

X Courses of Instruction

Accounting (ACC)

Edward W. Rodgers, *Acting Chairman*

Professor: Hoben

Associate Professors: Clark, Eley, Fioriti, Rodgers, Zulauf

Assistant Professors: Ellis, Rawie, Slonaker, Winger, Wise.

Part-time Instructors: Grismer, Halsey, Luthman, Murray, Sanders, Williams

ACC 203. SURVEY OF ACCOUNTING

THREE CREDIT HOURS

An introduction to the basic principles and concepts of accounting and of the financial statements, with emphasis on understanding accounting terminology and the reasons for accounting conventions and practices; includes an introduction to management uses of accounting data and reports. This course is intended to furnish non-business graduates with a foundation in accounting necessary for graduate business study.

ACC 207-208. PRINCIPLES OF ACCOUNTING

SIX CREDIT HOURS

An introduction to accounting terminology, concepts, and conventions, for the business student. Develops an understanding of the purposes of all financial statements, including conventional published reports as well as other special reports for use by business managers. This is a prerequisite for all upper level accounting courses.

ACC 303. COST ACCOUNTING

THREE CREDIT HOURS

An introduction to the purposes and methods of cost accounting. Embraces methods for determining product costs, but emphasizes procedures for effecting control of costs and the use of cost accounting data for managerial decision making.

ACC 304. ADVANCED COST ACCOUNTING

THREE CREDIT HOURS

This course explores the literature of cost accounting and managerial accounting, emphasizing concepts and the theoretical or philosophical basis of cost accounting methodology, and reconciles divergent views on controversial subjects. The relationship of cost accounting to economics and management concepts is also emphasized.

ACC 305-306. INTERMEDIATE ACCOUNTING I & II

SIX CREDIT HOURS

A deeper study of the elements of financial statements, along with coverage of alternative accounting procedures and practices. Emphasizes accounting concepts and principles, and relies upon current professional pronouncements. Gives comprehensive coverage of the most essential theories and practices as a basis for advanced accounting study.

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 312. GOVERNMENTAL ACCOUNTING THREE CREDIT HOURS
Accounting for institutions, municipalities, and for state and federal governments; organization; procedure, budget, accounts and records, reports.

ACC 340. FUNDAMENTALS OF BUSINESS DATA PROCESSING THREE CREDIT HOURS
Prerequisite Acc 207-208 and Bus 101. A course designed to give the student an understanding of the relationship between business systems and data processing equipment. Emphasis is placed on understanding business operations and the design of systems to provide business management with information useful in decision making.

ACC 341. MANAGEMENT INFORMATION SYSTEMS THREE CREDIT HOURS
Prerequisite Acc 340. A study of simple and complex management information systems including electronic data processing applications, and the evolution of integrated systems; introduction of structured decision making functions into systems is emphasized.

ACC 405. AUDITING PRINCIPLES TWO CREDIT HOURS
Introduction to standards for auditing procedures; accountants' reports and their implications; emphasis is on ethics and other aspects of public accounting practice, and on application of generally accepted accounting principles.

ACC 407. FEDERAL INCOME TAX ACCOUNTING THREE CREDIT HOURS
An interpretation of the income tax portions of the current Revenue Act. Emphasis is placed on provisions which influence the business decisions of individuals and business firms.

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.

American Studies (AmS)

Dr. Rocco M. Donatelli, *Chairman 1969-70*
Associate Professor: Donatelli
Assistant Professor: Henninger

The course requirement for American Studies majors is 48 hours, distributed as follows:
(1) American Studies 300, 301, and 400 in sequence;

- (2) American Studies majors must take courses in each of the three areas identified below as Groups A, B, and C, as follows:
- An area of concentration must consist of 24 semester hours. (15 hours must be chosen from the recommended American courses as listed in Group A, B, or C below. The other 9 hours must be non-American courses in the same area chosen in consultation with the Chairman.)
 - A second area consisting of nine semester hours to be chosen from one of the two remaining groups listed below;
 - A third area consisting of six semester hours to be chosen from the remaining group.

