

Courses of Instruction

Accounting (Acc)

Joseph F. Updyke, *Chairman*

Associate Professors: Updyke, Kriegbaum, Hoben

Assistant Professors: Clark, Rodgers

Instructors: Eley, Isip

Part-time Instructors: Bourne, Guenther, McGohan, Michel, Rotterman, Slonaker, Vlahos, VonderBrink, Wagner, Wiggins

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.

ACC 207-208. PRINCIPLES OF ACCOUNTING

SIX 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.

ACC 209. PRINCIPLES OF AUTOMATED ACCOUNTING

TWO CREDIT HOURS

A course acquainting the business student with the most current methods of processing accounting data into accounting statements and managerial reports.

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.

ACC 304. ADVANCED COST ACCOUNTING

THREE CREDIT HOURS

Analysis and control of industrial costs through utilization of budgetary procedures and standard cost systems. Study of distribution costs, profit-volume analyses, and cost reports used in managerial and administrative decisions.

ACC 305-306. INTERMEDIATE ACCOUNTING I & II

SIX CREDIT HOURS

A detailed study of the components appearing in accounting statements. An introduction to alternative procedures and terminology; analysis; theory; and current professional pronouncements.

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.

ACC 310. COST ACCOUNTING ANALYSIS

THREE CREDIT HOURS

Elements of manufacturing costs; cost and financial statement analysis; cost systems and budgets. Course is intended for students outside School of Business Administration. Prerequisites: Acc 207-208 or Acc 203.

ACC 312. GOVERNMENTAL ACCOUNTING

THREE CREDIT HOURS

Accounting for institutions, municipalities, and for state and federal governments; organization; procedure, budget, accounts and records, reports.

ACC 320. BUDGETARY PROCEDURES FOR MANAGEMENT CONTROL

THREE CREDIT HOURS

Role of the budget as it relates to management functions of motivation, planning, organization, and control. A study is made of the construction, control, and interpretation of accounts for a business enterprise.

ACC 401. AUDITING

THREE CREDIT HOURS

Re-examination of accounting principles as related to current accounting practice. Study of the auditor's report; auditing standards, procedures, and ethics used by the public accountant examining business enterprises.

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.

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.

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.

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.

ACC 414. SEMINAR IN ACCOUNTING

THREE CREDIT HOURS

Course consists of a study of current topics by individual reports, student panel discussions, open class discussions, case studies, and outside professional speakers. Recommended to seniors in accounting.

Biology (Bio)Dr. George B. Noland, *Chairman**Associate Professors:* Faso, Joly, Noland, Schuellein, Shay*Assistant Professors:* Laufersweiler, MacMahon, Nunn*Instructor:* Willis*Part-time Instructors:* Hein, Maimon, Metcalf, Mohr

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

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

A study of the more important biological processes and principles through analysis and synthesis. Deals primarily with the organizational aspects of living matter.

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

Course to accompany Bio 101. One three-hour laboratory per week in which the investigational and experimental approach is stressed.

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

A continuation of Bio 101. Stresses primarily the operational aspects of living matter. Prerequisite: Bio 101.

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

Course to accompany Bio 102. One three-hour laboratory period per week.

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

A general survey of biological phenomena designed to acquaint the student with the principles of life and their application to living things.

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

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. Prerequisites: Bio 101-102.

*Day and Evening***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. Prerequisites: Bio 101-102 or Bio 113.

*First Term, Each Year***Bio 207L. HUMAN ANATOMY LABORATORY****ONE CREDIT HOUR**

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

*First Term, 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 study. Prerequisites: Bio 101-102.

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

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

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

A short course patterned after Bio 209. Prerequisites: Bio 101-102.

Second Term, Each Year—Evening

BIO 220. GENERAL BOTANY THREE CREDIT HOURS
 A consideration of the structure, physiology, reproduction and inheritance of representatives of the plant groups. The importance of plants in the life of man will be discussed. Prerequisites: Bio 101, 102. *First Term, 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 Term, Each Year*

BIO 303. PHYSIOLOGY THREE CREDIT HOURS
 A study of the mammalian systems. Sufficient anatomy is introduced to give at least an elementary knowledge of the organs and organ systems. Prerequisites: Bio 101-102, Chm 123-124. Chm 313-314 recommended.

BIO 303L. PHYSIOLOGY LABORATORY ONE CREDIT HOUR
 Course to accompany Bio 303 lecture. One three-hour period per week.

BIO 304. HISTOLOGY TWO CREDIT HOURS
 Fundamentals of cell structure, tissue organization and microscopic anatomy of the vertebrate animal; stress on the mammals. Kodachromes will take the place of microscopic work. Prerequisites: Bio 101-102. *Second Term, Each Year—Evening*

BIO 309. MICROTECHNIQUE THREE CREDIT HOURS
 Considering the fixing, washing, dehydrating, clearing, infiltrating, imbedding, sectioning, affixing, staining and study of normal tissues; aims at recognition of organ systems of the vertebrate body. Prerequisites: Bio 101-102.

BIO 309L. MICROTECHNIQUE LABORATORY ONE CREDIT HOUR
 Course to accompany Bio 309. One three-hour laboratory period per week.

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. Prerequisites: Bio 101-102 and Mth 121.

BIO 312L. GENERAL GENETICS LABORATORY ONE CREDIT HOUR
 Course to accompany Bio 312. One two-hour period per week.

BIO 316. PLANT MORPHOLOGY TWO CREDIT HOURS
 A lecture and laboratory course dealing with the structure, reproduction and evolution of representative plant groups. Prerequisites: Bio 101-102 and Bio 220.

Second Term 1965 and 1967

BIO 316L. PLANT MORPHOLOGY ONE CREDIT HOUR
 Course to accompany Bio 316 lecture. One two-hour period each week.

Second Term 1965 and 1967

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. Prerequisites: Bio 101-102. Bio 209 recommended, or consent of instructor. *January, 1966*

BIO 324. ENTOMOLOGY

TWO CREDIT HOURS

The biology, morphology and identification of insects with emphasis of the local forms. The influence of insects and related animals on man and his possessions. Prerequisite: One year of biology. *January, 1965*

BIO 324L. ENTOMOLOGY LABORATORY

ONE CREDIT HOUR

Course to accompany Bio 324 lecture. Students will be required to prepare a properly identified collection. One two-hour period per week. *January, 1965*

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. Prerequisite: 8 hours biology.

*First Term, Each Year***BIO 325L. PARASITOLOGY LABORATORY**

ONE CREDIT HOUR

Course to accompany Bio 325 lecture. One three-hour period per week. Stresses the recognition of common parasites. *First Term, Each Year*

BIO 330. PLANT PHYSIOLOGY

THREE CREDIT HOURS

A study of plant metabolism including water relations, photosynthesis, mineral nutrition, growth and reproduction. Prerequisites: Bio 101, 102, 220, and one year of chemistry. *January, 1965*

BIO 330L. PLANT PHYSIOLOGY LABORATORY

ONE CREDIT HOUR

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

*January, 1965***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. Prerequisites: Bio 101, 102. *Second Term, Each Year*



Bio 361L. INVERTEBRATE ZOOLOGY LABORATORY TWO CREDIT HOURS
Course to accompany Bio 360 lecture. Two two-hour periods per week.

Second Term, Each Year

Bio 407. EMBRYOLOGY THREE CREDIT HOURS

The course considers the early stages of animal development, paying special attention to the study of the development of the chick and the pig. Prerequisites: Bio 101, 102 and 209.

Bio 407L. EMBRYOLOGY LABORATORY TWO CREDIT HOURS

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

Bio 410. RADIATION BIOLOGY THREE CREDIT HOURS

An introductory course in the theory and principles of ionizing radiation. Application of radioactive tracers to biological problems will be considered. Prerequisites: Bio 303 or consent of instructor.

First Term, Each Year

Bio 411. GENERAL BACTERIOLOGY THREE CREDIT HOURS

An introductory course in bacteriology stressing the physiology, cultivation, and classification of bacteria. Their role in medicine, agriculture and industry is emphasized. Prerequisites: Bio 101-102 and Chm 123-124. Chm 313-314 recommended.

Bio 411L. GENERAL BACTERIOLOGY LABORATORY TWO CREDIT HOURS

Course to accompany Bio 411 lecture. Two two-hour periods per week.

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: 312 and Mth 121.

January, 1965

Bio 416. PATHOGENIC BACTERIOLOGY TWO CREDIT HOURS

A brief survey of the bacteria which cause disease in man. Host-parasite relationships in resistance and infection are stressed. Prerequisite: Bio 411.

January, 1965

Bio 416L. PATHOGENIC BACTERIOLOGY ONE CREDIT HOUR

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

January, 1965



- BIO 420. SEMINAR ONE CREDIT HOUR
Practice in development, presentation, and discussion of papers dealing with biological problems. Prerequisite: Jr. and Sr. standing.
- BIO 421. BIOLOGICAL PROBLEMS ONE OR TWO CREDIT HOURS
(laboratory work)
- BIO 422. BIOLOGICAL PROBLEMS ONE OR TWO CREDIT HOURS
(library work)
- BIO 454. NEUROANATOMY THREE CREDIT HOURS
Study of neurological structure and function and its influence on sensation, perception, learning, and adjustment. Prerequisite: Bio 207. Accredited also in Psychology.

Business Management (BUS)

Barth J. Snyder, *Chairman*

Professors: McGovern, Snyder

Assistant Professors: Fuszara, George, Schneider, Will

Part-time Instructors: Hamilton, Hellwig, Hoefling, Mervar, Meyer, Nolting, Ondercin, Pryor, Quinn, Stephenson, Waterhouse, Yaross

- BUS 101. INTRODUCTION TO BUSINESS THREE CREDIT HOURS
A survey of the fields of business and their inter-relationship. The objectives are to emphasize business concepts and to prepare the students for specialized courses.
- BUS 301. CORPORATION FINANCE THREE CREDIT HOURS
Principles of financial organizations. A study of corporate securities; financial structures; financing of new and established corporations; management of corporate funds; corporate expansions, mergers and reorganizations.
- 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.
- BUS 304. BUSINESS LAW II: SALES AND NEGOTIABLE INSTRUMENTS THREE CREDIT HOURS
A consideration of the law of sales and negotiable instruments. Prerequisite: Bus 303.
- 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.
- BUS 314. PERSONNEL MANAGEMENT THREE CREDIT HOURS
A study of managerial principles and practices as they pertain to the total work force. Including selection, training, compensation, employee services and industrial relations.

BUS 315. PRINCIPLES OF MANAGEMENT **THREE CREDIT HOURS**
A basic course in the managerial functions of planning, organizing, assembling resources and directing operations for a business.

BUS 316. PRODUCTION MANAGEMENT **THREE CREDIT HOURS**
Place of management, factors underlying management decisions; product designs, physical facilities, location, layout; job evaluation, classification; plant operation, output; control of purchases and inventories. Prerequisite: Bus 315.

BUS 320-321. MOTION AND TIME STUDY **THREE CREDIT HOURS**
See Ine 403-403L and Ine 404-404L.

BUS 322. WAGE AND SALARY ADMINISTRATION **THREE CREDIT HOURS**
A discussion of role of wages and salaries for individual, firm and society. Problems in determination of wage levels, structures, methods of compensation, fringe benefits, and general aspects of compensation. Prerequisite: Bus 314 or permission of instructor.

BUS 324. LABOR LEGISLATION **THREE CREDIT HOURS**
A study of the National Labor Relations Act as amended.

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, grievances and maintenance of morale.

BUS 340. INTRODUCTION TO DATA PROCESSING **THREE CREDIT HOURS**
A study of the basic principles of record keeping as they relate to data processing.

BUS 341. PRINCIPLES OF SYSTEMS AND PROCEDURES **THREE CREDIT HOURS**
The object of the course is to introduce the student to the basic principles underlying systems work in business where machines data processing is employed. Prerequisite: Bus 340.

BUS 401. INVESTMENTS **THREE CREDIT HOURS**
A study of the basic features and principles underlying sound investments. Short term as well as long term investments, the bond and stock markets are considered.

BUS 403. BUSINESS LAW III: THE LAW OF BUSINESS ORGANIZATION AND PROPERTY **THREE CREDIT HOURS**
A treatment of the law of partnerships and corporations and the law of property. Prerequisite Bus 303.

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.

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.

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. Prerequisite: Bus 316 or permission of instructor.

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.

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.

BUS 423. BUSINESS POLICIES AND MANAGEMENT **THREE CREDIT HOURS**
Coordination and integration of knowledge and techniques acquired in previous courses in Business Administration. The case method is used.

BUS 450. BUSINESS MANAGEMENT HONORS SEMINAR **TWO CREDIT HOURS**
A course in research upon a subject within the student's major. The course is open only to those who have attained a cumulative grade point average of 3.20 or above in their Sophomore and Junior years.

BUS 455. BUSINESS ETHICS **THREE CREDIT HOURS**
Application of philosophy in the area of employee discipline with emphasis on rights, duties, and the purpose of discipline. Examination of arbitration cases in discipline.



Chemical Engineering (CME)

Dr. Michael A. Bobal, *Chairman**Associate Professor:* Bobal*Assistant Professor:* Willis*Part-time Instructors:* Bauer, Keith

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 Term, 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.
Second Term, 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.
First Term, Each Year

CME 321. CHEMICAL ENGINEERING OPERATIONS I THREE CREDIT HOURS
 A fundamental course in momentum, heat and mass transfer; differential and macroscopic conservation equations. Applications in fluid mechanics, fluidization, filtration. Prerequisites: Cme 202, Mth 301.
First Term, Each Year

CME 322. CHEMICAL ENGINEERING OPERATIONS II THREE CREDIT HOURS
 Continuation of the study of transport phenomena. Heat transfer in turbulent flow, analog and digital solutions of heat transfer problems. Simultaneous heat, mass and momentum transfer. Prerequisite: Cme 321.
Second Term, Each Year

CME 323L. TRANSPORT PHENOMENA LABORATORY ONE CREDIT HOUR
 Measurement of transport properties and application of fundamentals covered in Cme 321 and Cme 322. Prerequisite: Cme 321; Corequisite: Cme 322.
Second Term, Each Year

CME 411. UNIT OPERATIONS THREE CREDIT HOURS
 A study of the unit operations not covered in Chemical Engineering Operations I and II. Topics include extraction, leaching, distillation of binary and multicomponent systems, size reduction and handling of solids.
First Term, 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 321.
First Term, Each Year

CME 414L. UNIT OPERATIONS LABORATORY TWO CREDIT HOURS
 Continuation of Cme 413L. Prerequisite: Cme 322.
Second Term, Each Year

CME 421. SEMINAR ONE CREDIT HOUR
 Presentation of subjects relative to industrial practice. Attendance required by all Chemical Engineering Junior and Senior students, with only Seniors registering for credit.

CME 430. CHEMICAL ENGINEERING DESIGN**THREE CREDIT HOURS**

Study of the principles of process development, plant design and economics. Prerequisite: Cme 411. *Second Term, Each Year*

CME 451. INDUSTRIAL INSTRUMENTATION**TWO CREDIT HOURS**

A study of industrial instruments and systems for indicating, recording and controlling process variables. Prerequisite: Mth 301. *First Term, Each Year*

CME 452L. INDUSTRIAL INSTRUMENTATION LAB.**TWO CREDIT HOURS**

A laboratory course based on the principles discussed in Cme 451. The analog computer in conjunction with laboratory experiments is employed to demonstrate the fundamentals of process control. Prerequisites: Cme 451, Ele 322. *Second Term, Each Year*

CME 481. ENGINEERING CALCULATIONS**THREE CREDIT HOURS**

A study of elementary statistics, series solutions of ordinary differential equations, solutions of partial differential equations and boundary value problems. Laplace transformations. Prerequisite: Mth 301. *Second Term, Each Year*

*Chemical Engineering Electives***CME 461. ELEMENTS OF NUCLEAR ENGINEERING****TWO CREDIT HOURS**

Introduction to the application of engineering principles to the field of nuclear science.

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**

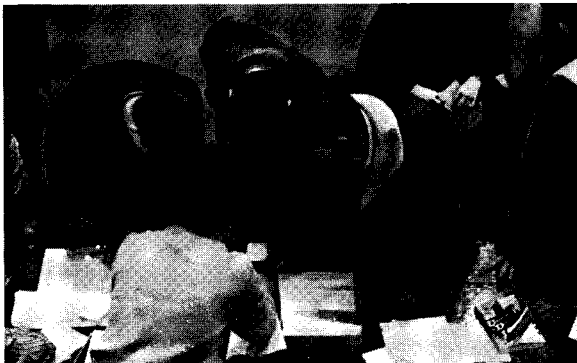
Vectors, tensors and the basic equations of fluid flow. Applications to incompressible, Newtonian and Non-Newtonian fluids. Prerequisite: Cme 321.

CME 503. ADVANCED UNIT OPERATIONS**TWO CREDIT HOURS**

This course covers diffusional topics, including extraction and multi-component absorption. Prerequisites: Cme 321, Cme 322, Cme 411.

CME 504. HEAT TRANSMISSION**TWO CREDIT HOURS**

A study of the basic concepts of the flow of heat by conduction, convection and radiation. Prerequisites: Cme 321, Cme 322.



Chemistry (CHM)

Dr. Cletus Chudd, S.M., *Chairman**Professors:* Chudd, Lucier, Michaelis*Associate Professors:* Eveslage, Pappalardo, Wottle*Assistant Professors:* Karl, O'Brien, Steed, Vance*Instructor:* Walsh*Part-time Instructors:* Becker, DeSando, Katchman, B. O'Brien, March, SemmelmanCHM 110. GENERAL CHEMISTRY THREE CREDIT HOURS

Fundamental principles of chemistry including a brief treatment of organic chemistry. Three class periods each week.

CHM 110L. GENERAL CHEMISTRY LABORATORY ONE CREDIT HOUR

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

CHM 123-124. GENERAL CHEMISTRY SIX CREDIT HOURS

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

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.

CHM 200. ORGANIC CHEMISTRY THREE CREDIT HOURS

A brief course in the fundamentals of Organic Chemistry. Three class periods each week. Prerequisite: Chm 110 or Chm 123.

*Second Term, Each Year*CHM 200L. ORGANIC CHEMISTRY LABORATORY ONE CREDIT HOUR

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

*Second Term, Each Year*CHM 215. QUANTITATIVE ANALYSIS 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 Term, Each Year*CHM 215L. QUANTITATIVE ANALYSIS LABORATORY TWO CREDIT HOURS

Course to accompany Chm 215 lecture. Two three-hour laboratory periods per week.

*First Term, 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 Term, Each Year*CHM 301. QUANTITATIVE ANALYSIS TWO CREDIT HOURS

A short course intended for premedical, pre dental, and medical technology students. Two class periods per week. Prerequisite: Chm 124.

CHM 301L. QUANTITATIVE ANALYSIS LABORATORY TWO CREDIT HOURS

Course to accompany Chm 301 lecture. One four-hour laboratory period per week.

CHM 302. PHYSICAL CHEMISTRY THREE CREDIT HOURS
 A short course especially designed for premedical, predental, or biology majors. Three lectures per week. Prerequisite: Chm 124. *Second Term, Each Year*

CHM 303. PHYSICAL CHEMISTRY THREE CREDIT HOURS
 For chemistry majors and chemical engineers. Three lecture hours each week. Prerequisite: Chm 215 or equivalent; Corequisite: Mth 218.

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

CHM 304. PHYSICAL CHEMISTRY THREE CREDIT HOURS
 Continuation of Chm 303. Prerequisite: Chm 303.

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

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

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

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

CHM 315-316. ORGANIC CHEMISTRY SIX CREDIT HOURS
 A study of aliphatic, aromatic, and heterocyclic compounds, including typical preparations, and basic techniques of organic chemistry; for chemistry majors and chemical engineers. Prerequisite: Chm 215.

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.

CHM 400. BIOCHEMISTRY THREE CREDIT HOURS
 A one semester course for Home Economics students. Prerequisite: Chm 200 or equivalent. *First Term, 1964-1965*

CHM 400L course to accompany Chm 400 lecture. One three-hour laboratory period per week. *First Term, 1964-1965*

CHM 404. SPECIAL TOPICS IN PHYSICAL CHEMISTRY THREE CREDIT HOURS
 A thorough treatment is given to certain topics surveyed in Chm 303-304 such as macromolecules, spectroscopy, photo-space and radiation chemistry. Prerequisite: Chm 304. *Second Term, Each Year*

- 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, or Chm 313-314. *Second Term, Each Year*
- CHM 405L. QUALITATIVE ORGANIC ANALYSIS CHEMISTRY LAB. TWO CREDIT HOURS
 Course to accompany Chm 405 lecture. Two three-hour laboratory periods per week. *Second Term, 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. *First Term, Each Year*
- CHM 415. ANALYTICAL CHEMISTRY TWO CREDIT HOURS
 Methods of analysis based on modern instrumentation. Prerequisite: Chm 215, 215L, 304. *First Term, Each Year*
- CHM 415L. ANALYTICAL CHEMISTRY LABORATORY TWO CREDIT HOURS
 This course accompanies Chm 415. Two three-hour laboratory sessions each week. Prerequisites: Chm 215, 215L, 304. *First Term, Each Year*
- CHM 416. EXPERIMENTAL INORGANIC CHEMISTRY ONE CREDIT HOUR
 The preparation, separation, and characterization of inorganic compounds; special emphasis on modern techniques of coordination chemistry. One lecture hour each week. Prerequisite: Chm 415. *Second Term, Each Year*
- CHM 416L. INORGANIC SYNTHESIS LABORATORY TWO CREDIT HOURS
 The laboratory course which accompanies Chm 416. One four-hour lab each week. Corequisite: Chm 416. *Second Term, Each Year*
- CHM 417. INORGANIC CHEMISTRY THREE CREDIT HOURS
 Electron distribution in atoms, nature of the chemical bond, periodicity, nucleus and its reactions, coordination compounds. Prerequisite: Chm 314 or Chm 316. *Second Term, Each Year*
- CHM 420. BIOCHEMISTRY THREE CREDIT HOURS
 A course dealing with the fundamentals of biochemistry and designed for chemistry and biology majors, pre-dental and pre-medical students. Prerequisite: Chm 314 or 316. *Second Term, Each Year*
- CHM 497. SEMINAR ONE CREDIT HOUR
 Required of all chemistry majors. One meeting each week. *First Term, Each Year*
- CHM 499. RESEARCH THREE CREDIT HOURS
 An elective for Chemistry majors. Permission of Chairman of Department required. Prerequisite: Senior standing.

Civil Engineering and Engineering Mechanics

Seymour J. Ryckman, *Chairman*

Professors: Chamberlain, Ryckman

Associate Professors: Driscoll, Stith, Thomson

Assistant Professors: DuBosar, Payne

Part-time Instructors: Curtis, Pao, Straus

Civil Engineering (CIE)

CIE 205L. SURVEYING FIELD PRACTICE

THREE CREDIT HOURS

Field work and computation in topography, highway surveying, 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

CIE 207. SURVEYING I

FOUR CREDIT HOURS

Theory of Measurements, computation and instrumentation. Boundary and construction surveys, celestial observations, triangulation and level net adjustments, elementary geodesy, and state coordinate systems. Corequisite: Mth 216.

First Term, Each Year

CIE 208. SURVEYING II

THREE CREDIT HOURS

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. Prerequisite: Cie 207.

Second Term, Each Year

CIE 213. PLANE TABLE SURVEYING

ONE CREDIT HOUR

General Principles of Surveying with emphasis on plane table mapping. Designed for students in Geology. Prerequisite: Mth 117 or Mth 122.

Second Term, 1965-1966

CIE 213L. PLANE TABLE SURVEYING LABORATORY

TWO CREDIT HOURS

Field and laboratory work in application of principles of Cie 213. Corequisite: Cie 213.

