerequisite: ETI 202.

ETI 226L. ANALOG COMPUTER AND SERVOMECHANISM LABORATORY
ONE CREDIT HOUR

To accompany ETI 226. Three hours of laboratory a week.

ETI 229L. ELECTRONIC CIRCUIT DIAGRAMS TWO CREDIT HOURS

An introduction to drawing with emphasis upon standards and symbols used on electronic circuit diagrams. Six hours of laboratory a week.

ETI 230. SPECIAL ELECTRICAL PROJECTS ONE CREDIT HOUR

Laboratory work and outside reading associated with a phase of electricity selected by the student and approved by Chairman of the Department.

INDUSTRIAL TECHNOLOGY (ITI)

RAYMOND B. PUCKETT, ACTING CHAIRMAN

Assistant Professors: MCGRAW (Leave of Absence), PUCKETT

Part-time Instructors: COCCA, EMRICK, HAZELL, KANOZA, LEWIS
SCHUSTER, SEE

ITI 101. INDUSTRIAL ORGANIZATION AND PRODUCTION THREE CREDIT HOURS
A survey of the operational, financial, marketing and accounting activities of industrial organization. Also included is a detailed survey of the duties of management as related to the production function of planning, control, personnel and human factors. Three hours of class a week.

ITI 104. INDUSTRIAL MATERIALS AND PROCESSES THREE CREDIT HOURS
A study of modern industrial materials with emphasis on their chemical and physical properties, and methods by which they may be processed. Three hours of class a week. Prerequisite: STI 121.

ITI 108. PRODUCTION METHODS AND CONTROL THREE CREDIT HOURS
Principles and the techniques used in production; current practices in production planning, routing, scheduling and dispatching; study of production standards, labor efficiency and costs; quantity and quality control. Three hours of class a week. Prerequisites: ITI 101 and ITI 104.

ITI 202. ELEMENTS OF SUPERVISION THREE CREDIT HOURS
A study of the supervisor's relation to his men and his place in developing an effective production team. Three hours of class a week. Prerequisites: ITI 101 and STI 141.

ITI 204. MOTION AND TIME STUDY **TWO CREDIT HOURS**

Fundamentals of work simplification and motion economy using the techniques of motion and time study for the development of effective methods of production. Two hours of class a week. Prerequisites: ITI 101 and STI 103.

ITI 204L. MOTION AND TIME STUDY LABORATORY **ONE CREDIT HOUR**

To accompany ITI 204. Three hours of laboratory a week.

ITI 205. LABOR AND WAGE ADMINISTRATION **THREE CREDIT HOURS**

Brief history of labor unionism and labor legislation. Survey of collective bargaining contracts, grievances and arbitration. Wage administration including job evaluation, wage structures, wage incentives and employee evaluation. Three hours of class a week. Prerequisite: ITI 101.

ITI 207. ELEMENTS OF COST CONTROL **THREE CREDIT HOURS**

A survey of the methods of breakdown and cost analysis of labor, material and overhead. All related to modern industrial practices. Three hours of class a week. Prerequisite: ITI 101.

ITI 208. INDUSTRIAL SAFETY **ONE CREDIT HOUR**

Basic principles of industrial accident prevention and organization for mechanical safeguards, fire prevention, occupational disease, hygiene and first aid, safety codes, compensation and safety education programs. One hour of class a week. Prerequisite: ITI 101.

ITI 210. PLANT LAYOUT **ONE AND ONE-HALF CREDIT HOURS**

A study of the economical arrangement of stocks, machines and layout of aisles for efficient material handling and production. One and one-half hours of class a week. Prerequisites: ITI 108 and MTI 101.

ITI 210L. PLANT LAYOUT LABORATORY **ONE CREDIT HOUR**

To accompany ITI 210. Three hours of laboratory a week.

ITI 211. OPERATION PLANNING AND CONTROL

ONE AND ONE-HALF CREDIT HOURS

Pre-production planning of the most economical methods, machines, operations, and materials for the manufacture of a product. Production control procedures. One and one-half hours of class a week. Prerequisites: ITI 101 and ITI 104. Evening classes only.

ITI 212. PRODUCTION PROCEDURES **ONE AND ONE-HALF CREDIT HOURS**

Primarily for students enrolled in Mechanical Technology, Option B, Tool Design. A survey of motion and time study and layout of production equipment. One and one-half hours of class a week. Prerequisite: ITI 211. Evening classes only.