GROUP A	GROUP B	GROUP C
English	History	Economics
332	351 458	340 343
352 (American)	370 458	341 430
450	374 370	342 480
452	375 481	
454	396 490	Political Science
456	397 492	301 401
	451	303 408
Fine Arts		310 450
400	Philosophy	321 475
471	409 457	360 480
472	414 458	
	455 470	Psychology
Music	456	311 409
303		315 415
304	Theological Studies	406 420
305	311 371	408
	346 477	
	370 482	Sociology-Anthropology
		300 322
		303 325
		315 406
		318 422
		320 426

No minor is required for American Studies majors.

AMS 300. AMERICAN CULTURES

A study of physical and literary artifacts in an attempt to discern the periods and places of development of America's general and sub-cultures.

First Term, 1969-1970

AMS 301. INTERPRETATIONS OF AMERICAN CULTURE

A critical study of various interpretations of American culture through more than a hundred years.

Second Term, 1969-1970

AMS 400. INTERDISCIPLINARY RESEARCH

A study of the principles of interdisciplinary scholarship as well as of what can and probably cannot be accomplished by it. Successful interdisciplinary accomplishments will also be studied, and the students will complete individual interdisciplinary projects.

First Term, 1970-1971.

Biology (Bio)

Dr. George B. Noland, *Chairman*

Professors: Jaffee, Noland

Associate Professors: Cooney, Faso, Geiger, Joly, Lachapelle, MacMahon, Shay

Assistant Professors: Bajpai, Chantell, Hayat, Laufersweiler, McDougall, Ramsey, Willis

Instructor: Trigg

With the approval of their departmental advisor and/or chairman, students majoring in areas outside of the biological sciences may take any biology course above the 100 level on a Pass-Fail basis.

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 (HONORS)

ONE CREDIT HOUR

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

BIO 114. BIOLOGICAL SCIENCE

THREE CREDIT HOURS

An introduction to the various biological sciences for non-science majors. Stresses those principles which apply to all forms of life, taking examples from plant, animal and microbial life.

BIO 114L. BIOLOGICAL SCIENCE LABORATORY

ONE CREDIT HOUR

Laboratory course to demonstrate and emphasize those principles discussed in lecture. One two-hour lab per week.

BIO 207L. HUMAN ANATOMY LABORATORY

ONE CREDIT HOUR

A foundation study in the basic anatomy of the human body, consisting of study of the various organs and systems composing the body. Medical Technology majors only. One three hour lab per week. Prerequisites: Bio 101-102.

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 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 310. MICROTÉCHNIQUE AND HISTOLOGY** THREE CREDIT HOURS
Fundamentals of cell morphology, microscopic structure of tissues and organs, and discussion of techniques in their study. Prerequisite: Bio 101-102.
- Bio 310L. MICROTÉCHNIQUE AND HISTOLOGY LABORATORY** ONE CREDIT HOUR
Fundamentals of fixing and processing various tissues in the preparation of slides; aims at recognition of microstructure of normal tissues. Prerequisite: Bio 101-102.
- 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 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. Bio 101-102.
- Bio 352L. PARASITOLOGY LABORATORY** ONE CREDIT HOUR
Course to accompany Bio 325 lecture. One three-hour period per week. Stresses the recognition of common parasites.
- Bio 340. CELL BIOLOGY** THREE CREDIT HOURS
A study of cell structure and function including ultrastructure, physical and chemical organization, metabolic processes in relation to structure, growth and specialization. Prerequisites: Bio 101-102.
- Bio 342. DEVELOPMENTAL BIOLOGY** THREE CREDIT HOURS
Plant and animal ontogeny and morphogenesis; roles of genetic and environmental factors in growth and development; differentiation; aggregation; hormonal and other biochemical mechanisms of control and coordination. Prerequisites: Bio 101-102.
- Bio 344L. ADVANCED BIOLOGY LABORATORY I** ONE CREDIT HOUR
Laboratory to supplement Bio 312 and 340. One three hour lab. per week. Prerequisites: Bio 101-102, Bio 340 and Bio 312. The latter may be taken concurrently.
- Bio 345L. ADVANCED BIOLOGY LABORATORY II** ONE CREDIT HOUR
Laboratory to supplement Bio 342 and Bio 440. One three hour lab. per week. Prerequisites: Bio 101-102, Bio 340. The latter may be taken concurrently.