Second Term, 1965-1966

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. Prerequisite: Egm 303.

Second Term, Each Year

CIE 307. HYDRAULICS

FOUR CREDIT HOURS

Principles of liquid statics and fluid flow including similitude, measuring devices, channel and pipe flow, turbines and pumps. Corequisites: Cie 307L, Egm 301.

First Term, Each Year

CIE 307L. HYDRAULICS LABORATORY

ONE CREDIT HOUR

Laboratory experiments and problems associated with Cie 307. Corequisite: Cie 307.

First Term, Each Year

- CIE 310L. CIVIL ENGINEERING LABORATORY ONE CREDIT HOUR
Experiments and studies relating the engineering properties of certain materials to their fundamental nature and composition. Corequisite: Egm 303. *Second Term, Each Year*
- CIE 312. SOIL MECHANICS THREE CREDIT HOURS
Principles of soil structures, classification, capillarity, permeability, flow nets, shear strength, consolidation, stress analysis, slope stability, lateral pressure, bearing capacity, and piles. Corequisites: Cie 312L, Egm 304. *Second Term, Each Year*
- CIE 312L. SOIL MECHANICS LABORATORY ONE CREDIT HOUR
Laboratory test to evaluate and identify soil properties for engineering purposes. Design problems are included. Corequisite: Cie 312. *Second Term, Each Year*
- CIE 402. STRUCTURAL DESIGN II TWO CREDIT HOURS
Concentrated loads on slabs, beams; composite construction, rigid frames, flat slabs as rigid frames, plastic design of rectangular and tee beams. Prerequisites: Cie 407, Cie 415; Corequisite: Cie 402L. *Second Term, Each Year*
- CIE 402L. STRUCTURAL DESIGN LABORATORY II TWO CREDIT HOURS
Assigned problems illustrating and affording practice in the design covered in Cie 402. Corequisite: Cie 402. *Second Term, Each Year*
- CIE 405. HIGHWAY ENGINEERING THREE CREDIT HOURS
Fundamentals of highway design, construction maintenance, and economics with illustrative practical problems. Prerequisites: Cie 208, Cie 310L. *First Term, 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. Prerequisite: Cie 407. *Second Term, 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. Prerequisite: Cie 306. *First Term, Each Year*
- CIE 408. SEMINAR ONE CREDIT HOUR
Practice in the presentation and discussion of papers; lectures by staff and prominent engineers. Attendance required by all Civil Engineering Sophomore, Junior, and Senior students with only Seniors registering for credit.
- CIE 409. SOIL MECHANICS TWO CREDIT HOURS
A study of the physical properties of soil as an engineering material and an introduction to basic foundation engineering problems. Corequisites: Cie 409L, Egm 304. *Second Term, Each Year*
- CIE 409L. SOIL MECHANICS LABORATORY ONE CREDIT HOUR
Specific gravity, Atterberg limits, grading, permeability, consolidation, triaxial, direct shear, optimum moisture content and field sampling. Corequisite: Cie 409. *First Term, 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. Prerequisite: Cie 306; Corequisite: Egm 304. *First Term, Each Year*

CIE 433. SANITARY ENGINEERING I THREE CREDIT HOURS
 An integrated study of the principles of water sanitation, water supply, stream pollution abatement and waste water disposal systems. Prerequisites: Cie 307, Cie 307L. *First Term, Each Year*

CIE 434. SANITARY ENGINEERING II THREE CREDIT HOURS
 A continuation of Cie 433 and with brief considerations of municipal and rural sanitation. Prerequisite: Cie 433. *Second Term, 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, cost controls, and fundamentals of Cpm and Pert.

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. 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. 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. 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 beams, columns and members, subject to both bending and direct stress. Latest report of the A.S.C.E.-A.C.I. Joint Committee is reviewed. Prerequisite: Cie 407.

CIE 524. FOUNDATION DESIGN THREE CREDIT HOURS
 Earth pressure and stability of natural slopes; frost action, perma-frost. Design of spread foundations, pile foundations, caissons, cofferdams, anchored bulkheads, bridge piers and abutments. 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. 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 administration, and the principles underlying geometric design. Prerequisite: Cie 405.

Engineering Mechanics (EGM)

EGM 202. STATICS

THREE CREDIT HOURS

The principles of mechanics; force systems, resultants and equilibrium; centroids and centers of gravity; application to trusses, frames, and beams; friction; virtual work; moments of inertia. Prerequisite: Phy 206; Corequisite: Mth 218.

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. Prerequisite: Egm 202.

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. Prerequisite: Egm 202.

EGM 304. ADVANCED STRENGTH OF MATERIALS

THREE CREDIT HOURS

Stresses and strains at a point; shear center; unsymmetrical bending; curved beams; approximate analysis of flat plates; torsion of non-circular bars; thick-walled cylinders. Prerequisite: Egm 303.

EGM 305L. MATERIALS TESTING

ONE CREDIT HOUR

A course to acquaint the student with A.S.T.M. standards and procedures in the physical tests of metals, timber and concrete. Tests include those of tension, compression, flexure, torsion, hardness and impact. Corequisite: Egm 303.



Communication Arts

George C. Biersack, *Chairman*

Associate Professor: Biersack

Assistant Professors: Baxter, Geyer, Gilvary, Mullins

Instructors: Henderson, Sokolowski

Part-time Instructors: Law, Vlahos, Moore

The course requirement for Communication Arts majors is 24 upper level credit hours distributed as follows:

FOR GENERAL MAJOR IN COMMUNICATION ARTS:

- (1) Speech 101 and 200 (Introduction to Mass Communications)
- (2) At least one upper level course in each of the following: Speech, Theatre, Broadcasting, Journalism, and Allied Areas, and electives in the field selected through consultation with the Department Chairman.
- (3) Seminar in Communication Arts.

FOR CONCENTRATED MAJOR IN COMMUNICATION ARTS:

- (1) Speech 101 and appropriate 200 level course.
- (2) 21 credit hours of upper level courses with a minimum of 15 hours in Speech, Theatre, or Broadcasting-Journalism.
- (3) Seminar in Communication Arts.

Minors in Communication Arts must have Spe 101 plus 12 hours of upper level courses selected through consultation with the department counselors.

The department sponsors three co-curricular activities, the University Players, the University Debators, and the Flyer News.

SPEECH

SPE 101. FUNDAMENTALS OF EFFECTIVE SPEAKING THREE CREDIT HOURS
Introductory course in fundamental skills of speaking. Self-confidence is developed through speaking opportunities, with special attention given to poise, vocal variety, physical animation, and the communication of ideas.

SPE 201. SPEAKING TECHNIQUES THREE CREDIT HOURS
Covers area of oral communication in professional situations. Adapts principles of effective speaking to specific audiences and occasions. Student prepares and delivers informational, problem-solving, good-will, and special occasion speeches.

SPE 300. VOICE AND DICTION

THREE CREDIT HOURS

Course treating the four phases of speech production: proper breathing, phonation, resonance, and articulation. Projection, quality, and clarity of speech are emphasized. Student's voice is analyzed through tape recordings.

Second Term, Each Year

SPE 301. SPEECH COMPOSITION

THREE CREDIT HOURS

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 Term, 1965-1966

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.

First Term, Each Year

SPE 307. CONFERENCE AND DISCUSSION

THREE CREDIT HOURS

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.

Second Term, 1965-1966

SPE 310. INTERPRETATIVE READING I

THREE CREDIT HOURS

Oral interpretation of poetry and prose. Combines a study of vocal modulations, pitch, inflection, and tone color with intellectual and emotional analysis of selections to develop a deeper appreciation of literature.

First Term, Each Year

SPE 312. PERSUASION

THREE CREDIT HOURS

Analysis of the motivations which lead to belief and action of individuals and audiences. Study in the techniques of achieving persuasive purposes. Delivery of speeches in the application of the theory.

First Term, Each Year



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. Impromptu reading. Prerequisite: Spe 310.

*Second Term, 1965-1966***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 Term, 1965-1966***SPE 401. PUBLIC SPEAKING II****THREE CREDIT HOURS**

A more intensive development of the goals sought in Spe 301. Students are required to demonstrate facility in holding audience attention through longer speeches. Prerequisite: Spe 201 or permission.

SPE 402. FORENSICS**THREE CREDIT HOURS**

A course designed to employ the values inherent in competitive speaking, and to relate those values in an alert, aggressive citizenship. Classroom experience in the various forms of debate, discussion, original oratory.

*First Term, 1964-1965***SPE 420. SPEECH METHODS IN THE SCHOOLS****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.

*Second Term, 1964-1965***SPE 430. SEMINAR IN THE SPEECH ARTS****THREE CREDIT HOURS**

Individual research and report on a problem in the field of speech, theater, or broadcasting. Student will do research in the area of his interest. Communication Arts majors or minors only, with permission.

*Second Term, Each Year***THEATER**

All Communication Arts majors with an emphasis in Drama are encouraged to participate in U.D. Players productions.

SPE 204. INTRODUCTION TO THE THEATER**THREE CREDIT HOURS**

Analyzes the nature of theater, its origin and development, from the standpoint of the play, the physical theater, and its place on our culture.

*Second Term, Each Year***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. Prerequisite: 204 or permission.

*First Term, Each Year***SPE 323. ACTING II****THREE CREDIT HOURS**

A further development and practice of fundamental principles set down in the elementary course in acting, Spe 313. Emphasis is placed on more specialized character portrayal. Prerequisite: Spe 313, or with permission.

Second Term, 1965-1966

SPE 414. STAGECRAFT AND LIGHTING THREE CREDIT HOURS
Presents fundamentals of designing, constructing, and painting stage scenery. Explores basic applications of stage lighting. Includes construction of scenery and plotting of lighting charts for specific plays. Prerequisite : Spe 204. *First Term, 1965-1966*

SPE 415. HISTORY OF THE THEATER I THREE CREDIT HOURS
A survey of the history of theater from Aeschylus to Miller, with emphasis on plays, playwrights, and play productions that lead up to the representational theater of today. Prerequisite : Spe 204 or permission. *First Term, 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 all aspects of production and direction of a one-act play. *Second Term, 1965-1966*

SPE 425. HISTORY OF THE THEATER II THREE CREDIT HOURS
Plays, players, and movements in recent and current theater, including realistic and non-realistic styles. Function of community theater and commercial and professional theater. Prerequisite: Spe 204 or permission. *Second Term, 1964-1965*

BROADCASTING

SPE 306. RADIO FUNDAMENTALS THREE CREDIT HOURS
A workshop course in microphonic technique as applied to straight announcing commercials, and newscasting. Development of articulation and tone for broadcasting purposes is emphasized. Station organization is discussed. *First Term, Each Year*

SPE 309. FUNDAMENTALS OF TELEVISION THREE CREDIT HOURS
Principles and practices of television broadcasting, studio layout, equipment, personnel, organization of channels, and networks, educational and closed circuit television. Students participate in various programming projects. *Second Term, Each Year*

SPE 316. RADIO WORKSHOP THREE CREDIT HOURS
Designed to develop voice, articulation, and reading skills. Exercises in microphone techniques. Development of radio stations' staff requirements and responsibilities. Project shows are taped for analysis. *Second Term, 1964-1965*

SPE 409. TELEVISION PRODUCTION THREE CREDIT HOURS
Intensive practice in preparation and production of TV programs. Camera technique, floor set-ups, and direction of crews and talent demonstrated through actual participation in TV shows. Prerequisite : Spe 309, or with permission. *First Term, Each Year*

JOURNALISM

Majors in Journalism must take Jrn 200 plus 15 semester hours in Jrn 300-400 courses, plus 9 semester hours from 300-400 offerings in the Department of English, selected in consultation with the Chairman of the Department of English. Minors in Journalism must take Jrn 200 plus 12 semester hours from Jrn 300-400 courses.

JRN 200. INTRODUCTION TO MASS COMMUNICATIONS MEDIA **THREE CREDIT HOURS**
Covers nature and purpose of mass communicative field. Emphasis on newspapers, television and radio, occupational opportunities, organizational structure of modern newspaper and news facets of television and radio. *Second Term, Each Year*

JRN 300. REPORTING AND WRITING FOR NEWS MEDIA **THREE CREDIT HOURS**
Determining news values. Structure of a news story. Techniques of gathering news for all media and how this material is applied to newspapers, television and radio. Prerequisite: Jrn 200. *First Term, 1964-1965*

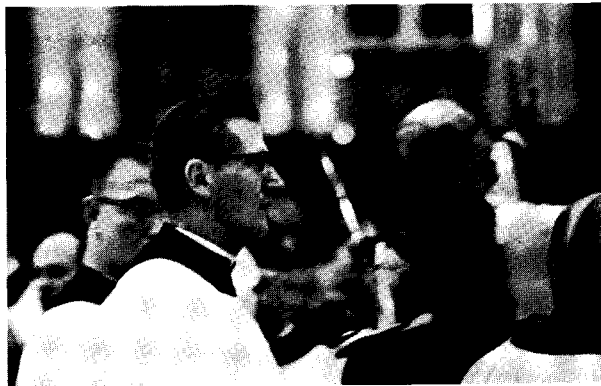
JRN 301. ADVANCED NEWS STORY WRITING **THREE CREDIT HOURS**
Advanced reporting and news writing. Analysis of feature story techniques and structure in all areas, especially columns and specialized reporting. Prerequisites: Jrn 200 and 300.

JRN 302. THE LAW AND NEWS MEDIA **THREE CREDIT HOURS**
Limitations of freedom of the press. The right of the people to know and the news media to report, within the limits of decency, fair comment and privacy. Censorship. Off-the-record material. Libel laws, copyright restrictions. Postal regulations.

JRN 400. EDITING AND COPYREADING **THREE CREDIT HOURS**
The copy desk on large and small newspapers, Editing, headline writing, page make-up, use of pictures and type. Prerequisite: Jrn 300 or permission of instructor. *First Term, 1964-1965*

JRN 401. EDITORIAL WRITING **THREE CREDIT HOURS**
Study of the methods used in preparing and writing newspaper editorials—editorial conferences to discuss topics, research necessary. *Second Term, 1965-1966*

JRN 404. NEWSPAPER MANAGEMENT PROBLEMS **THREE CREDIT HOURS**
Non-editorial operations—problems of business, circulation, advertising and printing departments as they affect operations of the news department. Special emphasis on small dailies and weeklies.



JRN 430. HISTORY OF JOURNALISM

THREE CREDIT HOURS

Critical study of development of the English language press. Emphasis on the American press and its role in political and economic progress of this country. The outstanding editors and their newspapers.

ALLIED AREAS

COM 301. PRODUCTION OF AUDIO-VISUAL AIDS

TWO CREDIT HOURS

Production of various types of audio-visual aides used in communications. Designing and producing audio-visual aids will be required.

First Term, 1965-1966

COM 302. USES OF AUDIO-VISUAL AIDS

TWO CREDIT HOURS

Investigates areas of communication where audio-visual aids are used to great advantage. Deals primarily with developing techniques and skills in using audio-visual aids.

Second Term, 1965-1966

COM 303. FREE-LANCE WRITING

THREE CREDIT HOURS

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

First Term, 1964-1965

COM 304. ADVERTISING

THREE CREDIT HOURS

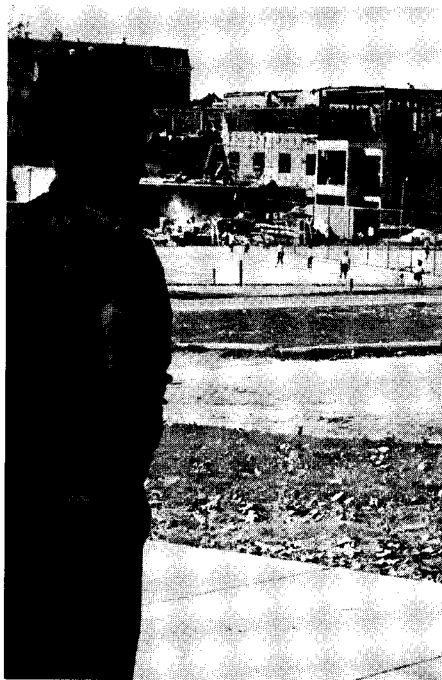
Nature and functions of advertising; preparation of layouts, writing of copy; selection and evaluation of media. Coordination of advertising with other marketing efforts. Social implications of advertising. (See Bus 307.)

COM 305. 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 communication.

Second Term, 1965-1966



COM 306. 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. (See Bus 409.)

COM 307. TECHNICAL WRITING**THREE CREDIT HOURS**

Designed for administrators, engineers, scientists, and business men. Views writing and language as a communications problem. Development techniques for organizing technical information in written form. *Second Term, 1965-1966*

COM 401. PUBLICITY AND PUBLIC RELATIONS**THREE CREDIT HOURS**

For students (business, education, personnel management, etc.) who expect to direct publicity campaigns or write news releases in their future work. Explains nature, organization, and problems of newspaper publishing. *First Term, 1965-1966*

Economics (Eco)Charles W. Whalen, *Chairman**Professors: Fecher, Whalen**Associate Professor: Leese**Assistant Professor: O'Brien**Instructor: Hilaski**Part-time Instructors: Busch, Cleland, Dickison, Hamberg, Hayes, Laufersweiler, McClellan, O'Connell, Suttman, Taylor, Vitton*

Eco 201-202 are prerequisites for all advanced courses in Economics.

Eco 201. PRINCIPLES OF ECONOMICS I**THREE CREDIT HOURS**

Basic economic principles. Analyzes American economy—business organization, industrial relations, the economic role of government, money and banking in the productive process, determination of aggregate level of national income and employment.

Eco 202. PRINCIPLES OF ECONOMICS II**THREE CREDIT HOURS**

Examines pricing of production factors under conditions of perfect and imperfect competition. Considers distribution of income, principles of international trade, problems of economic development, and alternative economic systems.

Eco 330. HISTORY OF ECONOMIC THOUGHT**THREE CREDIT HOURS**

Surveys early philosophers. Examines various schools and systems of economic thought (Mercantilists, Physiocrats, Classical, Historicals, Marginalists, Neo-classicals, Keynesians) and current economic theories with emphasis upon American developments.

Eco 340. MICRO ECONOMIC ANALYSIS**THREE CREDIT HOURS**

Analyzes theory of consumer behavior; production theory; equilibrium of the firm; market structures; monopoly, monopolistic competition, and oligopoly; allocation of resources; distribution of income.

Eco 341. MACRO ECONOMIC ANALYSIS**THREE CREDIT HOURS**

National income and determination of level of income and employment. Keynesian vs. classical systems. Role of government in economy; foreign trade and price levels; theory of economic growth; Keynesian and post-Keynesian theory.

- Eco 342. MONEY, BANKING, AND MONETARY POLICY** **THREE CREDIT HOURS**
 Considers principles of money and monetary systems; commercial banking and role of the Federal Reserve System; monetary theory and policy; the mechanism of international payments.
- Eco 343. PRINCIPLES OF PUBLIC FINANCE AND TAXATION** **THREE CREDIT HOURS**
 Studies major types of taxation and expenditure problems of local, state, and especially federal government. Emphasizes shifting, incidence, equity, and policy of different types of taxes together with fiscal administration and public debt.
- Eco 360. PRINCIPLES OF INTERNATIONAL TRADE** **THREE CREDIT HOURS**
 Studies international trade theory, issues, and problems. Examines national income and trade, foreign exchange, balance of payments, trade barriers, international economic organizations, and recent movements toward free trade.
- Eco 370. LABOR AND INDUSTRIAL RELATIONS** **THREE CREDIT HOURS**
 Considers labor problems of modern industrial society. Examines the history, structure, and functions of trade unions and employer organizations. Analyzes law of trade unionism; collective bargaining; and industrial conflict.
- Eco 371. LABOR ECONOMICS** **THREE CREDIT HOURS**
 Considers wage theory, determinants of wage rates and employment. Examines union policy, economic stability and growth. Also analyzes the economics of private governmental welfare and security programs.
- Eco 372. ECONOMICS OF SOCIAL SECURITY** **THREE CREDIT HOURS**
 Nature and causes of economic insecurity and social adjustment to it. Analyzes economic effects of unemployment, disability, substandard working conditions, old age and death, and the evolution of institutional approaches to these problems.
- Eco 440. BUSINESS CYCLES AND FORECASTING** **THREE CREDIT HOURS**
 Appraises different types of business fluctuation, explanatory theories, and measure of control. Considers relationship of business cycles to economic growth. Introduces methods and problems of forecasting.
- Eco 441. ADVANCED BANKING AND MONETARY ANALYSIS** **THREE CREDIT HOURS**
 Emphasizes nature and role of the central bank in modern economy. Reviews monetary system of the United States and examines the monetary mechanism as a device for stabilizing the economy. Analyzes international monetary problems.
- Eco 450. COMPARATIVE ECONOMIC SYSTEMS** **THREE CREDIT HOURS**
 Analyzes principal types of economic systems in the world today. Stresses their development in the United Kingdom, the Soviet Union, China, and India. Contrasts foreign systems with American capitalism.
- Eco 451. THE SOVIET ECONOMY** **TWO CREDIT HOURS**
 Analyzes Soviet methods of resource allocation and characteristics of its pricing system. Surveys Soviet economic institutions, determinants and measurement of output, distribution of income, and international relations.

Eco 460. PRINCIPLES OF ECONOMIC DEVELOPMENT AND GROWTH**THREE CREDIT HOURS**

Inquires into the nature of economic growth in both pre-industrial and industrial societies within their individual institutional framework. Analyzes theories of growth, domestic and international policy issues.

Eco 461. CURRENT EUROPEAN ECONOMIC PROBLEMS**TWO CREDIT HOURS**

Offered in cooperation with Miami University. Two credits granted economics majors on submission and approval of a written term paper embodying independent research undertaken while touring Europe as a part of the Miami Abroad program.

Eco 470. COMPARATIVE LABOR MOVEMENTS**THREE CREDIT HOURS**

Inquires into the development of trade unionism in the United Kingdom, Western Germany, Sweden, France, and Italy, as compared with the development of trade unionism in the United States.

Eco 480. CURRENT ECONOMIC PROBLEMS**TWO CREDIT HOURS**

Analyzes current economic issues including the problems of agriculture, employment and economic growth, inflation, budgetary policy, public debt, international balance of payments, and underdeveloped economics.

Eco 499. SPECIAL PROBLEMS IN ECONOMICS**TWO TO SIX CREDIT HOURS**

Particular assignments to be arranged and approved by chairman of the department. Credit hours to be determined.

Eco 499W. SPECIAL PROBLEMS IN ECONOMICS-WORKSHOP**TWO TO SIX CREDIT HOURS**

Special workshop assignments to be arranged and approved by chairman of the department. Credit hours to be determined.

Education (EDU)**Foundations of Education****Dr. Joseph J. Panzer, S.M., *Chairman****Professors:* Barrett, Campanelle, Elbert, Panzer*Assistant Professors:* Anderson, Bourgeois, Emling, Riley*Part-time Instructors:* Rogus, Vandevander**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 Term, Each Year***EDU 109. MORAL AND SPIRITUAL VALUES****THREE CREDIT HOURS**

A study of the basic religious and moral values inherent in the American tradition. Stresses the importance of such values for the teacher and emphasizes their role as integrating factor in the educative process.

EDU 198. NATURE OF THE LEARNER

THREE CREDIT HOURS

General psychology emphasizing concepts from the standpoint of both science and philosophy. Focuses attention on fundamental equipment of man as a learner. (A combination of Psy 204 and Phl 207 may substitute.)

EDU 207. EDUCATIONAL PSYCHOLOGY I: GROWTH & DEVELOPMENT

THREE CREDIT HOURS

Designed to study growth and development in childhood and adolescence. The knowledge gained will be made relevant for successful classroom practice. Prerequisite: Edu 198 or equivalent.