ITI 214. QUALITY CONTROL **TWO CREDIT HOURS**

An introduction to the techniques of industrial process control using statistical methods. Two hours of class a week. Prerequisite: STI 103.

MECHANICAL TECHNOLOGY (MTI)

L. DUKE GOLDEN, CHAIRMAN

Associate Professor: GOLDEN

Assistant Professor: MORGANA

Instructors: KNISLEY, KRETZLER, WOLFF

Assistant Instructor: OTT

Part-time Instructors: DEMAREY, HOFFMAN, KACHEL,
PARTLOW, THOMPSON, TRISSEL

MTI 101. TECHNICAL DRAWING THREE CREDIT HOURS

An introduction to technical drawing with the emphasis upon orthographic projection and conventional industrial practices. One hour of class and five hours of laboratory a week.

MTI 102. GRAPHICAL COMPUTATIONS THREE CREDIT HOURS

Fundamental descriptive and analytic geometry principles as applied to the solution of engineering problems: included are intersections and developments of planes and solids, layout of objects in space and clearance. One hour of class and five hours of laboratory a week. Prerequisite: MTI 101; Prerequisite or corequisite: STI 103.

MTI 105L. MACHINE TOOLS LABORATORY ONE CREDIT HOUR

A study of uses and capabilities of standard machine tools, measuring instruments and testing equipment. Three hours of laboratory a week. Corequisite: ITI 104.

MTI 203. MACHINE AND TOOL DRAWING ONE AND ONE-HALF CREDIT HOURS

Preparation of complete working drawings from layouts for interchangeable manufacture, computation of fits, limit dimensions and tolerances. One and one-half hours of class a week. Prerequisites: ITI 104 and MTI 102.

MTI 203L. MACHINE AND TOOL DRAWING LABORATORY ONE CREDIT HOUR

To accompany MTI 203. Three hours of laboratory a week.

MTI 205. DIE DESIGN THREE CREDIT HOURS

Fundamental principles of the design and construction of piercing, blanking, forming, drawing, progressive and compound dies. One hour of class and five hours of laboratory a week. Prerequisite: MTI 203. Evening classes only.

MTI 206. JIG AND FIXTURE DESIGN ONE AND ONE-HALF CREDIT HOURS

Fundamental principles of the design and construction of drill and combination jigs, and milling, reaming and tapping fixtures. One and one-half hours of class and three hours of laboratory a week. Prerequisite: MTI 203. Evening classes only.

MTI 206L. JIG AND FIXTURE DESIGN LABORATORY ONE CREDIT HOUR
To accompany MTI 206. Three hours of laboratory a week. Evening classes only.

MTI 210. MACHINE SHOP PRACTICES THREE CREDIT HOURS
A study of the use of hand and machine tools and measuring instruments as well as standard physical testing equipment such as the Rockwell hardness tester and tensile machines. One hour of class and five hours of laboratory a week.
Prerequisites: MTI 101, STI 103, STI 111.

MTI 220. MECHANICS: STATICS AND DYNAMICS THREE CREDIT HOURS
The study of Statics including force systems, resultants and equilibrium, centroids and centers of gravity of areas and bodies, trusses, frames, beams, friction and moments of inertia of areas and bodies; Kinematics including translation, rotation, plane motion and relative motion; Kinetics of particles and bodies by the methods of force-mass-acceleration, work-energy, and impulse-momentum. Two hours of class and four hours practicum a week.
Prerequisites: STI 104 and STI 111.

MTI 221. STRENGTH OF MATERIALS THREE CREDIT HOURS
The study of stresses and strains in tension, compression, shear-flexure and torsion; stresses and deflections of beams, shear and moment diagrams; analysis of columns; riveted and welded joints. Two hours of class and two hours practicum a week. Prerequisite: MTI 220.

MTI 222. MACHINE DESIGN ONE AND ONE-HALF CREDIT HOURS
Stress analysis in shafts, screw fastenings, keys, weldings, couplings, springs and bearings; design problems in power transmission with belts, pulleys, gears, friction drives and clutches. One and one-half hour of class a week. Prerequisites: ITI 104 and MTI 221.

MTI 222L. MACHINE DESIGN LABORATORY ONE CREDIT HOUR
To accompany MTI 222. Three hours of laboratory a week.