- 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.
- BIO 361L. INVERTEBRATE ZOOLOGY LABORATORY** TWO CREDIT HOURS
Course to accompany Bio 330 lecture. Two three-hour laboratory periods per week.
- 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 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 441 lecture. Two two-hour periods per week.
- 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 (HONORS)** ONE OR TWO CREDIT HOURS
(laboratory work)
- BIO 422. BIOLOGICAL PROBLEMS** ONE OR TWO CREDIT HOURS
(library work)
- BIO 434. HIGHER PLANTS** THREE CREDIT HOURS
A study of structure, function, reproduction and interrelations of tracheophyte plants.
- BIO 434L. HIGHER PLANTS LABORATORY** ONE CREDIT HOUR
Course to accompany Bio 434. One three-hour laboratory per week.
- BIO 436. LOWER PLANTS** THREE CREDIT HOURS
A course to provide familiarity with basic processes, structures, distribution and reproduction of Thallophyte and Bryophyte plants.
- BIO 436L. LOWER PLANTS LABORATORY** ONE CREDIT HOUR
Course to accompany Bio 436. One three-hour laboratory per week.
- BIO 440. ENVIRONMENTAL BIOLOGY** THREE CREDIT HOURS
Ecosystems; cycles of energy and material; food chains; ecological aspects of natural selection; influences of physical environment, homeostasis and selection; populations and communities.

Bio 462. ADVANCED GENETICS **TWO CREDIT HOURS**
 The nature of genes and gene action. The role of nucleic acids in protein synthesis. Molecular aspects of genotype and phenotypic expression. Prerequisite: Organic Chemistry.

Bio 462L. ADVANCED GENETICS LABORATORY **ONE CREDIT HOUR**
 Course to accompany Bio 462. One three-hour laboratory per week.

Bio 466. PATHOGENIC BACTERIOLOGY AND SEROLOGY **THREE CREDIT HOURS**
 The nature of infectious diseases, host-parasite relationships in resistance and infection, defense mechanisms (antigen-antibody response) and a brief survey of the bacteria causing disease in man will be considered. Prerequisite: Bact 411 and 411L.

Bio 466L. PATHOGENIC BACTERIOLOGY AND SEROLOGY LAB **ONE CREDIT HOUR**
 Laboratory to accompany Bio 416. 3 hours per week. Laboratory experiments to demonstrate immunological, serological, determinative and medical bacteriology.

Business Management (Bus)

Barth J. Snyder, Chairman

Professors: Snyder, George

Associate Professors: Bosshart, Holt, Kreider, Walden

Assistant Professors: Buckenmyer, Fuszara, Kussman, May, Marrinan, Miller, Office, Sunderhaus VonderEmbse

Part-time Instructors: Andrews, Baughan, Berk, Davis, De France, Ellett, Gibson, Hamilton, Heckman, Montgomery, Myers, Pitts, Pryor, Quinn.

BUS 102. AMERICAN BUSINESS ENVIRONMENT **THREE CREDIT HOURS**
 A survey of the environment of business. Historical determinants and present day influences on the business climate.

BUS 110-111. QUANTITATIVE ANALYSIS FOR BUSINESS **SIX CREDIT HOURS**
 A study of the fundamental operations of algebra, including equations, inequalities, matrices, progressions, exponents and logarithms; compound interest and annuities; and introduction to calculus.

BUS 210-211. QUANTITATIVE ANALYSIS **SIX CREDIT HOURS**
 A course in applied statistics covering the broad areas of probability, statistical inference, time series, regression and correlation, and sampling methods. Prerequisite: Bus 110-111.

BUS 215. 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 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 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 318. HUMAN RELATIONS FOR MANAGEMENT** **THREE CREDIT HOURS**
 Analysis of reactions, interactions, attitudes and activities of individuals and groups within a goal-seeking organization. Includes leadership, morale and goal oriented behavior.
- BUS 322. WORK SYSTEMS DESIGN** **THREE CREDIT HOURS**
 Approaches to Motion and Time study, work flow analysis, work and system analysis and related areas.
- 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 412. 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 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 420. LABOR LEGISLATION**THREE CREDIT HOURS**

A study of the National Labor Relations Act as amended.