EDU 208. EDUCATIONAL PSYCHOLOGY II: THE LEARNING PROCESS

THREE CREDIT HOURS

The aim of this course is two-fold: (1) to treat the learning process; and (2) to treat topics dealing with factors which vitally affect the learning process. Prerequisites: Edu 198, Edu 207 or equivalents.

EDU 419. PHILOSOPHY OF EDUCATION

THREE CREDIT HOURS

By interrelating the principal concepts pertaining to man, society, and the school, the student should develop a constructive philosophy of education. Accredited in Philosophy. Prerequisite: Edu 198 or equivalents.

EDU 423. PHILOSOPHY OF EDUCATION: CATHOLIC

THREE CREDIT HOURS

The educand, the aims and agencies of education, the philosophy of the curriculum are studied in the light of Catholic theology and philosophy. The course may be taken in lieu of Edu 419. Prerequisite: Edu 198 or equivalent.

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. Includes demonstration lessons applying sensory methods to the subjects of the curriculum. Involves laboratory experience.

Second Term, 1964-1965

EDU 440. HONORS SEMINAR

TWO CREDIT HOURS

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

Second Term, Each Year

EDU 448. PSYCHODYNAMICS OF BEHAVIOR

THREE CREDIT HOURS

Treatment of core concepts from Mental Hygiene, Personality Theory, and Abnormal Psychology. It is a prerequisite for admission to the graduate program in school counseling. Prerequisite: Edu 207, 208 or equivalents. *First Term and Summer, 1964-1965*

EDU 460W. SCIENCE IN THE ELEMENTARY SCHOOL

THREE CREDIT HOURS

Understanding the challenge of the newer developments of science for the elementary school program. Study of the objectives of elementary science and of the selection and grade placement of subject matter.

Summer

Elementary Education

Dr. Simon Chavez, *Chairman*

Professor: Chavez

Assistant Professors: Mathews, Sorohan, Waters

Instructors: Ruhmschussel, Vincze

Part-time Instructors: Guinan, Jenkins, McPherson, Schnelle, Traen

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 Term, Each Year*

EDU 303. READING IN THE ELEMENTARY SCHOOL THREE CREDIT HOURS
Treats: reading-readiness, experience reading, methods of meeting individual differences, functional reading, diagnosis in reading, and remedial measures. Observation of teaching. Prerequisite: Edu 207 or Psy 306. *Evening*

EDU 320. READING AND LANGUAGE ARTS IN ELEMENTARY SCHOOL FIVE CREDIT HOURS
An integrated language arts course with reading as its core subject. Acquisition of a certificate in handwriting required. Includes field experiences, particularly observation of teaching. Prerequisite: Edu 207 or Psy 306.

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. Acquisition of certificate in handwriting is required. Prerequisite: Edu 303. *Evening and Summer*

EDU 325. SOCIAL STUDIES IN THE ELEMENTARY SCHOOL THREE CREDIT HOURS
Function of the social studies in the elementary school; appraisal of teaching procedures in the field; formulation of definite principles; testing the results of instruction. Prerequisite: Edu 208. *Evening and Summer*

EDU 330. RELIGION IN CCD (ELEMENTARY) TWO CREDIT HOURS
Principles and techniques for the effective teaching of religion. Prepares the student to teach Catholic pupils on released time from the public elementary schools. Prerequisite: Four semester hours of Theology. *First Term, 1964-1965*

EDU 333W. RELIGIOUS INSTRUCTION IN CCD PROGRAM TWO CREDIT HOURS
Designed to prepare the student to teach Catholic pupils on released time from the public elementary and high schools. Prerequisite: Eight semester hours of Theology. *Summer, 1965*

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. Visitation of schools for observation. Prerequisites: Edu 207, Edu 208 or equivalents.

EDU 352. THE ELEMENTARY SCHOOL : PAROCHIAL THREE CREDIT HOURS
 Purposes and organization of the Catholic elementary school. Emphasis is placed on the curriculum. Visitation of parochial schools for observation. May be taken in lieu of Edu 350. Prerequisites: Edu 207, Edu 208.

EDU 400. RELIGION IN THE ELEMENTARY SCHOOL TWO CREDIT HOURS
 Methods and materials of instruction; employment of the principles of adaptation to the practical needs of elementary school children in the Catholic schools. Observation of teaching. Prerequisites: Edu 207, Edu 208. *First Term, 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.

EDU 414. STUDENT TEACHING SIX-TWELVE CREDIT HOURS
 Consists of teaching in actual classroom situations for full semester under close supervision. A seminar is held once a week. Prerequisite: Formal admission to student teaching a full semester in advance.

EDU 480. THE PSYCHOLOGY OF SLOW LEARNING CHILDREN TWO CREDIT HOURS
 Planned for teachers of slow learning children in special classes. Nature and nurture of abilities of mentally retarded children. Prerequisite: Standard Teaching Certificate. *Evening and Summer*

EDU 484. LANGUAGE ARTS FOR SLOW LEARNING CHILDREN TWO CREDIT HOURS
 Practical measures for taking care of the language and reading needs of mentally retarded children in special classes. Diagnosis of unique problems combined with practice and program development. Prerequisite: Edu 480. *Summer*

EDU 485. SOCIAL STUDIES FOR SLOW LEARNING CHILDREN TWO CREDIT HOURS
 Curriculum planning and program development for the integration of social studies in the education of mentally retarded children in special classes. Prerequisite: Edu 480. *Summer*

EDU 486. ARITHMETIC FOR SLOW LEARNING CHILDREN TWO CREDIT HOURS
 Deals with the special adjustments and techniques required in developing basic arithmetic skills in mentally retarded children in special classes. Prerequisite: Edu 480. *Summer*

EDU 487. OCCUPATIONAL ORIENTATION AND JOB TRAINING TWO CREDIT HOURS
 Designed to acquaint teachers with the problems and challenges involved in a program positively attuned to the limited occupational opportunities for mentally retarded children. Prerequisite: Edu 480. *Evening and Summer*

Secondary Education

Dr. Ellis Joseph, *Chairman*

Professors: Faerber, Leary, Seebold

Associate Professors: Darby, Jansen, Powers

Assistant Professor: White

Part-time Instructors: Cronin, Painter, Markus, Reston, Stuck, Weidner, Yura

EDU 327. BUSINESS EDUCATION IN THE SECONDARY SCHOOL TWO CREDIT HOURS
Principles and techniques of teaching business education subjects in high school, including both the social business and secretarial subjects. Prerequisite: Edu 208.

First Term, Each Year

EDU 331. RELIGION IN CCD (HIGH SCHOOL) TWO CREDIT HOURS
Concentrates on principles and techniques of religious instruction for high school students and follows the program of the Confraternity of Christian Doctrine. Prerequisite: Eight semester hours of Theology.

Second Term, 1964-1965

EDU 351. THE SECONDARY SCHOOL: PURPOSES AND PRACTICES TWO CREDIT HOURS
Purposes, organization, curricula, community relationships, and the practical aspects of teaching in Junior and Senior High Schools. Visitation of high schools for observation. Prerequisites: Edu 207, Edu 208 or equivalents.

EDU 353. THE SECONDARY SCHOOL: MARIANIST TWO CREDIT HOURS
Covers the basic course content of Edu 351 treated in terms of the Marianist traditions and concepts of teaching as revealed through Marianist educational literature. May be taken in lieu of Edu 351. Prerequisites: Edu 207, Edu 208.

Summer

EDU 405. ENGLISH AND SPEECH IN SECONDARY SCHOOL TWO CREDIT HOURS
Ways and means whereby the teacher can make his teaching more functional in the lives of students. Observation of teaching. Prerequisite: Edu 351 or Edu 353.

Second Term, Each Year

EDU 406. SOCIAL STUDIES IN SECONDARY SCHOOL TWO CREDIT HOURS
Aims and values of social studies in high school. General method and special techniques in the social studies field. Observation of teaching. Prerequisite: Edu 351 or Edu 353.

Second Term, Each Year

EDU 408. MODERN LANGUAGE IN THE SECONDARY SCHOOL TWO CREDIT HOURS
Considers the functions and values of language study; courses of study; organization of materials; conventional and progressive methods. Observation of teaching on high school level. Prerequisite: Edu 351 or Edu 353.

Second Term, Evening

EDU 409. MATHEMATICS IN THE SECONDARY SCHOOL TWO CREDIT HOURS
The objectives of high school mathematics; sequence and correlation of subject matter; methods of teaching. Directed observation of teaching. Prerequisite: Edu 351 or Edu 353.

Second Term, 1964-1965

EDU 410. RELIGION IN THE SECONDARY SCHOOL

TWO CREDIT HOURS

Presents the teacher of religion with modern methods of instruction with view to the practical needs of adolescents. Prerequisite: Edu 351 or Edu 353. *Summer, 1965*

EDU 411. SCIENCE IN THE SECONDARY SCHOOL

TWO CREDIT HOURS

Deals with instructional methods and materials in the modern science program. Includes the selection of objectives on the basis of reliable criteria, and the development of an integral science program. Prerequisite: Edu 351 or Edu 353.

Second Term, 1964-1965

EDU 412. STUDENT TEACHING

SIX CREDIT HOURS

Supervised teaching in actual classroom situations during the summer period. A seminar on campus twice a week. Restricted to students who have had full-time teaching experience. Prerequisite: Methods course.

EDU 416. THE TEACHING INTERNSHIP

NINE CREDIT HOURS

For beginning Marianist teachers in Marianist secondary schools. Supervised experiences under an administrator and a master teacher. Prerequisite: Edu 351.

First and Second Term, Each Year

School Administration and Counseling

Dr. Ellis Joseph, Acting Chairman

Professors: Campanelle, Faerber, Leary

Assistant Professors: Anderson, Joseph

Part-time Instructors: Crim, Edgington, Sigmund, Wogoman, Working, Wright

Courses are listed in the Graduate Catalog Issue of the Bulletin.



Electrical Engineering (ELE) Bro. Louis H. Rose, S.M., *Chairman*

Professor: Rose

Associate Professors: Borden, Morgan, Schmidt, Yakura

Instructor: Kubach

Part-time Instructors: Farren, Hoversten, Snyder

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. Corequisites: Phy 207, Mth 217.

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. Prerequisite: Ele 201; Corequisite: Mth 218.

ELE 307. ELECTRICAL MEASUREMENTS THREE CREDIT HOURS
A basic course covering both DC and AC measurements; errors of measurements; deflection and null methods; bridge analysis; wave forms and AC meters; square law movements. Corequisite: Ele 205.

ELE 307L. ELECTRICAL MEASUREMENTS LABORATORY ONE CREDIT HOUR
Experiments to accompany topics outlined in Ele 307. Corequisite: Ele 307.

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. Prerequisite: Ele 312.

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. Corequisite: Ele 310.

ELE 312. ENGINEERING ELECTRONICS I THREE CREDIT HOURS
A basic course with emphasis on terminal behavior of vacuum tubes and transistors.

ELE 312L. ENGINEERING ELECTRONICS LABORATORY I ONE CREDIT HOUR
Receiving tube and transistor characteristics, electronic instruments, basic amplifier circuits, power supplies, waveshaping circuits. Corequisite: Ele 312.

ELE 313. ENGINEERING ELECTRONICS II THREE CREDIT HOURS
A course in linear electronic circuits; network theorems; single and multistage amplifiers; transient response of electronic circuits and feedback amplifiers. Prerequisite: Mth 341; Corequisite: Ele 310.

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. Corequisite: Ele 313.

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; transformers. Prerequisite: Ele 205.

ELE 321. BASIC ELECTRIC THEORY

THREE CREDIT HOURS

For Chemical, Civil, Mechanical and Industrial Engineering students. Fundamental methods of analysis in DC and AC circuits. Prerequisites: Phy 207, Mth 218.

ELE 322. FUNDAMENTAL ENGINEERING ELECTRONICS

TWO CREDIT HOURS

A continuation of Ele 321. Physical aspects of vacuum tubes and associated circuits. Vacuum tube amplifiers, oscillators, special purpose tubes and semi-conductor devices. Instrumentation. Prerequisite: Ele 321.

ELE 322L. FUNDAMENTAL ENGINEERING ELECTRONICS LAB.

ONE CREDIT HOUR

Experiments, tests and measurements paralleling lectures in Ele 322. Basic receiving tube and transistor characteristics, electronic instruments, basic amplifier circuits, power supplies, wave-shaping circuits. Corequisite: Ele 322.

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. Prerequisite: Ele 318.

ELE 403L. MACHINERY LABORATORY

ONE CREDIT HOUR

Experiments covering series, shunt and compound DC machines. Transformer voltage regulation and efficiency. Parallel and polyphase operation of transformers. Synchronous generators and motors, single phase motors. Corequisite: Ele 403.

ELE 408. ELECTRICAL TRANSIENTS

THREE CREDIT HOURS

Application of the Laplace Transform; poles and zeros; transient and steady-state response. Fourier series, integral, and transforms. Prerequisite: Ele 313. Corequisite: Mth 342.

ELE 410. SEMINAR

ONE CREDIT HOUR

Presentation of papers by the students and lectures by engineers in active practice.

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. Prerequisite: Mth 341.

Second Term, Each Year

ELE 413. COMMUNICATION ENGINEERING

THREE CREDIT HOURS

Wave filters; transmission lines; impedance matching; application of "Smith Chart"; equalization; linear amplifiers; modulation. Prerequisites: Ele 310, Ele 310L.

ELE 413L. COMMUNICATION ENGINEERING LABORATORY

ONE CREDIT HOUR

The experiments will be closely correlated with the lecture materials. Corequisite: Ele 413.

- ELE 414. ADVANCED ELECTRONICS THREE CREDIT HOURS
 Electron ballistics; theory of metals and semiconductors; electron emission, space charge flow, fundamental gas processes; modern electron devices. Prerequisite: Mth 301 or Mth 341.
Second Term, Each Year

Electrical Engineering Electives

- 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. 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
 Closed-loop control systems; Routh's and Nyquist stability criterion; attenuation-frequency methods. The root-locus approach; relationship between steady-state and transient performance. Prerequisite: 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
 Chebyshev and Taylor approximations to brick wall functions. Elementary and modern synthesis. Low pass and band pass amplifiers. Feedback amplifiers and stability. Prerequisite: Mth 341. Corequisite: Ele 413.

- ELE 503. ANALOG COMPUTERS THREE CREDIT HOURS
 Analysis of linear electrical computing elements; function generation. Use of differential analyzers for solving linear integral-differential and non-linear differential equations. Prerequisites: Ele 313, Mth 342.

- ELE 504. DIGITAL COMPUTERS THREE CREDIT HOURS
 Circuit components and binary numbers. The simplification of Boolean functions. The arithmetic unit. Error-free computer operation. The control unit. Completing computer design. 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)

Dr. B. J. Bedard, *Chairman**Professor:* Boll*Associate Professors:* Bedard, Kohles, McCarthy, O'Donnell, Whetro*Assistant Professors:* Cochran, Donnelly, Fisher, Labadie, Lees, Means, Murphy, Petitpas, Rougier, Ruff, Shank, Stockum, Sturm, Tiernan*Instructors:* Bihl, Geis, Kenny, Kinneavy, Macklin, Miller, Panakal, Westhead*Part-time Instructors:* Armstrong, Collins, Hellwig, Palumbo, Riley

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, 318, or 428; 405 or 431; 490; a semester of Shakespeare; a period survey each from sequence 412 to 435 and 438 to 442; a semester of American literature from the sequence 450 to 456; and one additional elective from 300-400 level offerings. In addition to Freshman and Sophomore courses minors must take one course from the 300 level and three from the 400 level. Majors and minors should consult the departmental chairman regarding their program of study.

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

ENG 101. ENGLISH COMPOSITION I

THREE CREDIT HOURS

Extensive practice in composition is integrated with analysis of selected readings. Frequent themes are assigned.

ENG 102. ENGLISH COMPOSITION II

THREE CREDIT HOURS

Continuation of Eng 101. Practice is continued in various types of theme writing. Prerequisite: Eng 101. Required of every student.

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. Prerequisites: Superior score in entrance exams.

First Term, Each Year

ENG 220. INTRODUCTION TO LITERATURE

THREE CREDIT HOURS

Representative works are studied as a means of acquainting the student with the literary principles involved in poetry, drama, fiction, and essays. Prerequisite: Eng 102 or 103. Required of Sophomores in Business Administration.

ENG 221. ENGLISH LITERATURE

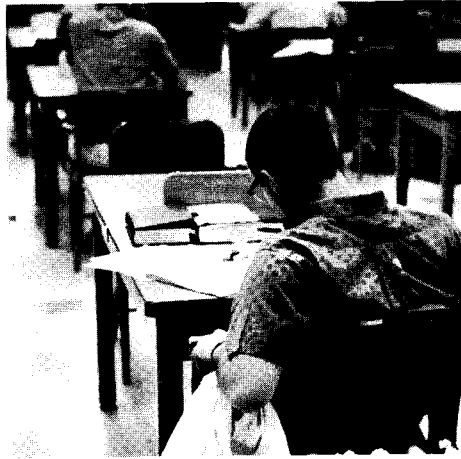
THREE CREDIT HOURS

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. Prerequisite: Eng 102 or 103.

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. Prerequisite: Eng 102 or 103.

**ENG 315. DEVELOPMENT OF GRAMMAR****THREE CREDIT HOURS**

Studies in grammatical structure of modern English in the light of historical development. Traditional and modern linguistic points of view considered.

*First Term, 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.

ENG 318. CREATIVE WRITING**THREE CREDIT HOURS**

The principles for writing the short story, the informal and formal essay, and the biographical sketch. Prerequisite: Eng 316 or permission.

*Second Term, Each Year***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.

*First Term, Each Year***ENG 323. DANTE****THREE CREDIT HOURS**

A comprehensive study of the three Canticles of the *Divine Comedy*: Inferno, Purgatorio, and Paradiso.

*Second Term, Each Year***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.

ENG 330. 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. (former Eng 422)

ENG 332. MODERN DRAMA

THREE CREDIT HOURS

A selected number of dramas, representing the best of world theater by the foremost playwrights of the modern period. (former Eng 426)

ENG 352. TOPICS IN MODERN LITERATURE

THREE CREDIT HOURS

A study of selected Continental, English, and American writers with a background of discussion of the significant forces shaping the literature of the twentieth century.

ENG 360. CHILDREN'S LITERATURE

THREE CREDIT HOURS

Treats the various fields of children's literature, including: history of children's literature, poetry for different age levels, folk tales, story telling. Required of and limited to students in Elementary Education.

ENG 362. SHAKESPEARE

THREE CREDIT HOURS

A study of selected plays of Shakespeare. Some of these are discussed intensively in class; others are assigned for outside reading.

ENG 368. 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 the mind," as set forth by Cardinal Newman in the *Discourses on the Idea of a University*. (former Eng 419)

Second Term, Each Year

ENG 370. FRANCIS THOMPSON

THREE CREDIT HOURS

A study of his poems toward the discernment of their manifold spiritual and autobiographical implications. (former Eng 414)

First Term, Each Year

ENG 403. HISTORY OF THE ENGLISH LANGUAGE

THREE CREDIT HOURS

Stages in the development of the English language and influences shaping its development are studied to show what happened to the English language from the beginning to the present time. (former Eng 430)

Second Term, Each Year

ENG 405. 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. Prerequisite: Eng 221, 222. (former Eng 429)

Second Term, Each Year

ENG 412. EARLY RENAISSANCE LITERATURE

THREE CREDIT HOURS

A survey of the non-dramatic literature of the sixteenth century from Thomas More to Sidney and Spenser. Prerequisite: Eng 221, 222.

ENG 413. LATER RENAISSANCE LITERATURE

THREE CREDIT HOURS

A survey of the non-dramatic literature of the early seventeenth century from Bacon, Jonson, and Donne, to Marvell, exclusive of Milton. Prerequisite: Eng 221, 222.

ENG 420. RENAISSANCE DRAMA

THREE CREDIT HOURS

A study of the drama of the Elizabethan, Jacobean, and Caroline periods, exclusive of Shakespeare. Prerequisite: Eng 221, 222.

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. Prerequisite: Eng 221, 222.

- 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. Prerequisite: Eng 221, 222.
- ENG 425. HISTORIES OF SHAKESPEARE THREE CREDIT HOURS
 The same procedure as followed for Eng 423. All of the Histories are taken. Prerequisite: Eng 221, 222.
- 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. Prerequisite: 221 or 222. *First Term, Each Year*
- ENG 431. MILTON THREE CREDIT HOURS
 A study of the major and minor poems and of selected prose of Milton. Prerequisite: Eng 221, 222. (former Eng 415) *First Term, Each Year*
- ENG 434. AGE OF WIT AND SATIRE THREE CREDIT HOURS
 A study of the neo-classical literature from the Restoration to the middle of the eighteenth century. The concern of the course is with the literature from Dryden to Pope, Addison, and Steele. Prerequisite: Eng 221, 222.
- ENG 435. ENGLISH LITERATURE OF THE EIGHTEENTH CENTURY THREE CREDIT HOURS
 A study of the most representative works in prose and poetry from Swift to Johnson. Prerequisite: Eng 221, 222. (former Eng 340)
- ENG 437. THE ENGLISH NOVEL THREE CREDIT HOURS
 A study of the development of the English novel from its beginning in the middle of the eighteenth century to the end of the nineteenth century. Prerequisite: Eng 221, 222.
- ENG 438. THE AGE OF ROMANTICISM THREE CREDIT HOURS
 A study of the major poets and critics of the Romantic Age. Prerequisite: Eng 221, 222.
- ENG 441. THE VICTORIAN AGE I THREE CREDIT HOURS
 A study of the major English poets from Tennyson to Housman. Prerequisite: Eng 221, 222. (former Eng 335)
- ENG 442. THE VICTORIAN AGE II THREE CREDIT HOURS
 English prose writers from Carlyle to Pater. Eng 441 is not a prerequisite. Prerequisite: Eng 221, 222. (former Eng 336)
- ENG 445. MODERN BRITISH FICTION THREE CREDIT HOURS
 A consideration of significant developments in the novel and short fiction from Joyce to the present day.
- ENG 446. MODERN ENGLISH POETRY THREE CREDIT HOURS
 A study of tradition and innovation in English poetry from Yeats to the present day.

ENG 450. NINETEENTH CENTURY AMERICAN POETRY AND PROSE

THREE CREDIT HOURS

A survey of the significant developments in American literature, exclusive of fiction, from Bryant and Poe to Whitman and Henry Adams.

ENG 452. AMERICAN FICTION OF THE NINETEENTH CENTURY

THREE CREDIT HOURS

A study of developments in the novel and short fiction from Washington Irving to Mark Twain and Stephen Crane. Prerequisite: Eng 221, 222.

ENG 454. MODERN AMERICAN FICTION

THREE CREDIT HOURS

A treatment of significant movements in the novel and in the theory of fiction in twentieth century American literature. Prerequisite: Eng 221, 222.

ENG 456. MODERN AMERICAN POETRY

THREE CREDIT HOURS

A study of the technique of modern poetry in America from Robinson, Jeffers, and Frost to the present. Prerequisite: Eng 221, 222.

ENG 490. SEMINAR

THREE CREDIT HOURS

Concentration on one literary figure, genre, or period for purposes of research and analysis. Reports are read at sessions. Required of all majors in English. With permission. Prerequisite: Eng 221, 222. (former Eng 440)

Second Term, Each Year

Fine Arts (ART)

Edward R. Burroughs, *Chairman*

Associate 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 Term, 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 Term, 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 Term, 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 Term, 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 Term, Each Year

ART 204. LETTERING AND CALLIGRAPHY**TWO CREDIT HOURS**

The same rules governing other aspects of art apply also to lettering. Application of the drawn letter and the designed letter to poster, books, inscriptions, and manuscripts through class assignments and projects will be required.