MTI 223. MECHANISM THREE CREDIT HOURS
Fundamentals of displacements, motions, velocities and design of friction wheels, flexible connectors, cams, linkages and gears. One hour of class and five hours of laboratory a week. Corequisites: MTI 203 and MTI 220.

SERVICE COURSES

Associate Professor: AVERDICK

Assistant Professor: STAUB

Instructors: FEHLMANN, PATRICK, STRANGE

Part-time Instructors: BASSETT, BOWAN, J. T. BROWN, GOODEMOTE,
JEWETT, LEONARD, MATTINGLY, MESSINA,
NEYHOUSE, SMITH, STUMP

STI 100. TECHNICAL INSTITUTE SURVEY NO CREDIT HOUR
An orientation course designed to give the freshman students a general view of

the engineering technician and his place in the engineering team. In addition will be included such subjects as "How to Study," use of the slide rule and general information concerning the University. One hour of class a week.

STI 101. INDUSTRIAL MATHEMATICS I THREE CREDIT HOURS

A review of the fundamentals of arithmetic and a study of selected topics from geometry and algebra with application to industrial problems. Three hours of class a week.

STI 103. TECHNICAL INSTITUTE MATHEMATICS THREE CREDIT HOURS

A study of the fundamental processes of algebra to include such topics as; factoring, fractions, exponents and radicals, ratio and proportion, systems of linear and second degree equations, logarithms, and progressions. Three hours of class a week.

STI 104. ADVANCED TECHNICAL INSTITUTE MATHEMATICS

THREE CREDIT HOURS

A brief introduction to selected topics of trigonometry, analytic geometry and calculus as applied to industrial problems. Three hours of class a week. Prerequisite: STI 103.

STI 111. PHYSICS: MECHANICS

THREE CREDIT HOURS

A study of the laws of simple machines, forces, linear and angular motion, conditions of equilibrium and fluids. Three hours of class a week. Prerequisite or corequisite: STI 104.

STI 111L. PHYSICS: MECHANICS LABORATORY ONE-HALF CREDIT HOUR

To accompany STI 111. Two hours of laboratory a week.

STI 113. PHYSICS: ELECTRICITY

THREE CREDIT HOURS

The basic principles of electricity and their application in industry. Three hours of class a week. Prerequisite: STI 111.

STI 113L. PHYSICS: ELECTRICITY LABORATORY ONE-HALF CREDIT HOUR

To accompany STI 113. Two hours of laboratory a week.

STI 121. INTRODUCTION TO INDUSTRIAL CHEMISTRY

ONE AND ONE-HALF CREDIT HOURS

A survey of the general principles of chemistry including elements and their simpler compounds. Special emphasis on topics of importance in industrial activities. One and one-half hours of class a week. Prerequisite: STI 103.

STI 121L. INTRODUCTION TO INDUSTRIAL CHEMISTRY LABORATORY

ONE CREDIT HOUR

To accompany STI 121. Three hours of laboratory a week.

STI 131. ENGLISH COMPOSITION I ONE AND ONE-HALF CREDIT HOURS

Review of basic principles of grammar, spelling and punctuation, with special emphasis on composition. One and one-half hours of class a week.

STI 132. ENGLISH COMPOSITION II ONE AND ONE-HALF CREDIT HOURS
Continuation of STI 131. One and one-half hours of class a week. Prerequisite: STI 131.

STI 133. EFFECTIVE SPEAKING ONE AND ONE-HALF CREDIT HOURS
Organization and presentation of spoken materials with special emphasis on voice and physical delivery and audience reaction. One and one-half hours of class a week.

STI 141. PRACTICAL PSYCHOLOGY THREE CREDIT HOURS
Fundamentals of psychology as applied to normal behavior and personal adjustment, with special emphasis on possible uses in industrial application. Three hours of class a week.

STI 205. MATHEMATICS FOR ELECTRICAL TECHNOLOGY THREE CREDIT HOURS
Practical applications of selected topics of calculus and differential equations to Electrical Technology. Three hours of class a week. Prerequisite: STI 104.

STI 212. PHYSICS: HEAT, LIGHT AND SOUND THREE CREDIT HOURS
The elementary principles of heat, light and sound with particular emphasis on industrial application. Three hours of class a week. Prerequisite: STI 111.