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. Prerequisite: Seniors only.

**BUS 450. BUSINESS MANAGEMENT HONORS SEMINAR
(HONORS)****ONE TO SIX 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 3.00 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*

Professor: Bobal

Assistant Professor: Keith, Olinger

Adjunct Assistant Professor: Morrison

Instructor: Srinivasan

CME 203. MATERIAL AND ENERGY BALANCES**THREE CREDIT HOURS**

An introduction to chemical engineering with lectures and problems on material and energy balances as applied to industrial processes. Prerequisites: Chm 125, Mth 118.

First Term, Each Year

CME 215. QUANTITATIVE ANALYSIS**TWO CREDIT HOURS**

Theory and techniques of gravimetric and volumetric analysis. Prerequisite: Chm 125.

First Term, Each Year

CME 215L. QUANTITATIVE ANALYSIS LABORATORY**ONE CREDIT HOUR**

Laboratory course to accompany Cme 215. One three hour laboratory period per week.

First Term, Each Year

CME 305. THERMODYNAMICS**THREE CREDIT HOURS**

Development of the fundamental principles of thermodynamics, particularly with respect to chemical engineering processes. Prerequisite: Mth 218.

Second Term, Each Year

CME 306. KINETICS**THREE CREDIT HOURS**

Reaction kinetics, catalysis and adsorption. Prerequisite: Cme 305.

First Term, Each Year

CME 315-6. ORGANIC CHEMISTRY**SIX CREDIT HOURS**

A study of aliphatic, aromatic and heterocyclic compounds. Prerequisite: Chm 125.

Cme 315: *Second Term, Each Year*Cme 316: *First Term, Each Year***CME 315L-6L. ORGANIC CHEMISTRY LABORATORY****TWO CREDIT HOURS**

Laboratory course to accompany Cme 315 and 316. One three hour laboratory period per week.

CME 324. TRANSPORT PHENOMENA I**THREE CREDIT HOURS**

Topics include viscosity, shell momentum balances, isothermal equations of change, thermal conductivity, shell energy balances, non-isothermal equations of change, diffusivity, concentration profiles. Prerequisite: Mth 219. Corequisite: Cme 381.

*First Term, Each Year***CME 325. TRANSPORT PHENOMENA II****THREE CREDIT HOURS**

Topics include friction factor, dimensionless correlations, isothermal macroscopic balances, Bernoulli's Equation, heat transfer coefficients, heat transfer correlations, heat exchangers, non-isothermal macroscopic balances. Prerequisite: Cme 324.

*Second Term, Each Year***CME 326L. TRANSPORT PHENOMENA LABORATORY****ONE CREDIT HOUR**

Experiments cover viscosity, velocity profiles, temperature profiles, heat transfer coefficients, diffusivity, compressibility factors for gases. Prerequisite: Cme 324. Corequisite: Cme 325.

*Second Term, Each Year***CME 333-4. PHYSICAL CHEMISTRY****SIX CREDIT HOURS**

A study of the laws of chemistry and physics as applied to gases, liquids, and solutions. Prerequisite: Mth 218.

Cme 333: *First Term, Each Year*Cme 334: *Second Term, Each Year***CME 333L-4L. PHYSICAL CHEMISTRY LABORATORY****TWO CREDIT HOURS**

Laboratory course to accompany Cme 333-4. One three hour laboratory period per week.

CME 381. APPLIED MATHEMATICS FOR CHEMICAL ENGINEERS**THREE CREDIT HOURS**

This course is designed to supply the mathematics to support transport phenomena and process control. Topics include vector calculus, solution of partial differential equations and Laplace transforms. Prerequisite: Mth 219.

*First Term, Each Year***CME 411. UNIT OPERATIONS I****THREE CREDIT HOURS**

Topics include fluid mechanics, transportation of fluids, flow of heat, evaporation, filtration and mixing. Prerequisites: Cme 324-325.