ART 205. GRAPHIC ARTS**THREE CREDIT HOURS**

The principal processes of the graphic arts are studied as they pertain to contemporary expression in the fine arts and advertising. Offered only at Marianist College.

*Second Term, 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 Term, 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 Term, 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 Term, 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. Offered only at Regina Heights.

ART 407. ART IN THE SCHOOLS**TWO CREDIT HOURS**

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. Accredited in Education.

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 Term, 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 Term, Each Year***ART 410. THE GREAT MASTERS III****TWO CREDIT HOURS**

Art forms in the New World are invested with idealisms similar to their contemporary European styles. The Art of the Americas answers special needs arising from the character of the people of the continents of the Western Hemisphere.

ART 417W. ELEMENTARY SCHOOL ART**THREE CREDIT HOURS**

A workshop designed to give the regular classroom teacher on the elementary level new and practical ideas on the employment of art materials and techniques in relation to seasonal interest of pupils and to holiday observances.

*Summer Session***ART 477W. ART IN THE SCHOOLS****THREE CREDIT HOURS**

Intended primarily for the teacher on the elementary level; creative art expression, use of materials, study of handwork and organization of units of work. May substitute for Art 407.

*Summer Session***Geology (GEO)****George H. Springer, Chairman***Professors: Coryell, Springer**Assistant Professor: Gray**Instructors: Horvath, Sardi**Part-time Instructor: Herron***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.

GEO 115. PHYSICAL GEOLOGY**THREE CREDIT HOURS**

An introductory course in geologic principles; the composition and structure of the earth, its land forms, and the agencies active in their production. *First Term, Each Year*

GEO 115L. PHYSICAL GEOLOGY LABORATORY**ONE CREDIT HOUR**

Course to accompany Geo 115. Two hours per week.

*First Term, Each Year***GEO 116. HISTORICAL GEOLOGY****THREE CREDIT HOURS**

A comprehensive study of earth history as interpreted from the rocks of the crust.

*Second Term, Each Year***GEO 116L. HISTORICAL GEOLOGY LABORATORY**

Course to accompany Geo. 116. Two hours per week.

*Second Term, 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 Term, Each Year***GEO 201L. MINERALOGY LABORATORY****ONE CREDIT HOUR**

Course to accompany Geo 201. Three hours per week.

*First Term, 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 Term, Each Year***GEO 204L. OPTICAL MINERALOGY LABORATORY****TWO CREDIT HOURS**

Course to accompany Geo 204. Four hours per week.

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

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

Second Term, 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 Term, 1965-1966*
- GEO 301L. STRUCTURAL GEOLOGY LABORATORY** ONE CREDIT HOUR
 Course to accompany Geo 301. Two hours per week. *First Term, 1965-1966*
- 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 Term, 1965-1966*
- GEO 302L. GLACIAL GEOLOGY LABORATORY** ONE CREDIT HOUR
 Course to accompany Geo 302. Two hours per week. *Second Term, 1965-1966*
- 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. *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 Term, 1964-1965*
- GEO 307L. GEOMORPHOLOGY LABORATORY** ONE CREDIT HOUR
 Course to accompany Geo 307. Two hours per week. *Second Term, 1964-1965*
- 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. *Second Term, 1965-1966*
- GEO 309L. PETROGRAPHY LABORATORY** TWO CREDIT HOURS
 Course to accompany Geo 309. Four hours per week. *Second Term, 1965-1966*
- GEO 310. STRATIGRAPHY** THREE CREDIT HOURS
 The interpretation of specific lithotypes and the synthesis of the stratigraphic record. Prerequisites: Geo 116, 301. *Second Term, 1964-1965*
- GEO 310L. STRATIGRAPHY LABORATORY** ONE CREDIT HOUR
 Course to accompany Geo 310. Two hours per week. *Second Term, 1964-1965*
- GEO 401. PALEONTOLOGY** THREE CREDIT HOURS
 A study of animal life of the geologic past as shown by the fossil record. *Second Term, 1965-1966*
- GEO 401L. PALEONTOLOGY LABORATORY** ONE CREDIT HOUR
 Course to accompany Geo 401. Two hours per week. *Second Term, 1965-1966*

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 Term, 1964-1965

GEO 403L. SEDIMENTATION LABORATORY

ONE CREDIT HOUR

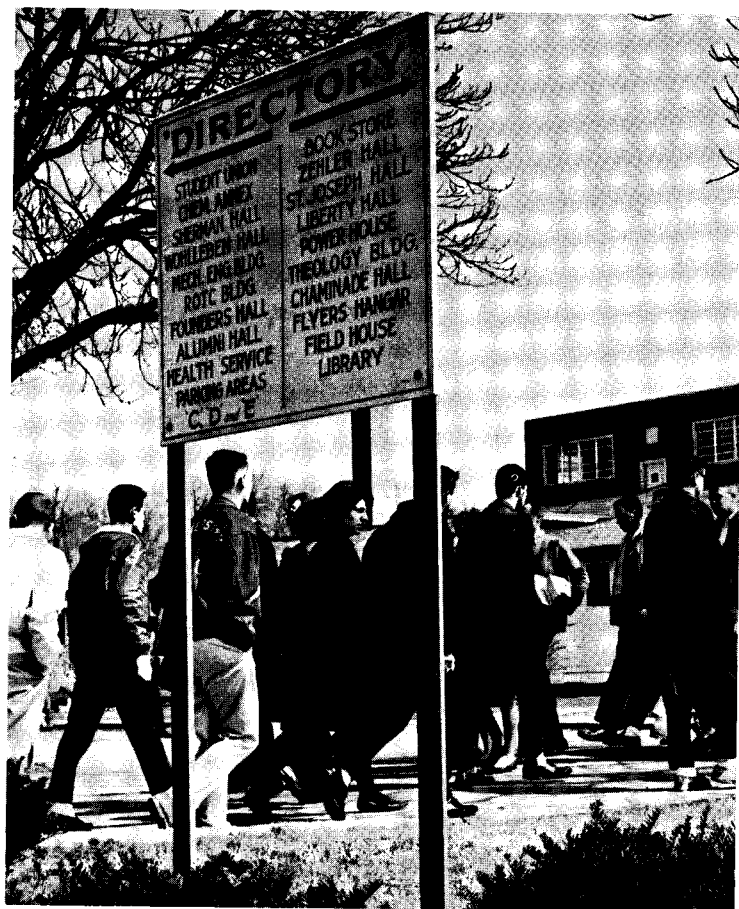
Course to accompany Geo 403. Two hours per week.

First Term, 1964-1965

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.



GEO 411. IGNEOUS PETROLOGY**THREE CREDIT HOURS**

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

*Second Term, 1964-1965***GEO 411L. IGNEOUS PETROLOGY LABORATORY****ONE CREDIT HOUR**

Course to accompany Geo 411. Two hours per week.

*Second Term, 1964-1965***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, 1964-1965***GEO 415L-416L. MICROPALAEONTOLOGY LABORATORY****TWO CREDIT HOURS**Course to accompany Geo 415-416. Two hours per week. *Full Year Course, 1964-1965***History (HST)**Dr. Wilfred J. Steiner, *Chairman**Professor: Steiner**Associate Professors: Beauregard, Maras, Ruppel**Assistant Professors: Donatelli, King, Mathias, Sha**Instructors: Bannan, Eid, Kutolowski**Part-time Instructor: Lowe*

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, and III, and two courses from Groups IV and V.

GROUP I	GROUP II	GROUP III	GROUP IV	GROUP V
301	303	310	356	351
302	304	318	357	370
305	306	409	364	375
309	319	421	380	451
345	340	424	385	461
346	403	429	458	462
411		435	459	481
			470	490

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 102 serve as prerequisites for advanced courses in History.

- HST 102. HISTORY OF CIVILIZATION THREE CREDIT HOURS
 A survey of mankind from 1660 A.D. to the present. Emphasis on the Old Regime, the French Revolution and Napoleonic Age, the Era of Nationalism and Liberalism, the New Industrialism and Imperialism.
- 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.
- 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.
- HST 301. MEDIEVAL EUROPE THREE CREDIT HOURS
 The development of European history from the 4th to the 14th century. Topics include: birth of Middle Ages; Christianity; Byzantine, Islamic, and Carolingian Empires; feudalism; manorialism; Crusades; growth of national states. *First Term, 1964-1965*
- HST 302. RENAISSANCE AND REFORMATION THREE CREDIT HOURS
 The development of European History from the 14th to the middle of the 17th century. Emphasis on the economic, political, social, and religious aspects of the Renaissance, Protestant Revolution, and Catholic Reformation. *Second Term, 1964-1965*
- HST 303. EXPANSION OF EUROPE THREE CREDIT HOURS
 A study of European imperialism from the 15th to the 20th century. Stress is laid on the reasons for the beginning of the movement, the theory and practice of colonialism, and the manner in which imperialism influenced Europe. *First Term, 1965-1966*
- HST 304. THE AGE OF ENLIGHTENMENT THREE CREDIT HOURS
 Designed to bridge the gap between the later Reformation and the era of the French Revolution. Intellectual and cultural developments will be covered, with emphasis on political, economic and social trends of the Old Regime. *Second Term, 1965-1966*
- HST 305. HISTORY OF RUSSIA THREE CREDIT HOURS
 The development of the Russian state from earliest times to the present. This course is concerned with the origins of the Russian state, political and economic growth, and the development of the modern Soviet state. *First Term, 1965-1966*
- HST 306. INTELLECTUAL AND CULTURAL HISTORY OF MODERN EUROPE THREE CREDIT HOURS
 Close analysis of men, ideas, and principal cultural developments in the period beginning with the Renaissance and extending into the 20th century. *Second Term, 1964-1965*
- HST 309. ANCIENT HISTORY THREE CREDIT HOURS
 A survey of ancient civilizations between 5000 B.C. and 313 A.D., including Egyptian, Mesopotamian, Anatolian, Syro-Palestinian, Persian, Aegean, Hellenic, Hellenistic, and Roman. *First Term, 1965-1966*

HST 310. MILITARY HISTORY SINCE 1789**THREE CREDIT HOURS**

This course touches upon the evolving concept and philosophy of war, the development and inter-relationships of weapons, tactics and strategy, and the role of military affairs in politics.

*First Term, 1964-1965***HST 313. CHRISTIAN ANTIQUITY****THREE CREDIT HOURS**

This course investigates origin and cultural setting of early Christianity, the conflict with the pagan Roman Empire and emergence of Christianity under Constantine. Offered only at Carthage.

*First Term, Each Year***HST 318. FRENCH REVOLUTION AND NAPOLEONIC ERA****THREE CREDIT HOURS**

Concentration on the ideological, economic, social and political background of the Revolution; an analysis of the Revolutionary governments; the resulting international wars; the rise and fall of Napoleon.

*Second Term, 1965-1966***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.

*Second Term, 1964-1965***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 nations and peoples emphasizing the themes of War and Revolution. The course covers the revolutions of the period as well as ideological, scientific, and technological developments.

*First Term, 1964-1965***HST 345. HISTORY OF WORLD RELIGIONS I****THREE CREDIT HOURS**

A historical survey of the origins, literature, beliefs, and practices of significant eastern Mediterranean religions including Christianity, Judaism, Gnosticism, Islam and others.

*Second Term, 1965-1966***HST 346. HISTORY OF WORLD RELIGIONS II****THREE CREDIT HOURS**

A historical survey of the origins, literature, beliefs and practices of important Far Eastern religions including Hinduism, Buddhism, Confucianism, Shinto and others.

*First Term, 1964-1965***HST 351. AMERICAN COLONIAL HISTORY****THREE CREDIT HOURS**

A study of the foundations of American Nationality: European background of America, development of the colonial system, transplanting of ideas and institutions from the Old World, growth of democratic tendencies.

Second Term, 1965-1966

- HST 356. LATIN AMERICA: THE COLONIAL PERIOD THREE CREDIT HOURS
The Indian civilizations, the Spanish and Portuguese conquest, the colonial period and the movements for independence are covered. Special emphasis is placed on the blending of Iberian, Indian, and African cultures. *First Term, 1964-1965*
- HST 357. LATIN AMERICA: THE NATIONAL PERIOD THREE CREDIT HOURS
Survey of the social, political, and economic histories of the Republics of Hispanic America from the beginning of the national periods to the present. *Second Term, 1964-1965*
- HST 364. HISTORY OF OHIO THREE CREDIT HOURS
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. *First Term, 1965-1966*
- HST 370. THE AGE OF JEFFERSON AND JACKSON THREE CREDIT HOURS
Emphasizes the whole range of historical, cultural, social and political trends that are traditionally associated with the presidencies of Jefferson and Jackson. The period covered extends from the 1790's to the 1850's. *First Term, 1965-1966*
- HST 375. THE PROGRESSIVE PERIOD (1890-1920) THREE CREDIT HOURS
A study in depth of the major historical trends that dominated these years which saw the universal acceptance of America's claim to world power. Due attention will be placed on cultural as well as political developments. *Second Term, 1964-1965*
- HST 380. DIPLOMATIC HISTORY OF THE UNITED STATES THREE CREDIT HOURS
Beginning with an explanation of the foundations of American foreign policy this course continues with the diplomacy of continental expansion through the 19th century. Emphasis is placed on diplomatic problems since 1898. *Second Term, 1964-1965*
- HST 385. AMERICAN ECONOMIC HISTORY THREE CREDIT HOURS
A survey of the development of Economic Institutions and Thought against the background of Technology and Politics. *Second Term, 1964-1965*
- HST 401. PRO-SEMINAR IN HISTORY TWO CREDIT HOURS
An introduction to historiography and the study of research and writing in History. A term paper is required. Prerequisite: 6 credit hours of upper level history.
- HST 403. HISTORY OF MODERN COMMUNISM THREE CREDIT HOURS
A historical treatment of modern communism and the growth of Communist parties after 1917. Marxism, Leninism, Stalinism, and Maoism will be considered in their historical settings and in the light of Christian principles. *First Term, 1965-1966*
- HST 409. EUROPE SINCE 1918 THREE CREDIT HOURS
Topics included; 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. *First Term, 1965-1966*
- HST 411. HISTORY OF THE FAR EAST THREE CREDIT HOURS
Brief review of the early historical development of the Far East, and a study of China and Japan in the 19th and 20th centuries. Emphasis on political, religious, cultural, and economic growth of China and Japan. *Second Term, 1965-1966*

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

A study of England and Great Britain from the Restoration to the present time. The aim of the course is to study the economic, political, and cultural developments of the Hanoverian, Victorian and modern periods. *Second Term, 1965-1966*

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. *Second Term, 1964-1965*

HST 429. MODERN GERMANY**THREE CREDIT HOURS**

Analysis of the development of the German state from 1848 through the period of unification, Second Empire, Weimar Republic, Third Reich, the post World War II Germanies. *Second Term, 1964-1965*

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. Offered only at Carthage. *Second Term, 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. *First Term, 1964-1965*

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; consequences of the war; the efforts to create a new Union, 1865 to 1877; problems created by those efforts. *Second Term, 1965-1966*

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 fine arts and technological developments. *First Term, 1965-1966*

HST 459. U.S. CONSTITUTIONAL HISTORY**THREE CREDIT HOURS**

A historical analysis of the origin and evolution of the American Constitution, constitutional theory and constitutional practice. Not open to those who have taken Pol 412. *Second Term, 1965-1966*

HST 461. THE HISTORY OF MEXICO**THREE CREDIT HOURS**

Study of Mexican history since 1820. Origins of revolution of 1910 and its development to the present emphasize Mexico's struggle for democracy. Diplomatic and cultural relations between Mexico and the U.S. are considered. *First Term, 1965-1966*

HST 462. THE A-B-C POWERS**THREE CREDIT HOURS**

The historical role of Argentina, Brazil, and Chile. Internal problems are considered in a detailed study of national histories. 20th century developments are stressed. The place of these powers in international politics is analyzed. *Second Term, 1965-1966*

HST 470. THE CATHOLIC CHURCH IN THE U.S. THREE CREDIT HOURS
 This course begins with the establishment of the first Catholic missions in the U.S. The influence of the Church on the cultural, political, economic and religious customs of the American people is explained. Prerequisites : Hst 251, 252. *First Term, 1964-1965*

HST 481. RECENT AMERICAN HISTORY THREE CREDIT HOURS
 A study of the immediate background of contemporary political, social and economic problems. Topics discussed: "Normalcy," Depression and New Deal, impact of World War II on the United States, and World Communism. *First Term, 1964-1965*

HST 490. THE WESTWARD MOVEMENT THREE CREDIT HOURS
 A history of the expansion of settlement in the U.S. since 1783. Topics include explorations, Indian relations, land policy, transportation, types of frontier settlements, and Western influence on American ideals and institutions. *First Term, 1964-1965*

Home Economics (HEC)

Elizabeth L. Payne, *Chairman*

Associate Professor: Payne

Assistant Professors: Bernhard, Ittelson, Metzger, Smallwood

HEC 101. CLOTHING I TWO CREDIT HOURS
 A study of clothing selection and construction of simple garments using commercial patterns. Emphasis is on short-cut methods of construction, fitting, dressmaking, details and finishing procedures. Two lecture periods per week. *Second Term, Each Year*

HEC 101L. CLOTHING I LABORATORY ONE CREDIT HOUR
 A course to accompany Hec 101 lecture. One three-hour period per week. *Second Term, 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 Term, Each Year*

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

HEC 201. FOODS II TWO CREDIT HOURS
 Continuation of Foods I. Two class periods per week. Prerequisite: Hec 102 or equivalent. *Second Term, Each Year*

HEC 201L. FOODS II LABORATORY ONE CREDIT HOUR
 Course to accompany Hec 201 lecture. One three-hour laboratory period per week. *Second Term, 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. *Second Term, Each Year*

HEC 211L. CLOTHING II LABORATORY**ONE CREDIT HOUR**

Course to accompany Hec 211 lecture. One three-hour laboratory period per week.
Second Term, Each Year

HEC 214. TEXTILES I**THREE CREDIT HOURS**

A study of the natural man-made and synthetic fibers for the use and care of finished fabrics. Three class periods per week.
Second Term, 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 Term, Each Year

HEC 225. CHILD DEVELOPMENT I**THREE CREDIT HOURS**

Developmental study of prenatal, infancy and early childhood. Observation and work in nursery school arranged. Three lecture periods per week.
First Term, 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.

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.
First Term, 1965-1966

HEC 309. HOUSEHOLD EQUIPMENT**THREE 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. Three lecture periods per week. Prerequisites: Hec 102, 201 or equivalent.

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 Term, 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.

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.
Second Term, Each Year

HEC 327L. FOOD PRESERVATION IN THE HOME LABORATORY**ONE CREDIT HOUR**

Course to accompany Hec 327 lecture. One three-hour laboratory period per week.
Second Term, Each Year

- 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 Term, Each Year
- HEC 329. CHILD DEVELOPMENT II THREE CREDIT HOURS
 An evaluation of the growth of children; case study and nursery school participation arranged. Three lecture periods per week. Prerequisite: Hec 225.
Second Term, 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 Term, Each Year
- HEC 402. DIET IN DISEASE THREE CREDIT HOURS
 Adaptation of diet to disease. Three class periods per week. Prerequisite: Hec 303.
Second Term, 1965-1966
- HEC 405. TEACHING OF HOME ECONOMICS IN SCHOOLS THREE CREDIT HOURS
 A study of Home Economics philosophies and Vocational Home Economics methods. Planning, preparing and presenting units and lessons for different grade levels. Three class periods per week.
First Term, Each Year
- HEC 406. HOME MANAGEMENT II ONE CREDIT HOUR
 Planning experience in maintaining a home on a minimum budget. One lecture period per week. Prerequisite: Hec 221.
- HEC 406L. HOME MANAGEMENT II LABORATORY TWO CREDIT HOURS
 Course to accompany Hec 406 lecture.
- 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.
Second Term, 1964-1965
- 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 Term, Each Year
- HEC 415L. TAILORING LABORATORY TWO CREDIT HOURS
 Course to accompany Hec 415 lecture. Two two-hour periods per week.
Second Term, Each Year
- HEC 430. PROBLEMS IN HOME FURNISHINGS TWO CREDIT HOURS
 Problems of making slip covers and draperies; individual problems of refinishing furniture and upholstering. Two class periods per week. Prerequisite: Hec 105.
First Term, Each Year

HEC 430L. HOME FURNISHINGS LABORATORY

TWO CREDIT HOURS

Course to accompany Hec 430 lecture. One three-hour period per week.

First Term, Each Year

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.

As Needed

HEC 437L. MEAL MANAGEMENT LABORATORY

ONE CREDIT HOUR

Course to accompany Hec 437 lecture. One two-hour period per week.

As Needed



Industrial Engineering (INE)

Robert I. Mitchell, *Chairman*

Professor: Schmid

Associate Professor: Mitchell

Assistant Professor: Horwedel

Part-time Instructor: Eilerman

INE 201. INDUSTRIAL ENGINEERING FUNDAMENTALS THREE CREDIT HOURS

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

INE 301. PERSONNEL ADMINISTRATION THREE CREDIT HOURS

A study of the contributions of the behavioral sciences to the design of complex management systems which require effective integration of human resources.

First Term, Each Year

INE 303. WAGE ADMINISTRATION THREE CREDIT HOURS

A study of financial remuneration, theory, philosophy, and practice. An interdisciplinary approach involving economics, psychology, sociology, engineering and management as they are related to the design of management systems. *Second Term, Each Year*

INE 310-311. ENGINEERING SYSTEMS DESIGN I AND II SIX CREDIT HOURS

Emphasizing the total systems concept for solving engineering design problems reasoning from general principles or laws to their application to achieve specific objectives.

INE 313. ENGINEERING LAW TWO CREDIT HOURS

Legal principles applied to engineering.

INE 320-321. MANAGEMENT SYSTEMS DESIGN I AND II SIX CREDIT HOURS

The application of design concepts to the development of simple systems which involve purposeful human industry with special attention to the integration of scientific and engineering methods with those of the applied psychologists or social scientists.

INE 332. STATISTICAL CONTROL AND SYSTEMS DESIGN THREE CREDIT HOURS

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. *First Term, Each Year*

INE 401. ENGINEERING ECONOMY TWO CREDIT HOURS

Emphasizes rational, scientific methods of economic analysis for engineering and management decision-making.

INE 403. TIME AND MOTION STUDY I TWO CREDIT HOURS

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.

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

A series of laboratory problems based on the above. Corequisite: Ine 403.

- 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 Term, Each Year*
- INE 404L. TIME AND MOTION STUDY LABORATORY II ONE CREDIT HOUR
A series of laboratory problems based on the above. Corequisite: Ine 404. *Second Term, 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. *Second Term, Each Year*
- INE 406. PLANT LAYOUT AND MATERIAL HANDLING TWO CREDIT HOURS
The design of a plant for a specified product. Includes: structure; power requirements; heat; light; sound; and ventilation; transportation facilities, material handling requirements and equipment. Prerequisites: Ine 405, Mee 206L. *First Term, 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. Corequisite: Ine 406.
- INE 408. ADMINISTRATION AND ORGANIZATION THREE CREDIT HOURS
Social relationships, achievements, goals, objectives of organizations. Processes, functions, techniques, and tasks of management. Theories and practices utilized in the dispersion and concentration of authority and responsibility.
- 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.
- 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. *Second Term, Each Year*
- INE 422. RELIABILITY APPLICATION THREE CREDIT HOURS
The application of reliability theories to the design of complex, integrated systems. Prerequisite: Ine 421. *First Term, Each Year*
- INE 499. SPECIAL PROBLEMS IN INDUSTRIAL ENGINEERING TWO TO SIX CREDIT HOURS
Particular assignments to be arranged and approved by Chairman of the Department.