STI 212L. PHYSICS: HEAT, LIGHT AND SOUND LABORATORY ONE-HALF CREDIT HOUR
To accompany STI 212. Two hours of laboratory a week.

STI 233. REPORT WRITING ONE AND ONE-HALF CREDIT HOURS
The preparation and presentation of industrial reports. One and one-half hours of class a week. Prerequisite: STI 132.

STI 251. ECONOMICS OF INDUSTRY THREE CREDIT HOURS
Basic economic principles as applied to major industrial problems. Three hours of class a week.

STI 252. AMERICAN POLITICAL IDEAS AND PRACTICES THREE CREDIT HOURS
Fundamentals of democratic processes in government and the practices in which they function. Three hours of class a week.

THEOLOGY (ThL)

REV. WILLIAM J. COLE, S.M., CHAIRMAN

Professors: LEIMKUHLER, STANLEY

Associate Professors: COLE, HOELLE, MONHEIM, WAGNER

Assistant Professors: BARTHOLOMEW, BURNS, KELLEY,

KOHMESCHER, NEUBAUER

Instructors: MULLIGAN, WEBER

The Department of Theology, while not neglecting the scientific requirements of the intellectual discipline known as theology, purposes to meet actual needs

of Christian students preparing for life in the 20th century. Hence, the Department strives in its curriculum of courses to offer the student that "broad knowledge" and to foster those "basic intellectual habits" in Theology which are relative to, and fundamental for, a Christian intellectual life.

The required courses for all Catholic students taking 4 year programs are: THL 106, 206, 306, 406. These courses are to be taken in the order listed, unless there is a special permission of the chairman of the Department of Theology to the contrary. For a major or minor in Theology, the following courses will be offered in a cycle: THL 342, 351, 366, 388, 390, 444, 450, 467, 471, 473, 490.

THL 106. DOGMATIC THEOLOGY I **THREE CREDIT HOURS**

The nature of theology; the true religion; the Church of Christ; the sources of revelation; the existence and nature of God: the blessed Trinity; creation; angels; the governance of the world. *Each Semester, Each Year*

THL 107. INTRODUCTION TO DOGMATIC THEOLOGY I **THREE CREDIT HOURS**

The nature of theology; the true religion, the Church of Christ, the sources of revelation, the existence and nature of God. Given only at Marianist College and Regina Heights. *First Semester, Each Year*

THL 108. INTRODUCTION TO DOGMATIC THEOLOGY II **THREE CREDIT HOURS**

The Blessed Trinity; creation; angels; the governance of the world. Given only at Marianist College and Regina Heights. *Second Semester, Each Year*

THL 160-161. INTRODUCTION TO SPIRITUAL THEOLOGY **SIX CREDIT HOURS**

A survey of asceticism and the principles of the interior life, mental prayer, the vows and Rule as essentials of the Religious life. Offered only at Marcy. *Full Year Course, Each Year*

THL 190. THE CHRISTIAN CRISIS **THREE CREDIT HOURS**

The Crisis of society, development of secularism, effects of secularism; the need for social and moral reconstruction, attitudes toward the social order. Offered only at Marianist College. *First Semester, Each Year*

THL 206. GENERAL MORAL THEOLOGY **THREE CREDIT HOURS**

Happiness—man's final goal; human acts; the morality of human acts; man's emotions; internal principles of good living; vices and sins; law; divine grace. *Each Semester, Each Year*

THL 290. MISSION OF THE CHURCH **THREE CREDIT HOURS**

Call of the Popes for social-moral reconstruction, the Church as an instrument of salvation, role of the layman in the Church, lay spirituality, Catholic Action and the problems of the social order. Offered only at Marianist college. *First Semester, Each Year*

THL 306. THEOLOGICAL AND MORAL VIRTUES I **THREE CREDIT HOURS**

Faith and Hope; Charity; Prudence; Justice, the parts of Justice; Fortitude; Temperance; States of Life. *First Semester, Each Year*

THL 307. INTRODUCTION TO THEOLOGICAL AND MORAL VIRTUES I**THREE CREDIT HOURS**

Faith, Hope, and Charity; Prudence. Given only at Marianist College and Regina Heights.
First Semester, Each Year

THL 308. INTRODUCTION TO THEOLOGICAL AND MORAL VIRTUES II**THREE CREDIT HOURS**

Justice; the parts of Justice; Fortitude; Temperance; States of Life. Given only at Marianist College and Regina Heights.
Second Semester, Each Year

THL 342. SURVEY OF MARIOLOGY I**THREE CREDIT HOURS**

Introduction; principles of Methodology; Christological foundations. Mary's functions: Divine Maternity, Spiritual Maternity, Mediation of graces; Universal Queenship.