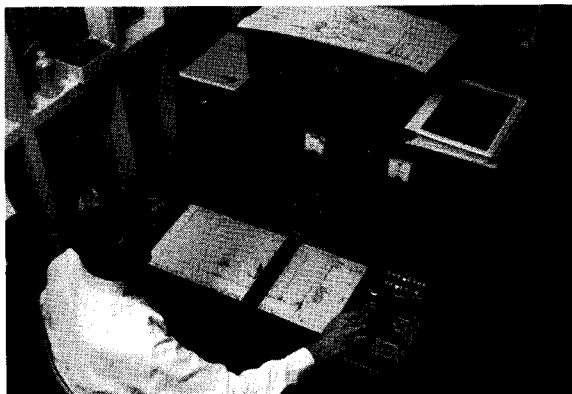
*First Term, Each Year***CME 412. UNIT OPERATIONS II****THREE CREDIT HOURS**

Continuation of Cme 411. Distillation, extraction, gas phase mass transfer, gas absorption, drying and crystallization. Prerequisite: Cme 411.

*Second 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 324.

First Term, Each Year



CME 414L. UNIT OPERATIONS LABORATORY
Continuation of Cme 413L. Prerequisite: Cme 325.

TWO CREDIT HOURS
Second Term, Each Year

CME 430. CHEMICAL ENGINEERING DESIGN
Study of the principles of process development, plant design and economics. Prerequisite: Cme 411.

THREE CREDIT HOURS
Second Term, Each Year

CME 452. PROCESS CONTROL
Topics include block diagrams, system transfer functions, feedback, transient and steady state response, root locus method, frequency response, Bode diagrams, analog computer. Prerequisite: Cme 381.

THREE CREDIT HOURS
First Term, Each Year

CME 453L. PROCESS CONTROL LABORATORY
Experiments cover analog computer programming, analog solution of differential equations, frequency response, Bode diagrams, computer simulation, open and closed loop system response. Report writing emphasized. Prerequisites: Cme 452, Ele 322.

Second Term, Each Year

Chemical Engineering Electives

**CME 499. SPECIAL PROBLEMS IN CHEMICAL
ENGINEERING (HONORS)**

TWO TO SIX CREDIT HOURS

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

Chemistry (Chm)

Dr. John J. Lucier, S.M., Chairman

Professors: Chudd, Eveslage, Lucier, Michaelis

Associate Professors: Katchman, Walsh

Assistant Professors: Antony, Fox, Fratini, Meiser, Rogers, Vance

Part-time Instructors: Becker, DeSando, March, Semmelman

CHM 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. Prerequisite: high school Chemistry.
- CHM 123L-124L. GENERAL CHEMISTRY LABORATORY TWO CREDIT HOURS
Course to accompany Chm 123-124 lecture. The laboratory work is devoted to semi-micro qualitative analysis. One three-hour laboratory period per week.
- CHM 125. GENERAL CHEMISTRY THREE CREDIT HOURS
A terminal course for engineering students. Three class periods per week. Prerequisite: high school Chemistry.
- CHM 125L. GENERAL CHEMISTRY LABORATORY ONE CREDIT HOUR
Course to accompany Chm 125. One three-hour laboratory 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 201. QUANTITATIVE ANALYSIS TWO CREDIT HOURS
A course intended for premedical, predental, and medical technology students. Two class periods per week. Prerequisite: Chm 124.
- CHM 201L. QUANTITATIVE ANALYSIS LABORATORY TWO CREDIT HOURS
Course to accompany Chm 201 lecture. One four-hour laboratory period per week.
- 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 302. PHYSICAL CHEMISTRY THREE CREDIT HOURS
A short course especially designed for premedical, predental, or biology majors. Three lectures per week. Prerequisite: Chm 124. *First Term, Each Year*
- CHM 303-304 PHYSICAL CHEMISTRY SIX CREDIT HOURS
For chemistry majors and chemical engineers. Three lecture hours each week. Prerequisite: Chm 215 or equivalent. Corequisite: Mth 218.

CHM 303L-304L. PHYSICAL CHEMISTRY LABORATORY TWO CREDIT HOURS
Course to accompany Chm 303 lecture. One three-hour laboratory period each week.