Languages

Dr. James M. Ferrigno, *Chairman*

Professors: Ferrigno, Perz

Associate Professors: Reyst, Sullivan

Assistant Professors: Bartholomew, Darby, Larrea, McKenzie, MacLemore, Rus, Shattock, Sory

Instructors: Hager, Pohorille

Part-time Instructors: Anduze, Millonig, Polony, Seeman, Steensen, Zieba

A language major may arrange his courses, with the approval of the department chairman, in one of these two forms of concentration: (A) Major in a single language, requiring 24 hours in upper level courses (300-400); (B) Composite major, requiring a minimum of 18 hours in each of two languages (any level).

It is recommended that students of either category elect a minor in languages as well. For a language minor, students in category *A* are required to do 12 hours of upper level work not in their major language, and students in category *B* are required to add 18 hours (any level) preferably in a language or languages other than those of their composite major; other students need 18 hours (any level) in one language.

Note: All the courses in 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.

FRN 102. ELEMENTARY FRENCH II

THREE CREDIT HOURS

Continuation of Elementary French 101. Prerequisite: Frn 101.

FRN 201. INTERMEDIATE FRENCH

THREE CREDIT HOURS

Grammar review, selected readings from modern authors, exercises in composition and conversation. Prerequisite: Frn 102.

FRN 202. INTERMEDIATE FRENCH II

THREE CREDIT HOURS

Continuation of Intermediate French 201. Prerequisite: Frn 201.

FRN 307. ADVANCED FRENCH COMPOSITION AND CONVERSATION

THREE CREDIT HOURS

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

First Term, Each Year

FRN 308. ADVANCED FRENCH COMPOSITION AND CONVERSATION

THREE CREDIT HOURS

Continuation of Advanced French Composition and Conversation Frn 307.

Second Term, Each Year

- FRN 309. RAPID READING IN FRENCH THREE CREDIT HOURS
 A course designed to improve and accelerate reading ability and to develop understanding and appreciation of the great works of French literature. Readings, reports and discussions. *First Term, 1964-1965*
- FRN 310. RAPID READING IN FRENCH THREE CREDIT HOURS
 Continuation of Rapid Reading in French 309. *Second Term, 1964-1965*
- FRN 311. FRENCH LITERATURE TO 1700 THREE CREDIT HOURS
 A survey of French literature from the earliest beginnings to the eighteenth century, with special emphasis on the principle authors and works of the seventeenth century. Lectures, discussions and reports on area material. *First Term, 1965-1966*
- FRN 312. FRENCH LITERATURE TO 1700 THREE CREDIT HOURS
 Continuation of French Literature to 1700, Frn 311. *Second Term, 1965-1966*
- FRN 405. FRENCH LITERATURE OF THE TWENTIETH CENTURY THREE CREDIT HOURS
 A survey of the literary movements, outstanding authors and works of the present century. Lectures, discussions and reports on assigned readings. *First Term, 1965-1966*
- FRN 406. FRENCH LITERATURE OF THE TWENTIETH CENTURY THREE CREDIT HOURS
 Continuation of French Literature of the Twentieth Century, Frn 405. *Second Term, 1965-1966*
- FRN 407. FRENCH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES THREE CREDIT HOURS
 A survey covering the literary movements, outstanding authors and works of this period. Lectures, discussions and reports on assigned readings. *First Term, 1964-1965*
- FRN 408. FRENCH LITERATURE OF THE EIGHTEENTH AND NINETEENTH CENTURIES THREE CREDIT HOURS
 Continuation of French Literature of the Eighteenth and Nineteenth Centuries, Frn 407. *Second Term, 1964-1965*

German (GER)

- GER 101. ELEMENTARY GERMAN THREE CREDIT HOURS
 Elements of German, including pronunciation, reading, translation, grammar, dictation and conversation.
- GER 102. ELEMENTARY GERMAN II THREE CREDIT HOURS
 Continuation of Elementary German 101. Prerequisite: Ger. 101.
- GER 201. INTERMEDIATE GERMAN THREE CREDIT HOURS
 Grammar review, selected readings from modern authors, exercises in composition and conversation. Prerequisite: Ger 102.
- GER 202. INTERMEDIATE GERMAN THREE CREDIT HOURS
 Continuation of Intermediate German 201. Prerequisite: Ger 201.

- GER 301. GERMAN LITERATURE TILL 1800 THREE 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. *First Term, 1965-1966*
- GER 302. GERMAN LITERATURE TILL 1800 THREE CREDIT HOURS
 Continuation of German Literature till 1800, Ger 301. *Second Term, 1965-1966*
- GER 306. SCIENTIFIC GERMAN THREE CREDIT HOURS
 A reading course intended to familiarize students with the technical vocabulary used in scientific fields. *Second Term, 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 Term, 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 Term, 1964-1965*
- GER 309. GERMAN CIVILIZATION THREE CREDIT HOURS
 A survey of the German people, its geographical, historical and political background. German art and folklore. *Second Term, 1964-1965.*
- 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 Term, 1964-1965.*
- 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 Term, 1964-1965*
- GER 409. GERMAN LITERATURE OF THE NINETEENTH CENTURY THREE 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. *First Term, 1965-1966*
- GER 410. GERMAN LITERATURE OF THE NINETEENTH CENTURY THREE CREDIT HOURS
 A continuation of German Literature of the Nineteenth Century, Ger 409. *Second Term, 1965-1966*

Greek (GRK)

- GRK 101. ELEMENTARY GREEK THREE CREDIT HOURS
 A study of the essentials of Greek grammar with exercises and readings.

GRK 102. ELEMENTARY GREEK THREE CREDIT HOURS
Continuation of Elementary Greek 102. Prerequisite: Grk 101.

GRK 201. INTERMEDIATE GREEK THREE CREDIT HOURS
Continuation of the study of grammar. Readings from New Testament. Prerequisite:
Grk 102. *First Term, 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 Term, 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 Grk 305. Comparison of the Greek and Latin texts with modern renditions.

GRK 403. GREEK DRAMA THREE CREDIT HOURS
Readings of Sophocles' *Oepidus 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. Reading, translation, writing, and conversation. *First Term, Each Year*

HEB 102. INTRODUCTION TO CLASSICAL HEBREW THREE CREDIT HOURS
Further study of the verb. 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. Prerequisite: Heb 101.

Second Term, Each Year

Italian (ITA)

ITA 101. ELEMENTARY ITALIAN THREE CREDIT HOURS
Elements of Italian, including pronunciation, reading, translation, grammar, dictation and conversation.

ITA 102. ELEMENTARY ITALIAN THREE CREDIT HOURS
Continuation of Elementary Italian 101. Prerequisite: Ita 101.

ITA 201. INTERMEDIATE ITALIAN

THREE CREDIT HOURS

Grammar review, selected readings from modern authors, exercises in composition and conversation. Prerequisite: Ita 102.

ITA 202. INTERMEDIATE ITALIAN

THREE CREDIT HOURS

Continuation of Intermediate Italian 201. Prerequisite: Ita 201.

Latin (LAT)

LAT 101. ELEMENTARY LATIN

THREE CREDIT HOURS

A college course in Latin fundamentals.

LAT 102. ELEMENTARY LATIN

THREE CREDIT HOURS

A continuation of Elementary Latin 101. Prerequisite: Lat 101.

LAT 201. INTERMEDIATE LATIN

THREE CREDIT HOURS

Second year course in Latin. Readings from classical authors of the pre-Christian periods. Prerequisite: Lat 102.

LAT 202. INTERMEDIATE LATIN

THREE CREDIT HOURS

A continuation of Intermediate Latin 201. Prerequisite: Lat 201.

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 Term, 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 Term, 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 Term, 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 Term, Each Year

LAT 309. CICERO

THREE CREDIT HOURS

A study of *De Amicitia* and *De Senectute* or other works of Cicero.

Second Term, 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 type 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
- 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
- LAT 413. THE CONFESSIONS OF ST. AUGUSTINE** THREE CREDIT HOURS
Excerpts are taken from the first Nine Books. First Term, 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, stress on pronunciation and handwriting.
- RUS 102. ELEMENTARY RUSSIAN II** THREE CREDIT HOURS
Continuation of Russian 201. Prerequisite: Rus 101.



- 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.
- RUS 202. INTERMEDIATE RUSSIAN II** THREE CREDIT HOURS
Continuation of Russian 201. Prerequisite: Rus 201.
- RUS 203. SCIENTIFIC RUSSIAN** THREE CREDIT HOURS
This course is given only at Wright-Patterson Air Force Base. Prerequisite: Rus 101-102, or equivalent.
- RUS 204. SCIENTIFIC RUSSIAN** THREE CREDIT HOURS
Continuation of Scientific Russian Rus 203.
- RUS 301. RUSSIAN READING AND CONVERSATION** THREE CREDIT HOURS
For students who possess a general knowledge of Russian, but lack practical experience of the spoken language. Conversation is based on more advanced reading material. Prerequisite: Rus 201-202, or equivalent. *First Term, Each Year*
- RUS 302. RUSSIAN READING AND CONVERSATION** THREE CREDIT HOURS
Continuation of Rus 301. *Second Term, Each Year*
- RUS 303. ADVANCED RUSSIAN GRAMMAR AND COMPOSITION** THREE CREDIT HOURS
Phonology and Morphology. A thorough treatment, entirely in Russian, of pronunciation and the parts of speech including a basic treatment of the verb. Recommended for future teachers or graduate students. *First Term, Each Year*
- RUS 304. ADVANCED RUSSIAN GRAMMAR AND COMPOSITION** THREE CREDIT HOURS
Specialized Morphology. Syntax. A treatment, like that of Rus 303, of verb aspects, word structure and sentence structure. Entirely in Russian. May be taken independently of Rus 303. *Second Term, Each Year*
- RUS 403. EARLY RUSSIAN LITERATURE** THREE CREDIT HOURS
Short review of the beginnings of Russian literature, the early forms of literature, the post-Peter I period, and the outstanding authors. Introduction to techniques of translation. Conducted in Russian. *First Term, 1965-1966*
- RUS 404. LATER RUSSIAN LITERATURE** THREE CREDIT HOURS
The literature of the late 18th Century. Reading of outstanding works. Literature of 19th and 20th Centuries (outstanding works and authors). Scientific translation. Course conducted in Russian. *Second Term, 1965-1966*
- RUS 405. PUSHKIN** THREE CREDIT HOURS
Survey of Pushkin's life, work and influence. Extensive readings in his works and readings in selected authors, contemporary or later, who show his influence. Course conducted in Russian. *First Term, 1964-1965*

RUS 406. L. N. TOLOSTOY THREE CREDIT HOURS
 Survey of Tolstoy's life, work and influence. Extensive readings in his works and readings in selected authors, contemporary or later, who show his influence. Course conducted in Russian. *Second Term, 1964-1965*

Spanish (SPN)

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

SPN 102. ELEMENTARY SPANISH II THREE CREDIT HOURS
 Continuation of Spanish 101. Prerequisite: Spn 101.

SPN 201. INTERMEDIATE SPANISH THREE CREDIT HOURS
 Grammar review, selected readings from modern authors, exercises in composition and conversation. Prerequisite: Spn 102.

SPN 202. INTERMEDIATE SPANISH THREE CREDIT HOURS
 Continuation of Intermediate Spanish 201. Prerequisite: Spn 201.

SPN 301. SPANISH LITERATURE THREE 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. *First Term, 1964-1965*

SPN 302. SPANISH LITERATURE THREE CREDIT HOURS
 A continuation of Spanish Literature Spn 301. *Second Term, 1964-1965*

SPN 303. SPANISH-AMERICAN LITERATURE THREE CREDIT HOURS
 A study of the principal authors and works of the colonial, revolutionary and modern periods. Lectures, discussions and reports on assigned readings. *First Term, 1965-1966*

SPN 304. SPANISH-AMERICAN LITERATURE THREE CREDIT HOURS
 A continuation of Spanish-American Literature Spn 303. *Second Term, 1965-1966*

SPN 307. ADVANCED SPANISH COMPOSITION AND CONVERSATION THREE CREDIT HOURS
 Practice in composition based on area material. Intensive drill in aural and oral use of the language. *First Term, Each Year*

SPN 308. ADVANCED SPANISH COMPOSITION AND CONVERSATION II THREE CREDIT HOURS
 Continuation of Spn 307. *Second Term, Each Year*

- 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 Term, 1965-1966
- 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 Term, 1965-1966
- 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 Term, 1964-1965
- 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 Term, 1964-1965

Marketing (MKT)

Harry C. Murphy, *Chairman*

Associate Professors: Comer, Murphy
Assistant Professor: Pearson

- MKT 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.
- MKT 310. SALESMANSHIP THREE CREDIT HOURS
 A study of the basic principles underlying all selling and their practical application to specific cases.
- MKT 315. 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. Prerequisite: Mkt 305.
- MKT 316. RETAIL ORGANIZATION AND OPERATION THREE CREDIT HOURS
 Principles of store management, store location, buildings, and equipment, store organization, expense center accounting, receiving and marking, store protection, and coordination of retail store activities are studied. Prerequisite: Mkt 305.
- MKT 318. RETAIL ADVERTISING AND SALES PROMOTION THREE CREDIT HOURS
 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 coordination. Prerequisites: Mkt 315 or Mkt 316.
- MKT 335. ADVANCED MARKETING THREE CREDIT HOURS
 The marketing policies of manufacturers and wholesalers; the technique of marketing research; analysis of current problems and literature relating to marketing efficiency. Prerequisite: Mkt 305.

MKT 405. CONSUMER BEHAVIOR THREE CREDIT HOURS
 The consumer-firm relationship studied in terms of concepts drawn from contemporary social sciences as related to present and prospective business activities.

MKT 411. 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. Prerequisites: Mkt 305 and Bus 313 or Psy 302.

MKT 417. RETAIL BUYING AND MERCHANDISING MATHEMATICS THREE CREDIT HOURS
 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. Prerequisites: Mkt 315 or Mkt 316.

MKT 420. MARKETING COMMUNICATIONS THREE CREDIT HOURS
 Problems of marketing considered as problems of effective communication in such functional areas as advertising, personal selling, packaging, research, display and pricing.

MKT 421. 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. Prerequisite: Mkt 305.

MKT 425. CREDIT AND COLLECTIONS THREE CREDIT HOURS
 Nature and functions of credit. Principles and practices in retail and mercantile credit administration. Sources and analysis of credit information.

MKT 430. MARKETING RESEARCH THREE CREDIT HOURS
 A study of the application of some of the limitations of the scientific method to the definition and solution of marketing problems. Examines the range of activities and the problems faced in market research. Prerequisites: Mkt 305 and Bus 313 or Psy 302.

MKT 499. PROBLEMS IN MARKETING THREE CREDIT HOURS
 A study of one or more specific aspects of the marketing process with emphasis on individual student reading and research. Subject matter to be determined by the instructor on the basis of interest and need of the student. Enrollment limited.

Mathematics (MTH)Dr. Kenneth C. Schraut, *Chairman**Professors:* Bellmer, Schraut*Associate Professors:* Bosshart, Esser, Kreider, Prather*Assistant Professors:* Back, Cada, Dwyer, Peterson, Speck, Stander*Instructors:* Baker, Friel, Schoen, Smith, Wagner, Wilson*Part-time Instructors:* Alexander, Berens, Fr. Breitfelder, Brunswick, Campbell, Donovan, Fluke, Grabner, Harris, Hudson, Janning, Kuntz, Sakalas, Wells, Zonars**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.

MTH 117. COLLEGE ALGEBRA AND TRIGONOMETRY **FIVE CREDIT HOURS**

For students proficient in traditional high school mathematics but who do not qualify for Mth 216. Prerequisite: One and one-half years of high school algebra and a year of high school geometry.

MTH 121. COLLEGE ALGEBRA **THREE CREDIT HOURS**

Systems of equations, progressions, logarithms, binomial theorem, complex numbers, determinants, theory of equations, and probability. Prerequisites: one and one-half years of high school algebra and one year of high school geometry.

MTH 122. PLANE TRIGONOMETRY **THREE CREDIT HOURS**

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

MTH 123. ANALYTIC GEOMETRY **FOUR CREDIT HOURS**

The traditional topics covered in plane and solid analytic geometry. Prerequisites: Mth 121 or Mth 117. *Evening*

MTH 125. INTRODUCTION TO STATISTICS AND FINANCE **THREE CREDIT HOURS**

This course is designed exclusively for students in business administration and covers topics in elementary statistics and in the mathematics of finance. Prerequisite: Mth 121.

MTH 141. MATHEMATICAL CONCEPTS I **THREE CREDIT HOURS**

Concepts necessary for an understanding of the structure of arithmetic and its algorithms. Prerequisite: one year high school algebra and one year high school geometry.

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

Concepts necessary for an understanding of operations and structure of algebra and geometry. Prerequisite: Mth 141.

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 real and complex numbers. Currently offered only under special auspices. Prerequisite: Mth 151.

MTH 155. ELEMENTS OF ALGEBRA THREE CREDIT HOURS
For those preparing to teach in the elementary schools. Follows the School Mathematics Study Group, Volume III. 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
For those preparing to teach in the elementary schools. Follows the School Mathematics Study Group, Volume V. 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 and integration of polynomials with applications to geometry and physics. Fundamental theorem and integral calculus. Prerequisite: Mth 123. *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; partial differentiation. Prerequisite: Mth 201. *Evening*

MTH 210-211. INTRODUCTORY MATHEMATICAL ANALYSIS THREE-SIX CREDIT HOURS
Sets, systems of numbers, 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.

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. Prerequisite: Mth 117 or Mth 121 and 122.

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. Prerequisite: Mth 216.

MTH 218. ANALYTIC GEOMETRY AND CALCULUS III FOUR CREDIT HOURS
Improper integrals, infinite series, expansions of functions, solid analytic geometry, partial differentiation, multiple integrals. Prerequisite: Mth 217.

MTH 301. DIFFERENTIAL EQUATIONS THREE CREDIT HOURS
Equations of the first order and first degree, linear equations of higher order with constant coefficients, method of Frobenius, Euler's equations and other special equations. Prerequisite: Mth 202 or Mth 218. *First Term, Each Year*

MTH 331. STATISTICS FOR ENGINEERS**THREE CREDIT HOURS**

Measure of central tendency, frequency distributions, skewness and kurtosis, sampling and the determination of significant differences, correlation. Prerequisite: Mth 202 or Mth 218.

*First Term, Each Year***MTH 332. INDUSTRIAL & ENGINEERING APPLICATIONS OF STATISTICS****THREE CREDIT HOURS**

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 331.

*Second Term, Each Year***MTH 341. ADVANCED ENGINEERING MATHEMATICS I****THREE CREDIT HOURS**

Equivalent to Mth 301. Prerequisite: Mth 202 or Mth 218.

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. Prerequisite: Mth 341.

MTH 343. ADVANCED ENGINEERING MATHEMATICS III**THREE CREDIT HOURS**

Infinite series and applications, special functions of mathematical physics, matrices, complex variables. Applications to engineering. Prerequisite: Mth 341.

MTH 361. INTRODUCTION TO ABSTRACT ALGEBRA**THREE CREDIT HOURS**

Introductory treatment of the various number systems of elementary algebra; fundamental concepts of groups, rings, integral domains and fields. Prerequisite: Mth 202 or Mth 218.

*Second Term, 1964-1965***MTH 362. INTRODUCTION TO LINEAR ALGEBRA AND MATRICES****THREE CREDIT HOURS**

Fundamental concepts of vector spaces, systems of linear equations, determinants, linear transformations and matrices. Prerequisite: Mth 202 or Mth 218.

*First Term, 1964-1965***MTH 411. PROBABILITY AND STATISTICS I****THREE CREDIT HOURS**

Mathematical probability, stochastic variables, joint distributions, Bayes' theorem, moments, Chebyshev's inequality, limit theorems including the laws of large numbers and central limits. Prerequisite: Mth 202 or Mth 218.

*First Term, Each Year***MTH 412. PROBABILITY AND STATISTICS II****THREE CREDIT HOURS**

Random sampling, estimation of parameters including maximum likelihood, methods of moments, and Bayes' estimate, confidence intervals, tests of hypotheses, regression, sampling from a normal population. Prerequisite: Mth 411.

*First Term, Each Year***MTH 413. PROBABILITY AND STATISTICS III****THREE CREDIT HOURS**

Statistical decision theory, partitioning of sums of squares, analysis of variance, regression on several independent variables, multiple regression approach to analysis of variance, design of experiments. Prerequisite: Mth 412.

First Term, Each Year

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

The number system, sequences and series, functions of a real variable, functions of several variables. Prerequisite: Mth 202 or 218.

*First Term, Each Year***MTH 422. ADVANCED CALCULUS II****THREE CREDIT HOURS**

The definite integral, improper integrals, line integrals, multiple integrals, and uniform convergence. Prerequisite: Mth 421.

*Second Term, Each Year***MTH 432. FOURIER SERIES AND BOUNDARY VALUE PROBLEMS****THREE CREDIT HOURS**

Partial differential equations of physics, orthogonal sets of functions, fundamental properties of Fourier series, Bessel functions, and Fourier-Bessel expansion. Prerequisite: Mth 421 or registration therein.

*First Term, 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. Prerequisite: Mth 218.

*First Term, Each Year***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. 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, homeomorphisms and continuous functions. Prerequisite: Mth 218.

Second Term, Each Year

Computer Science (Cps)

Computer Science Program Director: Dr. Thomas A. Dwyer, S.M.

Cps 231. SCIENTIFIC PROGRAMMING IN ALGOL

TWO CREDIT HOURS

General coding techniques; grammar and syntax of the ALGOL compiler; programming scientific and mathematical problems in ALGOL. One hour lecture and two hours problem session per week. Prerequisite: Mth 117, 121, or equivalent.

Cps 251. COMMON BUSINESS ORIENTED LANGUAGES (COBOL)

THREE CREDIT HOURS

COBOL language; magnetic tape systems; applications on NCR 304 requiring use of peripheral equipment. Two hours lecture and two hours problem session per week. Prerequisite: Mth 117, 121, or equivalent. May be counted toward Cps minor.

Cps 252. PROGRAMMING LANGUAGES

THREE CREDIT HOURS

Programming in machine language and with assembler; external programs of ALGOL compiler; procedures; ALGOL 60 report; construction of compilers. Two hours lecture and two hours problem session per week. Prerequisite: Cps 231. May be counted toward Cps minor.

Cps 311. MATHEMATICAL METHODS FOR DIGITAL COMPUTERS I

THREE CREDIT HOURS

Difference and summation calculus; evaluation of series; polynomial and trigonometric approximation. Emphasis in Cps 311, 312, 313 is on construction and analysis of algorithms for digital computers. Prerequisite: Mth 301 or 341 and Cps 231.

Second Term, Each Year

Cps 312. MATHEMATICAL METHODS FOR DIGITAL COMPUTERS II

THREE CREDIT HOURS

Numerical integration; roots of nonlinear equations; Chebyshev and rational approximation. Prerequisite: Cps 311.

First Term, Each Year

Cps 313. MATHEMATICAL METHODS FOR DIGITAL COMPUTERS III

THREE CREDIT HOURS

Linear systems, matrix methods; linear programming and applications; numerical solution of boundary value problems of partial differential equations. Prerequisite: Mth 362 and Cps 231.

Second Term, Each Year

Cps 314. ELECTRONICS FOR SCIENTISTS

THREE CREDIT HOURS

Terminal behavior of vacuum tube and semi-conductor devices; application to basic rectifier, amplifier, oscillator and control circuits, incorporation of these circuits in measuring and control devices. Prerequisites: Phy 207, Mth 301, or 341. Corequisite: Cps 314L.

Cps 314L. ELECTRONICS FOR SCIENTISTS LABORATORY

ONE CREDIT HOUR

Laboratory construction and testing of the basic vacuum tube and solid-state electronic circuits. Corequisite: Cps 314.