THL 351. OLD TESTAMENT PROBLEMS**THREE CREDIT HOURS**

Detailed study of the books of the Old Testament with special emphasis on the Pentateuch and Messianic prophecies.

THL 366. THE CHRISTIAN CONCEPT OF MARRIAGE**THREE CREDIT HOURS**

Detailed study of the encyclical by Pius XI "On Christian Marriage." Marriage as a divine institution; its blessings and benefits; vices opposed; remedies; preparation for marriage.

THL 368. PIUS XII: MYSTICAL BODY OF CHRIST**THREE CREDIT HOURS**

Detailed study of the encyclical by Pius XII on "The Mystical Body of Christ." The Church as the foundation of society; scope and norm of society; basis of authority; impact on secularist mind.

THL 386. THEOLOGY OF THE LAY APOSTOLATE**THREE CREDIT HOURS**

Covers the meaning, structure, spirituality and apostolate of the lay Catholic living in the world; survey of Catholic social principles, a review of certain specialized problems as the relation of Religion and Science, Politics, History and Industry.

THL 390. MISSION OF THE SOCIETY OF MARY**THREE CREDIT HOURS**

The family of Mary is conceived by Father Chaminade, the role of the family of Mary in the mission of the Church. Filial Piety, dogmatic background and apostolic implications of Filial Piety, the apostolic method of the Society of Mary, consecration to Mary from the S. M. point of view. Offered at Marianist College.
First Semester, Each Year

THL 406. CHRISTOLOGY AND THE SACRAMENTS I**THREE CREDIT HOURS**

A study of Christ (Incarnation and Redemption); the Sacraments (In general and particular); the judgment.
Each Semester, Each Year

THL 407. CHRISTOLOGY**THREE CREDIT HOURS**

An intensive study of Christ (Incarnation and Redemption). Given only at Marianist College and Regina Heights.
First Semester, Each Year

THL 408. THE SACRAMENTS

THREE CREDIT HOURS

The Sacraments (in general and in particular); the judgment, heaven, hell. Given only at Marianist College and Regina Heights.

Second Semester, Each Year

THL 444. SURVEY OF MARIOLOGY II

THREE CREDIT HOURS

Mary's privileges; freedom from inherited sin (Immaculate Conception); freedom from personal sin; fullness of grace; perpetual virginity in its various aspects; Our Lady's knowledge; Assumption and question of death of Mary. Mary and the Church.

THL 450. NEW TESTAMENT PROBLEMS

THREE CREDIT HOURS

Detailed study of the Books of the New Testament with special emphasis on the Gospel of St. John and the Epistles of St. Paul.

THL 462. MYSTICAL THEOLOGY

THREE CREDIT HOURS

An analysis of the three ways of perfection with the latter part of the course devoted to the gifts of the Holy Spirit. Offered at Regina Heights.

THL 467. THEOLOGY OF LITURGY

THREE CREDIT HOURS

The nature of the liturgy; the liturgical families of Christendom; the liturgical books of the Roman Rite; structural elements of the liturgy; liturgical participation of the laity in various forms and degrees.

THL 471. CHRISTIANITY AND SOCIAL PROGRESS

THREE CREDIT HOURS

A study of the socio-economic changes since 1891 in the light of Christian social principles and the application of those principles to the Christian social order on the international level.

THL 473. SOCIAL JUSTICE AND COMMUNISM

THREE CREDIT HOURS

A refutation of the errors of the dialectic and historical materialism of atheistic Communism with emphasis on the Christian remedial programs of spirituality and action.

THL 490. TECHNIQUES OF THE MARIANIST SODALITY

THREE CREDIT HOURS

The Sodality, an apostolic instrument for the Society of Mary, the relation of the school to the Sodality, structure of the Sodality, spiritual and apostolic formation of sodalists, apostolate of the Sodality, apostolic methods and techniques. Offered at Marianist College.

First Semester, Each Year