CHM 308. CHEMICAL LITERATURE TWO CREDIT HOURS
The use of chemical literature, indexing methods, and patent procedure. Prerequisite:
Ger 101-102. *Second Term, Each Year*

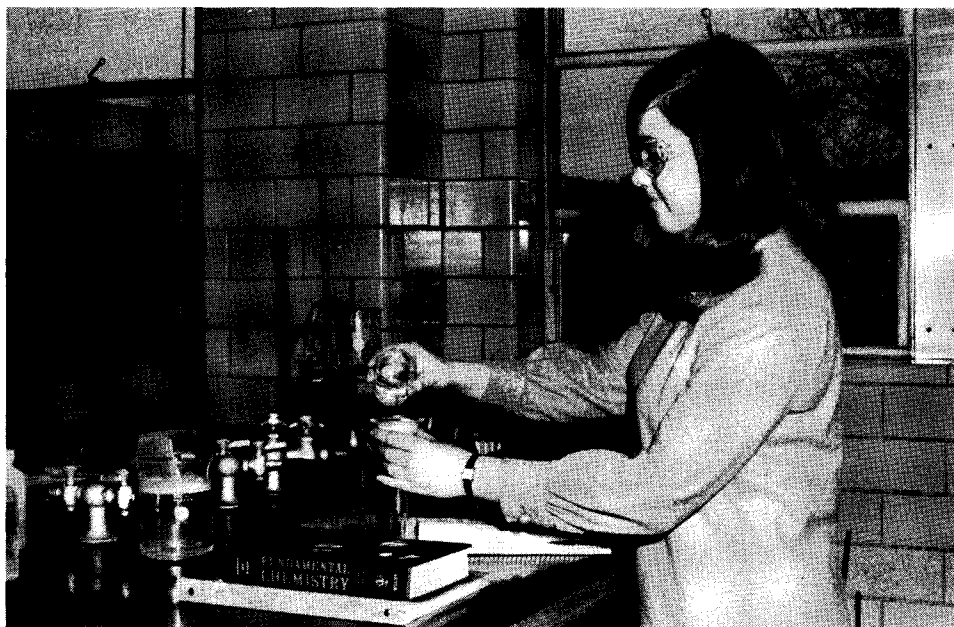
CHM 313-314. ORGANIC CHEMISTRY SIX CREDIT HOURS
This course is designed for premedical, predental, and medical technology students. A strong grounding in the fundamentals of Organic Chemistry is given. Three class periods per week. Prerequisite: Chm 124.

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 215.

CHM 400. BIOCHEMISTRY THREE CREDIT HOURS
A one semester course for Home Economics students. Prerequisite: Chm 200 or equivalent.



CHM 400L course to accompany Chm 400 lecture. One three-hour laboratory period per week.

ONE CREDIT HOUR

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, photochemistry 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 LABORATORY 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: Senior standing. *First Term, Each Year*

CHM 415. ANALYTICAL CHEMISTRY TWO CREDIT HOURS
Methods of analysis based on modern instrumentation. Prerequisites: Chm 215, 215L, 304.
Second 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 417. INORGANIC CHEMISTRY THREE CREDIT HOURS
Electron distribution in atoms, nature of the chemical bond, periodicity, nucleus and its reactions, coordination compounds. Prerequisite: Chm 303-304. *First Term, Each Year*

CHM 420. BIOCHEMISTRY THREE CREDIT HOURS
A course dealing with the fundamentals of biochemistry. Prerequisite: Chm 314 or 316, and Chm 302 or 303.
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 (HONORS) 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, Driscoll, Ryckman

Associate Professors: Kraft, Thomson

Assistant Professors: Bahramian,, McDaniel, Payne

Instructors: Shaw, Weiss

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 118. *First Term, Each Year*

CIE 208. SURVEYING II THREE CREDIT HOURS
Study of photogrammetry, circular and spiral curves, vertical curves, grade lines, earth-work 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 101.

CIE 213L. PLANE TABLE SURVEYING LABORATORY TWO CREDIT HOURS
Field and laboratory work in application of principles of Cie 213. Corequisite: Cie 213.

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. *First 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 building materials to their fundamental nature and composition. Prerequisite: 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 313. HYDRAULICS**THREE CREDIT HOURS**

Principles of liquid statics and fluid flow including similitude, measuring devices, channel and pipe flow, turbines and pumps. Corequisites: Cie 313L, Egm 301.