Cps 365. **APPLIED BOOLEAN ALGEBRA** THREE CREDIT HOURS
 Boolean algebra as an axiomatic mathematical system, applications to set theory, logic, switching circuits, and logical design. Prerequisite: Consent of Computer Science Program director. Three hours lecture per week. *First Term, Each Year*

Cps 399. **SPECIAL PROBLEMS IN COMPUTER SCIENCE** ONE TO THREE CREDIT HOURS
 Symbolic logic, tree searches, nerve nets, perceptrons; current state of the art; research areas in computer science; critical evaluation. Prerequisite: Consent of instructor. *First Term, Each Year*

Cps 414. **ADVANCED ELECTRONICS FOR SCIENTISTS** THREE CREDIT HOURS
 Continuation of Cps 314. High frequency techniques, modulation and detection, pulse generators, special circuits; application to counters, computer circuits, and experimental instrumentation and control problems. Prerequisite: Cps 314. Corequisite: Cps 414L.

Cps 414L. **ADVANCED ELECTRONICS FOR SCIENTISTS LABORATORY** ONE CREDIT HOUR
 Individual student projects in the electronic instrumentation of problems in the physical, biological, and computer sciences. Corequisite: Cps 414.

Cps 441. **ADVANCED PROGRAMMING I** THREE CREDIT HOURS
 Automatic programming languages, symbol manipulation, compiler compilers. Prerequisite: Cps 252. *First Term, Each Year*

Cps 442. **ADVANCED PROGRAMMING II** THREE CREDIT HOURS
 Programming techniques discussed in the current literature; advanced computer applications in both mathematical and non-numeric areas. Prerequisite: Cps 441. *Second Term, Each Year*

Cps 481. **MATHEMATICAL LOGIC** THREE CREDIT HOURS
 Fundamental concepts, propositional and predicate calculus, formalized number theory, primitive and general recursive functions, Goedel's theorem. Prerequisite: Cps 365 or Cps 399. Three hours lecture per week. *First Term, Each Year*

Cps 482. **INTRODUCTION TO AUTOMATA THEORY** THREE CREDIT HOURS
 Recursive functions, Turing machines, computability, introduction to the theory of automata, metalinguistics. Prerequisite: Cps 481. Three hours lecture per week. *Second Term, Each Year*

Cps 499. **SPECIAL PROBLEMS IN SYSTEMS DESIGN** THREE CREDIT HOURS
 Includes topics in systems design, applied logic design, probabilistic and self-organizing systems, pattern recognition, man-machine communication, artificial intelligence. Prerequisite: Cps 365. Three hours lecture per week. *Second Term, Each Year*

Mechanical Engineering (MEE)

Dr. C. Richard Horwedel, *Interim Chairman*

Associate Professors: Csaky, Nielsen, Wilder

Assistant Professors: Knight, Smith, Thorne

Part-time Instructors: Andrews, Ault, Bickert, Burger, Demarey, Dennis, DrRoze, Forbes, Harich, Keating, Lyder, Meyette, Minardi, Nash, Roth, Schwartz, Turrentine, Vergamini, Zara

MEE 202. MECHANISMS

ONE CREDIT HOUR

Kinematics of machinery; linkwork; cams; gearing; flexible connectors; intermittent motion mechanisms; trains of mechanisms. Prerequisites: Mth 217, Phy 206, Mee 206L; Corequisite: Mee 202L.

MEE 202L. MECHANISMS LABORATORY

ONE CREDIT HOUR

Laboratory exercises based on the foregoing principles. Corequisite: Mee 202.

MEE 206L. ENGINEERING GRAPHICS I

TWO CREDIT HOURS

Fundamentals of engineering graphics and the part that graphical communication plays in engineering.

MEE 207L. ENGINEERING GRAPHICS II

TWO CREDIT HOURS

Training in the analysis and graphical solution of fundamental problems involving three dimensions and the application of these solutions to engineering problems. Prerequisite: Mee 206L.

MEE 211. MATERIALS AND PROCESSES

TWO CREDIT HOURS

Atomic structure, crystalline nature of solids, bonding and imperfections in crystals. Wear in metal cutting and tool life, economics of machining. Cold working processes. 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 cutting. Experiments in workshop metrology. 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. Prerequisites: Mth 218, Phy 208.

MEE 303. METALLURGY

TWO CREDIT HOURS

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. 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. Corequisite: Mee 303.

MEE 304. HEAT POWER THREE CREDIT HOURS
A general course on the equipment of steam and gas power plants, including history of development and study of modern plant facilities. Fuels, combustion processes, and complete heat balances. Prerequisite: Mee 301.

MEE 304L. HEAT POWER 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. Corequisite: Mee 304.

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. Corequisite: Phy 208.

MEE 307. DYNAMICS OF MACHINERY TWO CREDIT HOURS
Analysis of displacement, velocity and acceleration. Static and dynamic force analysis; work, energy and impulse. Study of balancing, gyroscopic effects, flywheels and governors. 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. 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. Corequisite: Mee 301.

MEE 310. THERMAL ENGINEERING I THREE CREDIT HOURS
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. Prerequisites: Chm 124, Mee 301; Corequisite: Mee 308.

MEE 311. THEORY OF MACHINES THREE CREDIT HOURS
Linkages, cam design, spur gears, helical, bevel and worm gears. Differentials, computing mechanisms, introductions to synthesis, kinematics of machinery, static and dynamic forces, balancing. Prerequisite: Egm 301; Corequisite: Mee 301, Mee 311L.

MEE 311L. THEORY OF MACHINES LABORATORY TWO CREDIT HOURS
Laboratory exercises based on the foregoing principles. Corequisite: Mee 311.

MEE 401. INTERNAL COMBUSTION ENGINES THREE CREDIT HOURS
 A study of the Otto and Diesel cycles including fuels, combustion, detonation, knock testing, performance factors, performance testing, exhaust gases, and engine vibration. Prerequisite: Mee 302; Corequisite: Mee 304L.

MEE 403. HEATING AND AIR CONDITIONING THREE CREDIT HOURS
 Heat losses and gains through building walls; heating and cooling loads of buildings; warm air, steam, and hot water heating, with discussion of the various units used in such systems. Prerequisite: Mee 302.

MEE 404. REFRIGERATION TWO CREDIT HOURS
 Refrigeration methods, refrigerants and compressors; the thermodynamics of compression and absorption system of refrigeration; the economics and efficiency of cooling by liquid or gaseous refrigerants. Prerequisite: Mee 302.

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. Prerequisite: Mee 401; Corequisite: Mee 417.

MEE 407-408. MACHINE DESIGN I AND II FOUR CREDIT HOURS
 Analysis and design of machine members and mechanical systems. Development of creative ability and engineering judgment. 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. Corequisites: Mee 407-408.

MEE 409. HEAT TRANSMISSION TWO CREDIT HOURS
 Laws of conduction, radiation and convection; heat transfer to boiling liquids or condensing vapors; over-all heat transfer steady state or variable flow. Prerequisite: Mee 301; Corequisite: Mee 308.

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. 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. Corequisite: Mee 302.

MEE 414. SEMINAR ONE CREDIT HOUR
 Attendance required by all Mechanical Engineering Junior and Senior students with only Seniors registering for credit.

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. Processes of combustion and energy release. Prerequisites: Mee 302, Mee 310; Corequisite: Mee 412L.

MEE 418. ADVANCED FLUID MECHANICS THREE CREDIT HOURS
Dynamics of fluid flow. Compressible fluids. Theorems of conservation of mass and momentum. Laws of thermodynamics as applied to fluid flow. One dimensional isentropic flow; normal shock; friction; heat transfer. 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. 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. 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. Prerequisites: Mee 307, Mth 341.

MEE 416L. MECHANICAL VIBRATIONS LABORATORY ONE CREDIT HOUR
Laboratory exercises based on the foregoing principles. Corequisite: Mee 416.

MEE 421. TURBO-MACHINERY THREE CREDIT HOURS
Theory applicable to turbines, compressors and pumps. Dimensional analysis concepts; energy transfer in centrifugal and axial flow turbines, compressors and pumps. Thermodynamic relationships in turbomachinery processes. 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. 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 481. INTRODUCTION TO MEDICAL TECHNOLOGY **FOUR CREDIT HOURS**
A study of basic hospital and laboratory routine, Medical Terminology, Laboratory Ethics, Laboratory Mathematics.

MET 482. URINALYSIS AND RENAL FUNCTION **FOUR CREDIT HOURS**
Instruction in various methods of performing these tests with correlation based on anatomical and physiological functions of the organs.

MET 483. HEMATOLOGY **SIX CREDIT HOURS**
Instruction in the morphology of the blood and blood-forming tissues and practice in the associated studies. Correlation of findings based on anatomical and physiological functions of the cellular components of the blood.

MET 484. BACTERIOLOGY, PARASITOLOGY, MYCOLOGY **SEVEN CREDIT HOURS**
Instruction in various methods of microbiological examination of the body tissues, fluids, secretions, and excretions; tests for reaction of the body to specific diseases; tests for and study of various parasites found as pathologic organisms in the human body.

MET 485. CHEMISTRY AND GASTRIC ANALYSIS **EIGHT CREDIT HOURS**
Instruction in biochemical analysis and the chemical changes in the body due to disease; procedures for analyzing gastric fluid.

MET 486. HISTOLOGY AND CYTOLOGY **THREE CREDIT HOURS**
Instruction in various methods of preparation for sectioning and staining of tissues in preparation for microscopic examination.

MET 487. SEROLOGY AND SPINAL FLUID **THREE CREDIT HOURS**
Instruction in antigen-antibody reaction in vitro and the performance of the associated tests; procedures for analyzing cerebrospinal fluid.

MET 488. BLOOD BANKING **THREE CREDIT HOURS**
Instruction in blood typing and crossmatching of blood for administration of transfusions. Techniques in withdrawing blood from donors is included.

MET 489. LABORATORY MANAGEMENT **NO CREDITS**
The student familiarizes himself with the ordering of supplies, office procedures, and with basal metabolism techniques.

MET 490. NORMAL AND PATHOLOGIC PHYSIOLOGY **NO CREDITS**
A series of lectures stressing the correlation of theory and practical laboratory testing as it relates to disease states.



Military Science (MIL)Col. Wilbur E. Showalter, *Chairman**Professor:* Showalter*Assistant Professors:* Anderson, Bowden, Gainok, Carberry, Ennis, Gaier, Geiger, Maguire, Ragains, Rizzo, Sampson*Part-time Instructors:* Bennett, Martinez, Mendenhall, Nichols, Olson, Perry, Robertson, Thomas, Thompson, Whitby, Wolfe**MIL 101-102. FIRST YEAR BASIC COURSE** **TWO CREDIT HOURS**

Training provided in those subjects common to all branches of the Army, such as U.S. Army and National Security; individual weapons and marksmanship; organization of Army and R.O.T.C.; counterinsurgency; leadership laboratory.

MIL 201-202. SECOND YEAR BASIC COURSE **TWO CREDIT HOURS**

Continuation of above course. Subjects include: American military history; map and aerial photograph reading; basic tactics; counterinsurgency; leadership laboratory. Prerequisite: Mil 101-102.

MIL 301-302. FIRST YEAR ADVANCED COURSE **FOUR CREDIT HOURS**

Subjects: Military teaching principles; service branches; tactics-communications; precamp orientation; counterinsurgency; leadership; summer camp. Prerequisites: Mil 101, 102, 201, 202, pass physical, selection.

MIL 401-402. SECOND YEAR ADVANCED COURSE **FOUR CREDIT HOURS**

Continuation of above. Subjects: Logistics; Army Administration: Military Justice; Operations; Service Orientation; U.S. in World Affairs; Counterinsurgency; Leadership. Prerequisite: Mil 301-302 and Summer Camp.

Music (MUS)Maurice R. Reichard, *Chairman**Professor:* Reichard*Associate Professors:* Tagg, Thomas, Zech*Assistant Professor:* Weaver*Instructor:* Wiggenghorn*Part-time Instructors:* Blagg, Christopher, Enoch, Heisey, Katz, Kline, Minton, Reger**MUS 102. MUSIC LITERATURE AND APPRECIATION** **TWO CREDIT HOURS**

A study of the masterpieces of music, with special reference to the listener; includes compositions of value to the classroom teacher. For students in elementary education. Not open to students who have credit for Mus 105. *Second Term, Each Year*

MUS 105. MUSIC APPRECIATION **TWO CREDIT HOURS**

A study of the masterpieces of music aimed at developing a broad 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 Term, Each Year*

MUS 141. INTRODUCTION TO MUSIC**TWO CREDIT HOURS**

For the student with no previous experience with the theory of music. Notation of music, key signatures, fundamental harmonic progression, and an introduction to the piano keyboard. Elementary ear training and dictation. *First Term, Each Year*

MUS 151-152. FIRST YEAR THEORY**EIGHT CREDIT HOURS**

Formation of scales and intervals; progression of triads and seventh chords; simple modulation; basic technique of dictation, sight singing, and rhythmic reading. Prerequisite: Knowledge of the fundamentals of music.

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 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 Term—Evening*

MUS 232. TEACHING MUSIC IN GRADES 4, 5, AND 6**TWO CREDIT HOURS**

Materials to be used in music for the intermediate grades and their presentation; problems and possibilities of the elementary school music program. Prerequisite: Equivalent of Mus 141. *Second Term—Evening*

MUS 235-236. VOICE CLASS**FOUR CREDIT HOURS**

Principles of good singing; development of the voice; vocal literature. May be repeated to a total of eight credit hours. Minimum of four students required for class. Prerequisite: Permission of the instructor.

MUS 245-246. GREGORIAN CHANT**FOUR CREDIT HOURS**

An introduction to Gregorian Chant. Principles of free rhythm; modal characteristics; fundamentals of choronomy. Offered only at Marianist College and at Regina Heights.

MUS 251. SECOND YEAR THEORY**FOUR CREDIT HOURS**

Continuation of Mus 151-152; more advanced sight-singing and dictation; analysis and writing of advanced seventh chords, modulation. Non-harmonic tones, and altered chords. Prerequisite: Mus 152. *First Term, Each Year*

MUS 262. MUSICAL FORM**TWO CREDIT HOURS**

A study of the structural designs used in musical composition; a study of all polyphonic, homophonic, and the larger forms. Prerequisite: Mus 251. *Second Term, Each Year*

MUS 272. KEYBOARD HARMONY**TWO CREDIT HOURS**

A study of diatonic chord progressions, including simple modulations, at the keyboard; their use in accompaniment of melodies; improvisation; modern chord terminology. Prerequisite: Mus 251; four credit hours in Piano. *Second Term, 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 Term, 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 Term, 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.

*Second Term, 1964-1965***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.

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.

*Evening***MUS 322. INSTRUMENTATION AND ORCHESTRATION****THREE CREDIT HOURS**

Scoring for instruments in small combinations and full orchestra and symphonic band; emphasis on the needs of school music organizations. Prerequisite: Junior standing in music and permission of the instructor.

*Second Term, Each Year***MUS 325. STRINGED INSTRUMENTS****TWO CREDIT HOURS**

Class instruction in stringed instruments; teaching of stringed instruments in the schools.

*First Term, 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 Term, 1964-1965***MUS 327. BRASS INSTRUMENTS****ONE CREDIT HOUR**

Class instruction in brass instruments; teaching brass instruments in the schools.

*Second Term, 1964-1965***MUS 328. PERCUSSION INSTRUMENTS****ONE CREDIT HOUR**

Class instruction in percussion instruments; teaching of percussion instruments in schools.

Second Term, Each Year

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.

Second Term, 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.

First Term, Each Year

MUS 335. MUSIC IN THE ELEMENTARY GRADES THREE CREDIT HOURS
The music education program in the elementary grades; materials and their presentation; problems and responsibilities of the music teacher. Prerequisite: Sophomore standing in music education.

Second Term, Each Year

MUS 341. CONDUCTING THREE CREDIT HOURS
Methods of controlling tempo and the dynamic elements of musical performance groups; practical experience in experimental campus organizations. Prerequisite: Junior standing in Music; permission of the instructor.

Second Term, 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 Term—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.

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.

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; original student compositions. Prerequisite: Permission of the instructor.

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.

MUS 425-426. PROBLEMS IN INSTRUMENTAL MUSIC FOUR CREDIT HOURS
 Practical problems and experience in instrumental music in teaching or other professional situations approved by the Department of Music. Prerequisite: Senior standing in Music or in Music Education.

MUS 429. MARCHING BAND TECHNIQUES TWO CREDIT HOURS
 Materials and methods of organization and instruction for the Marching Band.
Second Term—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. Prerequisite: Senior standing in Music or in Music Education.

MUS 441-442. LABORATORY IN COMPOSITION FOUR CREDIT HOURS
 Advanced work in musical composition; writing multi-movement forms of both vocal and instrumental music. Prerequisite: Mus 411 and 412; permission of the instructor.

MUS 470W. MUSIC IN THE PRIMARY GRADES THREE CREDIT HOURS
 The workshop treats phases of the child's music needs and considers appropriate materials and methods for the regular classroom teacher. Opportunities given for participation in music activities. For primary teachers. *Summer*

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:

* <i>Piano</i> , semester fee.....	\$20.00
* <i>Organ</i> , semester fee.....	20.00
* <i>Voice</i> , semester fee.....	20.00
** <i>Violin, Cello, Bass</i> , term fee.....	40.00 to 64.00
** <i>Reed, Woodwind, Brass Instruments</i> , term fee.....	40.00
*" <i>Laboratory fees</i> " (\$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.	
**Fees for instruction in instruments of the Band or Orchestra are based on the private instruction fee of the individual instructor. With permission of the Chairman of the Department of Music, these fees may be paid directly to the instructor and not included in the amounts paid to the University treasurer at time of registration.	

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)

Ann Franklin, *Chairman*

Associate Professors: Franklin, Horrigan

Part-time Instructors: Heagler, Sandman, 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

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.

NSG 340. PRINCIPLES OF TEACHING IN NURSING

THREE CREDIT HOURS

Communication skills and principles underlying learning and teaching are presented. Concepts of health guidance, individual group teaching methods are developed through individual projects, group projects, discussion and role-playing.

NSG 350. COMPREHENSIVE MEDICAL-SURGICAL NURSING

THREE CREDIT HOURS

Principles of medical-surgical nursing, special emphasis on total patient care. Student develops nursing plans which include measures for meeting socio-psychologic, emotional, spiritual and physical needs of the patient.

Second Term, 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 Term, 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.
First Term, 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 Term, Each Year

Nsg 370. COMPREHENSIVE PSYCHIATRIC NURSING**THREE CREDIT HOURS**

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 Term, 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 Term, 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.

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 Term, Each Year

Nsg 492. PUBLIC HEALTH NURSING PRINCIPLES**THREE CREDIT HOURS**

This course 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 Term, Each Year

Nsg 493. PUBLIC HEALTH NURSING FIELD WORK**FOUR CREDIT HOURS**

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.
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 Term, Each Year

Philosophy (PHL)

Rev. Edmund L. Rhodes, S.M., *Chairman**Professors*: Baker, Elbert*Associate Professors*: Dieska, Harkenrider, Rhodes*Assistant Professors*: Bedard, Bloemer, Chrisman, Dombro, Farians, Hickey*Instructors*: Baltazar, Psihas*Part-time Instructors*: Danaher, Wening

Courses required for a major: Phl 103, 207, 303, 306, 402, 403, 404, 406, 434, elective.

Courses required for a minor: Phl 103, 207, 303, 306, 402, 403, 404 (Non-Cath.).

Students should consult the chairman concerning electives.

Logic and philosophical psychology are prerequisites for all 300 and 400 courses.

PHL 103. LOGIC

THREE CREDIT HOURS

Correct methods of defining and dividing concepts; analysis of propositions and their immediate implications; applications of the rules for valid syllogistic inference; induction; fallacies. Required of all freshmen.

PHL 207. PHILOSOPHICAL PSYCHOLOGY

THREE CREDIT HOURS

Nature of life in general; plant soul; brute animal soul; knowledge and appetite in man; human intellect and will; intellectual and moral habits; nature, origin and immortality of the human soul. Required of all sophomores. Prerequisite: Phl 103.

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. Prerequisite: Phl 207.

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; skepticism, idealism and subjectivism. Prerequisite: Phl 207.

PHL 402. GENERAL METAPHYSICS

THREE CREDIT HOURS

An analysis of real being; analogy of being; transcendentals; application of act and potency to essence and existence, substance and accident, the one and the many, causality; special classes of being. Prerequisite: Phl 306.

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.

PHL 404. ETHICS

THREE CREDIT HOURS

Happiness and ultimate end of man; human act; norms and determinants of morality; eternal and natural law; conscience; moral virtues; rights and duties. Required of all non-Catholics. Prerequisite: 402.

- 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. Prerequisite: Phl 402.
First Term, 1964-1965
- 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. Prerequisite: Phl 402.
Second Term, 1964-1965
- PHL 408. HISTORY OF MODERN PHILOSOPHY THREE CREDIT HOURS
 A consideration of the rise and development of modern philosophic thought from the Renaissance of the 20th century. Prerequisite: Phl 402. *First Term, 1965-1966*
- PHL 410. HISTORY OF POLITICAL PHILOSOPHY THREE CREDIT HOURS
 A study of the principal political opinions of the Western philosophers; Plato, Aristotle, and the leading Roman, Medieval, and modern political philosophers. Prerequisite: Phl 402. Required of all political science majors. *First Term, Each Year*
- PHL 414. PHILOSOPHY OF LAW THREE CREDIT HOURS
 Nature of law; natural and positive law; implications and juridical origin and effect of law; justice; genetic origin of law. Prerequisite: Phl 402. *Second Term, 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*. Prerequisite: Phl 402. *Summer, 1965*
- 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*. Prerequisite: Phl 402. *Second Term, 1964-1965*
- 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*. Prerequisite: Phl 402. *Third Term, 1964-1965*
- 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. Prerequisite: Phl 402. *Second Term, 1964-1965*
- PHL 460. BUSINESS ETHICS THREE CREDIT HOURS
 Application of philosophy in the area of employee discipline with emphasis on rights, duties, and the purpose of discipline. Examination of arbitration cases in discipline.

Health and Physical Education (PHE)

James B. LaVanche, *Acting Chairman*

Health and Physical Education: Men

Henry Ferrazza, *Director*

Associate Professor: Baujan

Assistant Professors: Blackburn, Ferrazza, LaVanche, Morgan

Instructor: Schleppi

Part-time Instructor: Douglass

Health and Physical Education: Women

Doris Drees, *Director*

Assistant Professor: Drees

Instructors: Hager, Middlebrook, Sokolowski

Part-time Instructor: Sharp

PHE 107-108. PHYSICAL EDUCATION ACTIVITIES (WOMEN) ONE CREDIT PER TERM
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.

PHE 107-108. PHYSICAL EDUCATION ACTIVITIES (MEN) ONE-HALF CREDIT PER TERM
Fundamentals of physical education activities. Screening will be given for Physical Education majors and those having teaching fields. Prerequisite for Phe 200. Two activity periods a week.

PHE 110. HEALTH AND PHYSICAL EDUCATION (MEN) ONE CREDIT HOUR
The teaching of soccer, touch football, volleyball, basketball. The health lectures will consist of knowledge and attitudes pertaining to healthful living. One lecture and two activity periods.
First Term, Each Year

PHE 111. HEALTH AND PHYSICAL EDUCATION (MEN) ONE CREDIT HOUR
The teaching of skills: handball, gymnastics, wrestling, and track and field. The health lectures will consist of knowledge and attitudes pertaining to healthful living. One lecture and two activity periods.
Second Term, Each Year

PHE 112. HEALTH AND PHYSICAL EDUCATION (MEN) ONE CREDIT HOUR
The teaching of skills in tennis, archery, and badminton. The health lectures will consist of knowledge and attitudes pertaining to healthful living. One lecture and two activity periods.
First Term, Each Year

PHE 113. HEALTH AND PHYSICAL EDUCATION (MEN) ONE CREDIT HOUR
The teaching of skills in bowling, (aquatics or dance), and golf. The health lectures will consist of knowledge and attitudes pertaining to healthful living. One lecture and two activity periods.
Second Term, Each Year

PHE 110. HEALTH AND PHYSICAL EDUCATION (WOMEN) ONE CREDIT HOUR
Orientation to physical education and health consisting of the purposes, basic principles of physical education and health. The teaching of the fundamental skills and knowledge. One health lecture and two physical activity periods.
First Term, Each Year

PHE 111. HEALTH AND PHYSICAL EDUCATION (WOMEN) ONE CREDIT HOUR
The teaching of fundamental skills and knowledge of indoor team and individual

sports. The health lectures will consist of knowledge and attitudes pertaining to healthful living. *Second Term, Each Year*

PHE 112. HEALTH AND PHYSICAL EDUCATION (WOMEN) ONE CREDIT HOUR
The teaching of skills and knowledge of outdoor individual sports. The health lectures will consist of knowledge and attitudes pertaining to healthful living. One health lecture and two physical activity periods. *First Term, Each Year*

PHE 113. HEALTH AND PHYSICAL EDUCATION (WOMEN) ONE CREDIT HOUR
The teaching of skills and knowledge of dance and recreational activities. The health lectures will consist of knowledge and attitudes pertaining to healthful living. One health lecture and two physical activity periods. *Second Term, Each Year*

PHE 115. HEALTH ONE CREDIT HOUR
Course aims to establish and promote individual health and proper health habits through a study of the fundamentals of physical well-being. Required of all men and women pursuing a teaching field or major in physical education. One lecture period. *First Term, Each Year*

PHE 119. THEORY AND TECHNIQUES OF OFFICIATING (MEN) ONE-HALF 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 Term, Each Year*

PHE 120. THEORY AND TECHNIQUES OF OFFICIATING (MEN) ONE-HALF CREDIT HOUR
Continuation of Phe 119. Two lab periods a week. *Second Term, Each Year*

PHE 200. METHODS IN TEAM & INDIVIDUAL SPORTS FOR MEN TWO CREDIT HOURS
Skills and methods needed to teach soccer, speedball, volleyball, touch football, archery, golf, badminton, bowling, handball, swimming, etc. Four periods a week. Prerequisite for Phe 433 M.

PHE 205-206. HUMAN ANATOMY AND PHYSIOLOGY SIX CREDIT HOURS
(See Bio 205-206)

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.

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 acquired. Two lecture periods a week. *Second Term, 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 Term, Each Year*

PHE 217. TEAM SPORTS (WOMEN) TWO CREDIT HOURS
 Skills and methods needed to teach hockey, soccer, speedball, volleyball, softball, and basketball. Two lecture and two activity periods a week. *First Term, Each Year*

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 Term, 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. *Second Term, 1964-1965*

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. Two lecture periods a week. *Second Term, Each Year*

PHE 308. TEACHING OF HEALTH THREE CREDIT HOURS
 Application of principles of methodology to health education in elementary and secondary schools. Develops standards and techniques for selecting suitable source material. Observation of teaching in area schools required. Three lecture periods a week. *First Term, 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 Term, Each Year*

PHE 326. GAMES AND FUNDAMENTAL RHYTHMS THREE CREDIT HOURS
 Learning game activities; relating needs and abilities of children and youth to the games program. Teaching of rhythms and folk dancing in elementary and secondary schools. Two lecture and two activity periods a week. *Second Term, 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. *First Term, Each Year*

PHE 335. CARE AND PREVENTION OF INJURIES THREE CREDIT HOURS
 Diagnosis, interpretation, and treatment of injuries. First aid for injuries in home, school, and community. Qualifying for Red Cross First Aid Instructor's Certificate is a requirement. Three lecture periods a week. *Second Term, Each Year*

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 Term, Each Year*

PHE 350. KINESIOLOGY**TWO CREDIT HOURS**

The study of human movement. Body mechanics, posture, motor efficiency, sports, and the influence of growth and development upon motor performances are studied. Two lecture periods a week.

*First Term, Each Year***PHE 402. ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION (MEN)****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 Term, Each Year***PHE 402. ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION (WOMEN)****TWO CREDIT HOURS**

An investigation of the problems involved in organizing and administering women's Physical Education, cheerleading, drill teams, and the Girls' Athletic Association. Two lecture periods a week.

*First Term, 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. Two lecture periods a week.

*First Term, Each Year***PHE 407. MODERN PROBLEMS IN PUBLIC HEALTH****TWO CREDIT HOURS**

Study of current health problems; special emphasis on preventive medicine, epidemiology, and organization for health. Introduction to seminar study. Two lecture periods a week.

*Second Term, 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 period a week.

*First Term, 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 Term, Each Year***PHE 413. HEALTH IN ELEMENTARY SCHOOL****THREE CREDIT HOURS**

Study of physical and social environment essential for maintaining and promoting the growth and well-being of the elementary school student. The standard first aid course offered.

PHE 414. PHYSICAL EDUCATION IN ELEMENTARY SCHOOL**THREE CREDIT HOURS**

Designed to equip the classroom teacher with methods and activities for conducting a physical education program.

PHE 433. GYMNASTICS FOR MEN**TWO CREDIT HOURS**

Methods in conditioning, tumbling, horses, bucks, low and high bar, pyramid building, wrestling, trampoline, stunts with and without equipment. One lecture and two activity periods a week.

PHE 433. GYMNASTICS FOR WOMEN**TWO CREDIT HOURS**

Methods and skills needed to teach stunts, tumbling, trampoline, calisthenics, balancing, free exercise, rope stunts and other self-testing activities. One lecture and two activity periods a week.

*First Term, 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.

Physics (PHY)**Dr. Joseph J. Kepes, Chairman***Professors:* Bueche, Mann, Rambauske*Associate Professors:* Kepes, Martin, Schick*Assistant Professors:* Crivello, Hieber, Kendziorski*Part-time Instructors:* Swartzbaugh, Yaney

A major in physics consists of 24 credit hours, exclusive of Phy 206-207-208-209. 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 fundamental principles of physics to physics, chemistry, astronomy, meteorology. Gives the student a broad understanding of man's physical environment. Four class periods per week.

PHY 151. GENERAL PHYSICS**THREE CREDIT HOURS**

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 Term, 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 Term, 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 Term, 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 Term, 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 Term, 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 Term, 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.

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.

PHY 209. MODERN PHYSICS**THREE CREDIT HOURS**

Basic elements of modern physics. Serves as an introduction to advanced atomic topics or as a terminal course for science, engineering, or other interested students. Prerequisites: Phy 206, 207; Corequisite : Phy 208.

*Second Term, Each Year***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 Term, Each Year

- PHY 303. INTERMEDIATE MECHANICS I** THREE CREDIT HOURS
The fundamental concepts of mechanics. The topics covered include virtual work, kinematics, and particle dynamics. Three class periods per week. Prerequisites: Phy 206, 207, 208, Mth 218. *First Term, Each Year*
- PHY 304. INTERMEDIATE MECHANICS II** THREE CREDIT HOURS
A continuation of Phy 303. Topics include dynamics of systems of particles, rigid bodies, central forces, accelerating systems, and the mechanics of continua. Three class periods per week. Prerequisite: Phy 303. *Second Term, Each Year*
- PHY 311. ATOMIC PHYSICS** THREE CREDIT HOURS
The electron, photoelectric and thermionic emission of electrons, atomic and molecular structure and spectra, X-rays, introduction to wave mechanics. Three class periods per week. Prerequisite: Phy 209 or consent of instructor. *First Term, Each Year*
- PHY 314. ELECTRONICS FOR SCIENTISTS** THREE CREDIT HOURS
Terminal behavior of vacuum tube and semi-conductor devices; application to basic rectifier, amplifier, oscillator and control circuits. Prerequisites: Phy 208, Mth 301 or 341; Corequisite: Phy 314L.
- PHY 314L. ELECTRONICS FOR SCIENTISTS LABORATORY** ONE CREDIT HOUR
Laboratory construction and testing of the basic vacuum tube and solid-state electronic circuits.
- PHY 321. NUCLEAR PHYSICS** THREE CREDIT HOURS
Radioactivity, particle accelerators, the interaction of nuclear radiation with matter, particle detection, fission, and cosmic rays. Three class periods a week. Prerequisites: Phy 311 or consent of instructor. *Second Term, Each Year*
- PHY 351. INTRODUCTION TO ASTRONOMY** THREE CREDIT HOURS
History of astronomy, apparent motions of celestial bodies, planetary systems, spectral classifications, multiple systems, variable stars, structure of the Universe. Prerequisites: Mth 202 or Mth 218, Phy 208. *First Term, 1964-1965*
- PHY 361. PRINCIPLES OF REACTOR PHYSICS** THREE CREDIT HOURS
Chain reactors. Slowing down theory, diffusion equations, space distribution, criticality, group theories. Laboratory experiments accompany the lecture. Prerequisites: Phy 208, Mth 201 or consent of instructor. *Offered as needed*
- PHY 402. WAVE THEORY** THREE CREDIT HOURS
Theory of wave motion, applications to mechanical, thermal, acoustical, electrical, optical systems, foundations of wave mechanics. Three class periods per week. Prerequisites: Mth 301, Phy 206, 207, 208. *Offered as needed*
- 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. *First Term, Each Year*

PHY 408. ADVANCED ELECTRICITY AND MAGNETISM I **THREE CREDIT HOURS**
Electrostatics, Coulomb's and Gauss' laws and the Laplace and Poisson equations, dielectrics, electrostatic energy methods, scalar and vector potential. Three class periods per week. Prerequisites : Phy 206, 207, 208. *First Term, Each Year*

PHY 409. ADVANCED ELECTRICITY AND MAGNETISM II **THREE CREDIT HOURS**
Electromagnetic induction. Magnetic properties, A.C. Circuit methods. Maxwell's equations. Electromagnetic waves, reflection and refraction, simple wave-guides, resonators. Prerequisite: Phy 408. *Second Term, 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. *Second Term, 1964-1965*

PHY 414. ADVANCED ELECTRONICS FOR SCIENTISTS **THREE CREDIT HOURS**
Continuation of Phy 314. High frequency techniques, modulation and detection, pulse generators, special circuits; application to counters, computer circuits, and experimental instrumentation and control problems. Prerequisites: Phy 314; Corequisite: Phy 414L.

PHY 414L. ADVANCED ELECTRONICS FOR SCIENTISTS **ONE CREDIT HOUR**
Individual student projects in the electronic instrumentation of problems in the physical, biological, and computer sciences. Corequisite: Phy 414.

PHY 420. INTRODUCTION TO SOLID STATE **THREE CREDIT HOURS**
Classification of solids, definition of crystals and crystal structures, survey of lattice properties. Free electron theory, band theory of solids, semi-conductors and crystal imperfections. Prerequisite: Phy 209. *First Term, 1964-1965*

PHY 431. ADVANCED LABORATORY I **TWO CREDIT HOURS**
A laboratory course in which the student performs advanced experiments in optics, mechanics, electricity and magnetism, and modern physics. One four-hour period per week. Corequisite: an advanced course in physics. *First Term, 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 Term, 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.

PHY 440. X-RAYS **THREE CREDIT HOURS**
Nature, production and properties of x-rays and their interaction with matter. Applications and x-ray spectroscopy. Three class periods per week. Prerequisites: Mth 218, Phy 206, 207, 208. Recommended: Phy 311. *Second Term, 1964-1965*

PHY 450. ADVANCED ASTRONOMY THREE CREDIT HOURS
Orbits, celestial mechanics, spectroscopic theory and analysis, ionization theory, radiation transfer, nuclear reactions, atmospheres, star models. Three class periods per week.
Prerequisites: Mth 301, Phy 301, 303, 311, 351. *Second Term, 1964-1965*

PHY 460. SEMINAR ONE-HALF CREDIT HOUR
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.

PHY 505. MODERN PHYSICS FOR ENGINEERS THREE CREDIT HOURS
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 Professor: Liebler

Instructors: Brockman, Patyk

Part-time Instructors: Pivarnik, Wilson

Required courses for a major in Political Science are: Pol 201, 302, 314, 412, 417, 421. Political Science 201 is a prerequisite and may not be applied toward a major or minor. Twenty-seven credit hours are required for a major in Political Science, distributed through the following areas: Local Government (Pol 302); National Government (Pol 201, Pol 412); International Relations (Pol 314); Political Philosophy (Pol 417); Seminar (Pol 421). Electives in Pol 300-400 courses must total at least nine credit hours. A minor in Political Science requires prerequisite Pol 201, plus twelve credit hours from Pol 300-400 courses.

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.

POL 301. INTRODUCTION TO LAW THREE CREDIT HOURS
Brings 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 Term, 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.
- POL 304. COMPARATIVE GOVERNMENT** **THREE CREDIT HOURS**
 A comparison of the governments of the United Kingdom, France, Germany, USSR, and others. Operation of legislative, administrative and judicial institutions.
Second Term, Each Year
- 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 Term, 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 Term, 1964-1965*
- POL 312. NATIONAL LEGISLATIVE PROCESS** **THREE CREDIT HOURS**
 A detailed treatment of the organization, powers, functions, procedures of, and influences on Congress in federal legislation.
Second Term, Each Year
- POL 314. INTERNATIONAL RELATIONS** **THREE CREDIT HOURS**
 An exposition of the dynamic forces influencing nations in their conduct of world affairs.
- POL 316. INTERNATIONAL ORGANIZATIONS** **THREE CREDIT HOURS**
 A study of origins and evolution of organized international collaboration with an emphasis on the United Nations.
Second Term, 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 Term, 1965-1966
- 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 Term, 1965-1966
- POL 405. WORLD PROBLEMS OF THE UNITED STATES** **THREE CREDIT HOURS**
 A critical examination of the Communist world challenge and response and their geographic patterns.
- POL 406. GEOGRAPHY IN INTERNATIONAL RELATIONS** **THREE CREDIT HOURS**
 This program proposes to include the geopolitical aspects of land, sea, outer space, communications, transportation, military strategy and the contributions of geography to international problems.
- 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 Term, Each Year

POL 410. PUBLIC ADMINISTRATION

THREE CREDIT HOURS

A study of the operations of local and national departments and bureaus of the Public Administrative service.

First Term, Each Year

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.

POL 414. PHILOSOPHY OF LAW

THREE CREDIT HOURS

Nature of law; natural and positive law; implications and juridical origin and effect of law; justice; genetic origin of law. Prerequisite: Phl 402.

Second Term, 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 Term, Each Year

POL 417. HISTORY OF POLITICAL PHILOSOPHY

THREE CREDIT HOURS

Principal political opinions of the Western philosophers drawn from original sources. Political doctrines of Plato and Aristotle, leading Roman and Medieval thinkers, and modern political philosophies. Accredited in Philosophy.

First Term, Each Year

POL 421. GOVERNMENT SEMINAR

THREE CREDIT HOURS

Research and conferences in (a) International Affairs or (b) National Government Areas. Prerequisite: Permission of Chairman.

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 Term, 1964-1965

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.



Psychology (Psy)

Dr. Anthony Debons, *Chairman*

Professors: Debons, Scheidler

Associate Professors: Noland, Rancurello

Assistant Professor: Hunt

Instructor: Palumbo

Part-time Instructors: Christensen, Davis, Gallico, Riley, Working

Psychology majors must complete 29 semester hours, including the required courses as follows: Psy 204 or 201, Psy 302, 305, 308, 309, and 484. In addition, the student must elect, in consultation with his advisor, a minimum of nine additional credits in Psychology. Majors will be assigned to individual advisors; they should contact the department chairman for assignment as soon 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, and industrial problems.

PSY 204. GENERAL PSYCHOLOGY **THREE CREDIT HOURS**
Covers major fields in psychology. Emphasizes sensation, sense organs, learning, etc. Recommended for P.P. majors, engineers, pre-med, nurses.

PSY 205. APPLIED PSYCHOLOGY **THREE CREDIT HOURS**
Emphasizes practical applications of psychology in mental hygiene, society and industry. Intended primarily for students working toward associate degrees in technology or business. It is not equivalent to Psy 201 or 204.

PSY 302. ELEMENTARY STATISTICS **THREE CREDIT HOURS**
Measures of central tendency, deviation, correlation, other basic statistical concepts. Presumes usual high school training in mathematics. Required of all students majoring in psychology. Prerequisite: Psy 204 or 201.

PSY 304. ADOLESCENT PSYCHOLOGY **THREE CREDIT HOURS**
Treats interrelated physical, social, emotional development of adolescents. Child Psychology is recommended as a prerequisite though not required.

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.

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.

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. Prerequisite: Psy 306.

Second Term, Each Year

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. Prerequisites: Psy 302.

PSY 308L-309L. EXPERIMENTAL PSYCHOLOGY I-II LAB. TWO CREDIT HOURS
Course to accompany Psy 308-309. One two-hour laboratory period each week.

PSY 312. ABNORMAL PSYCHOLOGY THREE CREDIT HOURS
Treats mental aberrations whether functional or organic. Describes syndromes, etiology and treatment. Prerequisite: Psy 305 and 201 or 204.

Second Term, Each Year

PSY 315. PERSONALITY THREE CREDIT HOURS
Critical evaluation of theories of personality. Emphasis is on both clinical and experimental findings. Prerequisite: Psy 305 and 201 or 204.

Second Term, Each Year

PSY 400. LEARNING THREE CREDIT HOURS
Covers the empirical foundations of the learning process. Simple classical, instrumental, and variants of both types of conditioning are considered prior to investigations of more complex learning. Prerequisites: Psy 302 and 308.

First Term, 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. Prerequisite: Psy 302.

Second Term, Each Year

PSY 402. PSYCHOLOGICAL TESTS AND MEASUREMENTS THREE CREDIT HOURS
Historical background of testing and the ethics involved. Concentrates on the requirements of acceptable tests in general. Reviews principal tests of intelligence, personality, aptitude, etc. Prerequisite Psy 302, 204 or 201.

First Term, Each Year

PSY 408. SOCIAL PSYCHOLOGY THREE CREDIT HOURS
Presents systematic treatment of social forces affecting human behavior. Emphasizes methods of social psychology. Prerequisite: Psy 204 or 201.

PSY 409. HISTORY OF PSYCHOLOGY THREE CREDIT HOURS
Considers modern psychology from the vantage point of its origins in philosophy and science. Emphasizes an evaluation of systems and schools in the history of psychology. For seniors only.

First Term, Each Year

PSY 412. INTERVIEWING AND COUNSELING PROCEDURE THREE CREDIT HOURS
Theories and techniques of interviewing and counseling are discussed and evaluated. Practice provided by role playing and by case study. Permission of the instructor or chairman is required. For seniors only.

PSY 420. INDUSTRIAL PSYCHOLOGY**THREE CREDIT HOURS**

Introduces modern efforts to improve human performance in industrial organization and society. Studies selection and placement of employees, morale training, incentive, etc. Prerequisite: Psy 302, 204 or 201. *First Term, Each Year*

PSY 454. PHYSIOLOGICAL PSYCHOLOGY**THREE CREDIT HOURS**

Study of neurological structure and function emphasizing role of nervous and glandular systems in the study of behavior. Prerequisite: Bio 207. *Second Term, Each Year*

PSY 484. ADVANCED GENERAL PSYCHOLOGY**FIVE CREDIT HOURS**

Designed as a final synthesizing course covering entire field of psychology wherein student may organize the facts and principles of relatively disparate area. Updating of textbook material through journals. For seniors only. *First Term, 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. May be taken more than one time.

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. Permission of instructor or department chairman is required.

Secretarial Studies (SEC)Velma M. Miller, *Chairman**Associate Professors: Civile, Miller**Instructor: Hewitt*

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.

SEC 102. INTERMEDIATE SHORTHAND**THREE CREDIT HOURS**

Gregg theory is reviewed. Reading practice continues but transcription is emphasized. Five class periods a week.

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.

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 term.

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.

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.

SEC 107. PERSONAL TYPEWRITING**TWO CREDIT HOURS**

Students are taught typing for personal use—this includes knowledge of the typewriter, preparing outlines, manuscript writing, business letters, fill-in forms, rough drafts, etc. Three class periods a week. For use of typewriter, \$3 per term.

SEC 110. SECRETARIAL MATHEMATICS**THREE CREDIT HOURS**

Review and practice of essential mathematical computations common to business offices; development of proficiency in these functions.

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.

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.

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.

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 term.

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 telefunken machines. Four class periods a week. Pre-requisite: Intermediate Typewriting.

SEC 206. ADVANCED SECRETARIAL PRACTICE

THREE CREDIT HOURS

Advanced training in duplication processes, dictating machines, filing techniques, and communications. Four class periods a week.

SEC 207. BUSINESS MACHINES

THREE CREDIT HOURS

The student is given the opportunity to become acquainted with and to use correctly the principal types of adding machines, calculators, accounting machines, and key punch. Three class periods a week.

Sociology (Soc)

Dr. Edward A. Huth, *Chairman**Professor:* E. Huth*Associate Professor:* M. Huth*Assistant Professor:* Weir*Part-time Instructors:* Hair, Lenarduzzi, Wood*Major or Minor in Sociology*

Majors and Minors in Sociology should consult the Chairman of the Department in planning their course programs. They must complete, during their Freshman and Sophomore years, the general requirements for the B.A. degree. Sociology 201 and 202 are prerequisites for advanced courses in sociology. Electives are selected from the 300 and 400 courses. Majors must complete 30 semester hours, including: Soc 201, 202, 401, 403, and 414. Minors are required to complete 15 hours in sociology, including: Soc 201 and Soc 202.

Major in Social Work

The Department of Sociology is a Constituent Member of the Council on Social Work Education, an international accrediting agency for schools of social work in the United States and Canada. The Epsilon Chapter of Phi Alpha National Social Work Honorary Society is under the jurisdiction of the Department of Sociology.

Majors in Social Work should consult the Chairman of the Department of Sociology in planning their course programs. They must complete, during their Freshman and Sophomore years, the general requirements for the B.A. degree. Sociology 201 and 202 are prerequisites for advanced courses in sociology and social work. Electives are selected from the 300 and 400 courses. Majors must complete 30 semester hours, including: Soc 201, 202, 305, 319, 401, and 418.

SOC 201. GENERAL SOCIOLOGY

THREE CREDIT HOURS

The basic course in the principles of sociology; an introduction to the fundamental concepts of sociology. A prerequisite for specialized courses in sociology.

SOC 202. SOCIAL PROBLEMS

THREE CREDIT HOURS

A study of the causes, extent, treatment, mitigation, and prevention of abnormal conditions affecting society. Required for advanced courses in sociology.