CIE 313L. HYDRAULICS LABORATORY**ONE CREDIT HOUR**

Laboratory experiments and problems associated with Cie 313. Corequisite: Cie 313.

CIE 314. THEORY OF STRUCTURES**FOUR CREDIT HOURS**

The analytical and graphical methods of stress determination in statically determinate structures, together with a study of influence lines. Prerequisite: Egm 303.

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, or Cie 314. *First Term, Each Year*

CIE 408A. SEMINAR**ONE CREDIT HOUR**

Practice in the presentation and discussion of papers; lectures by staff and prominent engineers. Attendance required by Civil Engineering second term seniors only.

CIE 408B. SEMINAR**ZERO CREDIT HOURS**

Practice in the presentation and discussion of papers; lectures by staff and prominent engineers. Attendance required by Civil Engineering sophomores, juniors, and first term seniors.

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 or Cie 314. 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, or Cie 313, Cie 313L. *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

In addition to courses listed below, students may select with departmental approval Civil Engineering and Engineering Mechanics courses in the five hundred series listed in Graduate School Catalog including such courses as: experimental stress analysis, advanced soil mechanics, advanced structural analysis, traffic engineering, prestressed concrete, and foundation design.

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 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.

Engineering Mechanics (Egm)**EGM 101. MECHANICS I****THREE CREDIT HOURS**

The principles of mechanics; force systems, free body diagrams, resultants and equilibrium, centroids and centers of gravity; application to trusses, frames, and beams; friction; moments of inertia. Prerequisite: Phy 196. Corequisite: Mth 119.

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 101 or 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 101 or Egm 202.

EGM 303L. STRENGTH OF MATERIALS LABORATORY ONE CREDIT HOUR
 Action of metals, timber and concrete under load, verification of theories of mechanics.
 Prerequisite: Egm 303.

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.

Communication Arts

George C. Biersack, *Chairman*

Professor: Staats

Associate Professors: Biersack, Gilvary, Jukes, Knittel

Assistant Professors: Jochenning

Instructors: Devine, Harcar, Harwood, Kiernan, Miller, Weatherly, Selka

Part-time Instructors: Vlahos, Reingold, Stroud

The course requirements 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 Debaters, 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.

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.

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.

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.

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.

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.

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.

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.

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.

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. Students will do research in the area of his interest. Communication Arts majors or minors only, with permission.

Theater

All Communications 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 in our culture.

SPE 304. THEATRE PRODUCTION WORKSHOP **THREE CREDIT HOURS**
Principles and practical application of theatre production: including play analysis, stagecraft, lighting, stage blocking, and rehearsal process. Students work on selected plays and with full stage and shop facilities.

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.

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.

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.

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.

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.

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.

Broadcasting

SPE 306. RADIO FUNDAMENTALS

THREE CREDIT HOURS

A workshop course in microphone technique as applied to straight announcing, commercials, and newscasting. Development of articulation and tone for broadcasting purposes is emphasized. Station organization is discussed.

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.

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.

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.

Journalism

Majors in Journalism must take Jrn 200 plus 18 semester hours in Jrn and Com 300-400 courses, plus 6 semester hours from 300-400 offerings in the Department of English, selected in consultation with the Chairman. Minors in Journalism 12 semester hours from 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.

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.

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 makeup, uses of pictures and type. Prerequisite: Jrn 300 or permission of instructor.

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.

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 aids used in communications. Designing and producing audio-visual aids will be required.

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.

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.

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 Mkt 421.)

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.

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.

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.

Computer Science (Cps)

Thomas A. Schoen, S.M., *Chairman*

Associate Professors: Jehn, Schoen

Assistant Professors: Cada, Kester, Wesselkamper

Instructor: Krall

Part-time Instructors: Brunswick, Keller, Lokai, Sikora

Cps 133. FORTRAN PROGRAMMING**TWO CREDIT HOURS**

General programming techniques; grammar and syntax of the Fortran IV compiler; programming in Fortran. Not open to students who have taken Cps 141 or Cps 147. Corequisite: Mth 101 or equivalent.

Cps 141. ALGOL PROGRAMMING**TWO CREDIT HOURS**

General programming techniques; grammar and syntax of the Algol 60 compiler; programming in Algol. Not open to students who have taken Cps 133 or Cps 147. Corequisite: Mth 101 or equivalent.