- SOC 301. MARRIAGE AND THE FAMILY THREE CREDIT HOURS
The Christian concept of marriage and the family. Mate selection, family finances, husband-wife relationships, parenthood, role of children, family disorganization and improvement.
- SOC 303. POPULATION THREE CREDIT HOURS
A study of the growth, distribution, composition, and perspectives of population with special reference to the United States. *Third Term, Each Year*
- SOC 305. INTRODUCTION TO SOCIAL WORK THREE CREDIT HOURS
Comprehensive survey of social work including social casework, social group work, community organization, social research, social action and social administration. Required of Majors in Social Work. *First Term, Each Year*
- SOC 307. CRIMINOLOGY AND PENOLOGY THREE CREDIT HOURS
Problems of crimes and criminals; etiology, extent, treatment and prevention of crimes; theories and practices of punishment; prisons and prison reform; probation and parole; objectives of penology. *First Term, Each Year*
- SOC 308. ANTHROPOLOGY THREE CREDIT HOURS
An introduction to cultural and physical anthropology; the social, economic, political, religious, and artistic life of primitive people in relation to contemporary civilization; culture processes; law and ethics. *Second Term, Each Year*
- SOC 313. JUVENILE DELINQUENCY THREE CREDIT HOURS
Analyses of causes, extent, treatment, and prevention of juvenile delinquency. The relation of the home, school, church, state, and police to delinquency. Child guidance clinics; detention homes; disposition of cases. *Second Term, Each Year*
- SOC 315. INDUSTRIAL SOCIOLOGY THREE CREDIT HOURS
Analyses of problems concerning industrial relations. Characteristics of industrial society; occupational roles and relationships; technological progress and its repercussions. *First Term, Each Year*
- SOC 319. SOCIAL WELFARE THREE CREDIT HOURS
History, philosophy, policies, programs, and administration of social welfare services under public and private auspices. Social, economic and political problems involved. Required of Majors in Social Work. *Third Term, 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 social data. Required of Majors in Sociology and in Social Work. *Second Term, Each Year*
- SOC 403. HISTORY OF SOCIAL THOUGHT THREE CREDIT HOURS
Theoretical sociology, the historical unfolding of man's attempts to theorize about his social, political, and economic life. Examination of social theory in terms of its logical and empirical validity. Required of Majors in Sociology. *First Term, Each Year*

SOC 409. SOCIAL CONTROL THREE CREDIT HOURS
 Means of social control in primitive and advanced societies. Modification of individual and group behavior by such methods as: praise, ridicule, rewards, punishment, slogans, and propaganda. *Third Term, Each Year*

SOC 412. SCHOOL AND SOCIETY THREE CREDIT HOURS
 Discussion of topics as: teachers, groups in the school, ecology and educational processes, deviant behavior in schools, education for social responsibility. *Second & Third Term, Each Year*

SOC 414. SEMINAR IN SOCIOLOGY THREE CREDIT HOURS
 Individual and group projects developed around such areas as: Marriage and Family Problems, Juvenile Delinquency, Rural Problems, Urban Renewal, and Deviant Behavior. Required of Majors in Sociology. *Second Term, Each Year*

SOC 418. COMMUNITY ORGANIZATION THREE CREDIT HOURS
 The adjustment of community resources to meet community needs; methods for developing, maintaining, extending, and coordinating social welfare agencies. Required of Majors in Social Work. *Third Term, Each Year*

SOC 433. URBAN-RURAL SOCIOLOGY THREE CREDIT HOURS
 Physical and social characteristics of urban-rural areas; urban and rural ecology; major problems of urban and rural life; slums and blighted areas; urban planning and urban renewal. *First & Third Term, Each Year*

Theological Studies (THL)

Rev. Matthew F. Kohmescher, S.M., *Chairman*

Professors: Leimkuhler, Stanley

Associate Professors: Hoelle, Monheim, Kohmescher, Wagner

Assistant Professors: Burns, Kelley, Neubauer, Weber

Instructors: Bradley, Brady

The Department of Theological Studies, 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 to the contrary.

THL 106. DOGMATIC THEOLOGY 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.

- 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. Offered only at Marianist College and Regina Heights.
First Term, Each Year
- THL 108. INTRODUCTION TO DOGMATIC THEOLOGY II THREE CREDIT HOURS
The Blessed Trinity; creation; angels; the governance of the world. Offered only at Marianist College and Regina Heights.
Second Term, 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 Term, 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.
- THL 250. INTRODUCTION TO SACRED SCRIPTURE THREE CREDIT HOURS
Basic course for a proper understanding of the Bible today. Complete introduction, i.e., inspiration, inerrancy, canon, literary forms, cultural background, papal pronouncements plus a consideration of the more important Books.
- 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 Term, Each Year*
- THL 306. THEOLOGICAL AND MORAL VIRTUES THREE CREDIT HOURS
Faith and Hope; Charity; Prudence; Justice, the parts of Justice; Fortitude; Temperance; States of Life.
- THL 307. INTRODUCTION TO THEOLOGICAL AND MORAL VIRTUES I THREE CREDIT HOURS
Faith, Hope, and Charity; Prudence. Offered only at Marianist College and Regina Heights.
First Term, Each Year
- THL 308. INTRODUCTION TO THEOLOGICAL AND MORAL VIRTUES II THREE CREDIT HOURS
Justice; the parts of Justice; Fortitude; Temperance; States of Life. Offered only at Marianist College and Regina Heights.
Second Term, Each Year
- THL 342. SURVEY OF MARIOLGY 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, Prophets and Sapiential Literature; treatment of the critical problems involved.
First Term, Each Year

- 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. *First Term, Each Year*
- 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. *First Term, Each Year*
- 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 and the relation of Religion and Science, Politics, History and Industry. *Second Term, Each Year*
- THL 390. MISSION OF THE SOCIETY OF MARY THREE CREDIT HOURS
Family of Mary as conceived by Father Chaminade, her role in mission of the Church. Filial Piety, dogmatic background and apostolic implications, apostolic method of the Society, consecration to Mary. Offered at Marianist College. *First Term, Each Year*
- THL 406. CHRISTOLOGY AND THE SACRAMENTS THREE CREDIT HOURS
A study of Christ (Incarnation and Redemption); the Sacraments (in general and in particular); the judgment.
- THL 407. CHRISTOLOGY THREE CREDIT HOURS
An intensive study of Christ (Incarnation and Redemption). Offered only at Marianist College and Regina Heights. *First Term, Each Year*
- THL 408. THE SACRAMENTS THREE CREDIT HOURS
The Sacraments (in general and in particular); the judgment, heaven, hell. Offered only at Marianist College and Regina Heights. *Second Term, 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 Gospels and on the Epistles of St. Paul; treatment of the critical problems involved. Prerequisite: Thl 250. *Second Term, Each Year*
- 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
Nature and sources of the liturgy; rites; worship life of the church (sacrifice and sacraments); prayer life of the church; development of the liturgy. *Second Term, Each Year*

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.

First Term, Each Year

THL 473. SOCIAL JUSTICE AND COMMUNISM

THREE CREDIT HOURS

A refutation of the error of the dialectic and historical materialism of atheistic Communism with emphasis on the Christian remedial programs of spirituality and action.

Second Term, Each Year

THL 480. MODERN CATHOLIC THOUGHT

THREE CREDIT HOURS

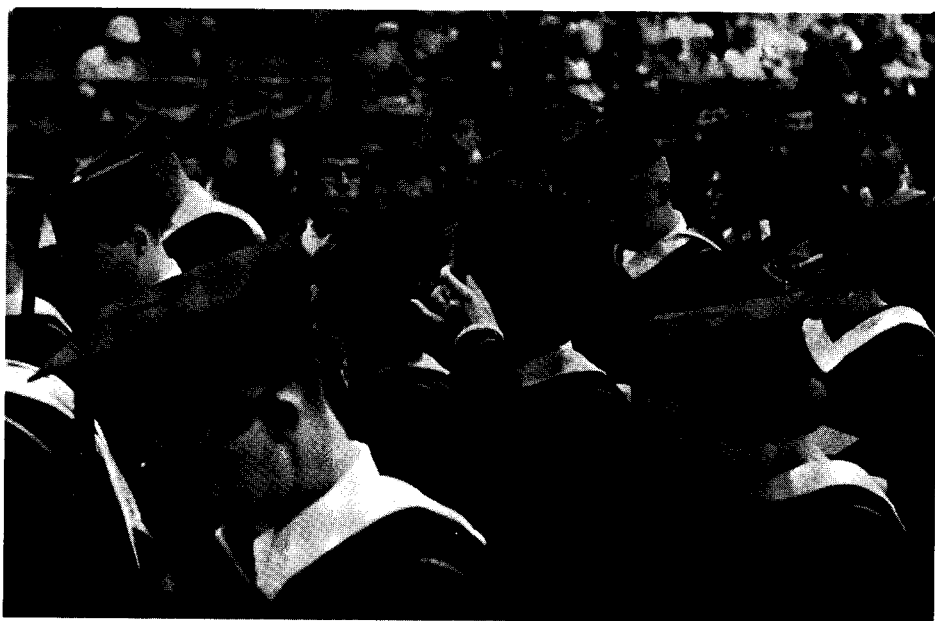
Reading and discussion of representative modern Catholic writers in the field of theology. Required of all majors. Seniors only. Permission of department chairman required.

THL 490. TECHNIQUES OF THE MARIANIST SODALITY

THREE CREDIT HOURS

The Sodality, apostolic instrument of the Society of Mary; relation of the school to the Sodality; structure of the Sodality; formation of sodalists; apostolate of the Sodality; methods and techniques. Offered at Marianist College.

First Term, Each Year



Technical Institute

Acting Director: James L. McGraw

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. Prerequisite: Sti 121 or 122.

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. Gravimetric, volumetric, and colorimetric analyses are stressed along with the techniques that accompany these operations such as weighings and separations. 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 chemical technicians. Application of the properties of matter in its different states. Covers chemical equilibrium; thermochemistry; electrochemistry; reaction kinetics; phase rule. Prerequisites: Cti 202, Sti 104 or Sti 106.

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. 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. Prerequisite: Cti 202.

CTI 207. APPLIED CHEMISTRY TWO CREDIT HOURS
Practical applications of chemistry in various industries. Emphasis will be placed on plastics, powdered metallurgy, paper and other units as required. Prerequisite: Cti 206.

CTI 207L. APPLIED CHEMISTRY LABORATORY 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.

CTI 208. ORGANIC CHEMISTRY I THREE CREDIT HOURS
 A systematic study of the aliphatic classes of organic compounds. Prerequisite: Cti 101.

CTI 208L. ORGANIC CHEMISTRY I LABORATORY ONE CREDIT HOUR
 To accompany Cti 208. Three hours of laboratory a week.

CTI 209. ORGANIC CHEMISTRY II THREE CREDIT HOURS
 A systematic study of the aromatic classes of organic compounds. Prerequisite: Cti 208.

CTI 209L. ORGANIC CHEMISTRY II LABORATORY ONE CREDIT HOUR
 To accompany Cti 209. Three hours of laboratory a week.

ELECTRONIC ENGINEERING TECHNOLOGY (ETI)

Richard R. Hazen, *Chairman*

Assistant Professors: Hanneman, Hazen, Peterson

Part-time Instructors: Burns, Clark, Feist, Frank, Mueller, Shumaker

ETI 101L. ELECTRICAL CIRCUITS LABORATORY ONE CREDIT HOUR
 Fundamental D.C. and A.C. circuit experiments. Three hours of laboratory a week. To accompany 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. Corequisite: Sti 103 or Sti 105.

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. Prerequisite: Eti 102. Corequisite: Sti 104 or Sti 106.

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.

ETI 201. FUNDAMENTALS OF ELECTRONIC TECHNOLOGY THREE CREDIT HOURS
 Selected topics D.C.-A.C. circuits, measurements and electron devices for non-Electronic Technology students. Prerequisite: Sti 106, Sti 213.

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. Prerequisite: Eti 103; Co-requisite: Sti 205.

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. Prerequisite: Eti 103; Corequisite: Sti 205.
- ETI 203L. ELECTRICAL MEASUREMENTS LABORATORY** ONE CREDIT HOUR
 To accompany Eti 203. Three hours of laboratory a week.
- ETI 204. ELECTRICAL MEASUREMENTS** TWO CREDIT HOURS
 Fundamentals of direct and alternating current measuring instruments and methods of measurement, with particular emphasis on industrial applications. Corequisite: Eti 103, Sti 205.
- ETI 204L. ELECTRICAL MEASUREMENTS LABORATORY** ONE CREDIT HOUR
 To accompany Eti 204. Three hours of laboratory a week.
- ETI 205. ELECTRONIC MEASUREMENTS** THREE CREDIT HOURS
 Study of modern electronic measuring instruments and systems including oscilloscopes, counters, and telemetry. Corequisite: Eti 202.
- ETI 205L. ELECTRONIC MEASUREMENTS LABORATORY** ONE CREDIT HOUR
 To accompany Eti 205. 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. Prerequisite: 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. 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 Junction Diodes, Transistors, and Transistor Circuits. 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, regis-
 ters and memory). Prerequisite: Eti 202.

ETI 224L. DIGITAL COMPUTER LABORATORY ONE CREDIT HOUR
 To accompany Eti 224. 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, mag-
 netic amplifiers and friction dampers. Prerequisite: Eti 202.

ETI 226L. ANALOG COMPUTER AND SERVOMECHANISM LABORATORY ONE CREDIT HOUR
 To accompany Eti 226. Three hours of laboratory a week.

ETI 227. PULSE CIRCUITS THREE CREDIT HOURS
 Selected topics relating to radar, television, and computer circuits including integrators,
 differentiators, blocking oscillators, multivibrators and time-base generators. Prerequi-
 site: Eti 202.

ETI 229L. ELECTRONIC CIRCUIT DIAGRAMS TWO CREDIT HOURS
 An introduction to drawing with emphasis upon standards and symbols used on elec-
 tronic circuit diagrams. Six hours of laboratory a week. Prerequisite: Eti 202.

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. Prerequisite : Eti 202.

INDUSTRIAL ENGINEERING TECHNOLOGY (ITI)

James L. McGraw, *Chairman*

Assistant Professors: McGraw, Puckett

Part-time Instructors: Cocca, Emrick, Hazell, 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.

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.

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. Prerequisites: Iti 101 and Iti 104.

ITI 203. ELEMENTS OF SUPERVISION**TWO CREDIT HOURS**

A study of the supervisor's relation to his men and his place in developing an effective production team. 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. 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. Prerequisite: Iti 101.

ITI 215. ELEMENTS OF COST CONTROL**TWO CREDIT HOURS**

A survey of the methods of breakdown and cost analysis of labor, material and overhead. All related to modern industrial practices. Prerequisite: Iti 101.

ITI 216. QUANTITATIVE METHODS IN I.E.T.**THREE CREDIT HOURS**

An introduction to the application of mathematics to decision-making in industry. Prerequisite: Sti 106.

ITI 217. INDUSTRIAL ECONOMIC ANALYSIS**THREE CREDIT HOURS**

An introduction to the economics of tools, equipment and machinery, including an elementary study of compound interest and depreciation. Prerequisite: Sti 106.

ITI 218. STATISTICAL QUALITY CONTROL**THREE CREDIT HOURS**

An introduction to the techniques of industrial process control using statistical methods. Prerequisite: Sti 103 or 105.

ITI 230. MOTION AND TIME STUDY I**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. Prerequisites: Iti 101 and Sti 103 or Sti 105.

ITI 230L. MOTION AND TIME STUDY I LABORATORY**ONE CREDIT HOUR**

To accompany Iti 230. Three hours of laboratory a week.

ITI 231. MOTION AND TIME STUDY II**TWO CREDIT HOURS**

A study of the techniques used in work measurement and in setting time standards; including stop watch time study, and work sampling. An introduction to predetermined time systems and to standard data. Prerequisite: Iti 230.

ITI 231L. MOTION AND TIME STUDY LABORATORY

ONE CREDIT HOUR

To accompany Iti 231. Three hours of laboratory a week.

ITI 232. PLANT LAYOUT

TWO CREDIT HOURS

A study of the economical arrangement of stocks, machines and layout of aisles for efficient material handling and production. Prerequisites: Iti 108 and Mti 101 or Mti 103L.

ITI 232L. PLANT LAYOUT LABORATORY

ONE CREDIT HOUR

To accompany Iti 232. Three hours of laboratory a week.

MECHANICAL ENGINEERING TECHNOLOGY (MTi)

L. Duke Golden, *Chairman*

Associate Professor: Golden

Assistant Professor: Morgana

Instructors: Kretzler, Wolff

Part-time Instructors: Demarey, Hoffman, Kachel, Thompson, Trissel

MTi 103L. TECHNICAL DRAWING

TWO CREDIT HOURS

An introduction to technical drawing with emphasis on orthographic projection and conventional industrial practices in producing technical sketches and completed detail drawings. Six hours of laboratory a week.

MTi 104L. GRAPHICAL COMPUTATIONS

TWO CREDIT HOURS

Principles of descriptive geometry. Intersections and developments of planes and solids; layout of objects in space and clearance. Six hours of laboratory per week. Prerequisites: Mti 101 or Mti 103, Sti 103 or Sti 105.

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 106L. TESTING AND MEASUREMENTS

ONE CREDIT HOUR

The use of measuring instruments and standard mechanical testing equipment. Three hours of laboratory a week. Corequisite: Iti 104, Sti 114 or Sti 111.

MTi 107L. MACHINE TOOL OPERATION

ONE CREDIT HOUR

The use of hand tools and standard production machine tools. Three hours of laboratory a week. Prerequisites: Mti 103L or Mti 101, Sti 105; Corequisites: Mti 106L, Sti 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. 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 213. INDUSTRIAL MECHANISMS **THREE CREDIT HOURS**

Applications and mechanical advantages of gears, cams, pulleys, linkages and levers as used in industrial work simplification devices. For industrial engineering technology. Prerequisite: Sti 114.

MTI 220. MECHANICS: STATICS & DYNAMICS **THREE CREDIT HOURS**

Principles of applied engineering mechanics. Two hours of class and four hours practicum per week. Prerequisites: Sti 106 and Sti 114.

MTI 221. STRENGTH OF MATERIALS **THREE CREDIT HOURS**

Principles of applied strength of materials primarily with reference to mechanical design. Two hours class, two hours practicum per week. Prerequisites: Mti 220 or Mti 224.

MTI 224. STATICS **TWO CREDIT HOURS**

Force systems, resultants and equilibrium, centroids of areas and centers of gravity of bodies, trusses, frames, beams, friction and moments of inertia of areas and bodies. One hour of class and three hours practicum a week. Prerequisite: Sti 114.

MTI 225. DYNAMICS **TWO CREDIT HOURS**

Principles of applied engineering dynamics. One hour class, three hours practicum per week. Corequisite: Mti 224.

MTI 226L. MECHANISM **TWO CREDIT HOURS**

Motions, displacements, velocities, friction wheels, flexible connectors, cams, linkages and gears. Six hours of laboratory a week. Prerequisite: Mti 102 or Mti 104L; Co-requisite: Mti 220 or Mti 224.

MTI 227L. INDUSTRIAL AUTOMATION ACTUATION **TWO CREDIT HOURS**

Application hydraulic, pneumatic and electric actuators in the design of industrial automation for production systems. Six hours laboratory per week. Prerequisites: Mti 225, Mti 226L, Mti 107L, Mti 231 and Sti 213.

MTI 230. THERMODYNAMICS **TWO CREDIT HOURS**

General laws of thermodynamics, properties and processes of gases, vapor and gas-vapor mixtures; cycles; and the flow of fluids, application of thermodynamics to machines such as engines. Corequisites: Sti 206 and Sti 214.

MTI 231. FLUID MECHANICS**THREE CREDIT HOURS**

Properties of fluids, buoyant forces, uniform and non-uniform flow, forces developed by fluids in motion and hydraulic machinery. Prerequisite: Mti 230.

MTI 321L. DIES, JIGS AND FIXTURES**TWO CREDIT HOURS**

Design calculation and sketching, of dies, jigs and fixtures used in industrial production. Six hours of laboratory a week. Prerequisite: Mti 221.

MTI 322L. MACHINE DESIGN**TWO CREDIT HOURS**

Principles of engineering knowledge and mathematics applied to analysis and design of machine members and mechanical systems. Six hours laboratory per week. Prerequisite: Mti 221.

SERVICE COURSES

Associate Professor: Averdick

Assistant Professors: Fehlmann, Staub

Instructors: Patrick, Strange

Part-time Instructors: Bassett, Bowan, Brockman, Bullis, J. T. Brown, Goodemote, Jewett, Leonard, McAdams, Messina, O'Brien, Roeger, Smith

ORI 100. TECHNICAL INSTITUTE SURVEY**NO CREDIT HOURS**

A general view of the engineering technician and his place on the engineering team. Also includes such subjects as "How to Study," use of the slide rule and general University orientation. 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.

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. Prerequisite: Sti 103.

STI 105. TECHNICAL INSTITUTE MATHEMATICS**THREE CREDIT HOURS**

Fundamental processes of algebra to include factoring, fractions, exponents and radicals, linear and quadratic equations, determinants, and logarithms. Introduction to trigonometry to include angular measure, interpolation, identities, and graphs.

STI 106. ADVANCED TECHNICAL INSTITUTE MATHEMATICS**THREE CREDIT HOURS**

Additional topics in trigonometry to include: solution of right triangles, solution of oblique triangles, and functions of composite angles. Selected topics in analytic geometry and differential calculus. Prerequisite: Sti 105.

STI 114. PHYSICS: MECHANICS**TWO CREDIT HOURS**

A study of the laws of simple machines, forces, linear and angular motion, conditions of equilibrium and fluids. Corequisite: Sti 104 or Sti 106.

STI 114L. PHYSICS: MECHANICS LABORATORY**ONE-HALF CREDIT HOUR**

To accompany Sti 114. 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. Prerequisite: StI 103 or StI 105.

STI 121L. INTRODUCTION TO INDUSTRIAL CHEMISTRY LABORATORY**ONE CREDIT HOUR**

To accompany StI 121. Three hours of laboratory a week.

STI 122. INDUSTRIAL CHEMISTRY**THREE 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. Prerequisite: StI 103 or StI 105.

STI 122L. INDUSTRIAL CHEMISTRY LABORATORY**ONE CREDIT HOUR**

To accompany StI 122. Three hours of laboratory a week.

STI 130. ENGLISH COMPOSITION**THREE CREDIT HOURS**

An intensive review of basic principles of grammar, spelling, punctuation and sentence structure, with special emphasis on composition.

STI 132. ENGLISH COMPOSITION II**ONE AND ONE-HALF CREDIT HOURS**

Continuation of StI 131. 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.

STI 134. EFFECTIVE SPEAKING**TWO CREDIT HOURS**

Organization and presentation of spoken materials with special emphasis on voice and physical delivery and audience reaction.

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.

STI 205. MATHEMATICS FOR ELECTRICAL TECHNOLOGY**THREE CREDIT HOURS**

Practical applications of selected topics of calculus and differential equations to Electrical Technology. Prerequisite: StI 104 or StI 106.

STI 206. MATHEMATICS FOR MECHANICAL ENGINEERING TECHNOLOGY**THREE CREDIT HOURS**

Practical applications of selected topics in differential and integral calculus to Mechanical Technology. Prerequisite: StI 104 or StI 106.

STI 213. PHYSICS: ELECTRICITY**TWO CREDIT HOURS**

The basic principles of electricity and their application in industry. Prerequisite: StI 111 or StI 114.

STI 213L. PHYSICS: ELECTRICITY LABORATORY ONE-HALF CREDIT HOUR
To accompany Sti 213. Two hours of laboratory a week.

STI 214. PHYSICS: HEAT, LIGHT AND SOUND TWO CREDIT HOURS
The elementary principles of heat, light and sound with particular emphasis on industrial application. Prerequisite: Sti 111 or Sti 114.

STI 214L. PHYSICS: HEAT, LIGHT AND SOUND ONE-HALF CREDIT HOUR
To accompany Sti 214. Two hours of laboratory a week.

STI 233. REPORT WRITING ONE AND ONE-HALF CREDIT HOURS
The preparation and presentation of industrial reports. Prerequisite: Sti 130 or Sti 132.

STI 234. REPORT WRITING TWO CREDIT HOURS
The preparation and presentation of industrial reports. Prerequisite: Sti 130 or Sti 132.

STI 251. ECONOMICS OF INDUSTRY THREE CREDIT HOURS
Basic economic principles as applied to major industrial problems.

STI 252. AMERICAN POLITICAL IDEAS AND PRACTICES THREE CREDIT HOURS
Fundamentals of democratic processes in government and the practices in which they function.