Cps 147. PL I PROGRAMMING**TWO CREDIT HOURS**

✓ General programming techniques; grammar and syntax of the PL/I compiler; programming in PL/I. Not open to students who have taken Cps 133 or Cps 141. Corequisite: Mth 101 or equivalent.

Cps 203. DATA PROCESSING SYSTEMS**TWO CREDIT HOURS**

Material applicable to data processing problems; applications requiring consideration or use of peripheral equipment.

Cps 232. COBOL PROGRAMMING**TWO CREDIT HOURS**

General programming techniques; grammar and syntax of the Cobol compiler; programming data processing problems in Cobol. Corequisite: Mth 101 or equivalent.

Cps 345. PROGRAMMING LANGUAGES**THREE CREDIT HOURS**

✓ Programming in machine language and with an assembler; input/output techniques; introductory topics in compiler organization. Prerequisite: Cps 133, 141, or 147.

Cps 346. OPERATING SYSTEM**THREE CREDIT HOURS**

Study of OS/360 or similar system and its functions of data, job, and task management. Prerequisite: Cps 345.

Cps 353-354. NUMERICAL METHODS**SIX CREDIT HOURS**

✓ Solution of nonlinear equations, interpolation and approximation, differentiation and integration, curve fitting, numerical filtering and data smoothing, matrices and systems of linear equations, eigenvalues and eigenvectors; solution of difference, differential, and integral equations; boundary value problems in ordinary differential equations, elementary statistics. Emphasis placed on applications. Prerequisite: Cps 133, 141 or 147, and Mth 218 or 228.

Cps 383. LOGIC AND SET THEORY THREE CREDIT HOURS
 Propositional and predicate calculus, formal and informal proofs, basic concepts of set theory, operations on sets, relations, functions. Corequisite: Mth 119 or 129.

Cps 387. LOGICAL DESIGN THREE CREDIT HOURS
 Minimization of Boolean functions, error detecting and error correcting codes; principles of design for arithmetic operations, including a survey of functional units for implementation; memory devices, central processing units, and input-output equipment. Prerequisite: Cps 133, 141 or 147, Mth 218 or 228.

Cps 405. COMPUTER TECHNIQUES FOR BUSINESS APPLICATIONS THREE CREDIT HOURS
 Linear programming, network analysis including PERT, game theory, queuing theory, inventory theory, Markov chains, simulation and other topics. Prerequisite: Cps 133, 141 or 147, Mth 362, Mth 367 or equivalent.

Cps 441-442. ADVANCED PROGRAMMING SIX CREDIT HOURS
 Analysis of compilers and their construction; programming techniques discussed in the current literature; advanced computer applications in both mathematical and non-numeric areas. Prerequisite: Cps 345.

Cps 455-456. NUMERICAL ANALYSIS SIX CREDIT HOURS
 Quadrature methods and the numerical solution of ordinary differential equations; matrices and large scale linear systems; norms and spectral radii of matrices; modern iterative matrix methods, including the successive overrelaxation method; numerical solution of partial differential equations. Prerequisite: Cps 353, Mth 362.

Cps 481. MATHEMATICAL LOGIC THREE CREDIT HOURS
 Formalization of propositional calculus, first order theories including predicate calculi, formal number theory, recursive functions, Goedel's incompleteness theorem. Prerequisite: Cps 383 or Mth 390.

Cps 482. AUTOMATA THEORY THREE CREDIT HOURS
 Finite automata, sequential machines, Turing machines, computability, existence of self-reproducing machines. Prerequisite: Cps 481.

Cps 498. PROBLEMS IN (NAMED AREA) ONE TO THREE CREDIT HOURS
 Individual readings and research in a specialized area (see Cps 499.) May be taken more than once for additional credit. Prerequisite: permission of the department.

By arrangement

Cps 499. (SPECIAL TOPICS) ONE TO THREE CREDIT HOURS
 Lectures and/or laboratory experience in such specialized areas as those listed below. May be taken more than once for additional credit. Prerequisite: permission of the department.

By arrangement

- | | |
|----------------------------|--------------------------|
| 1. analog computers | 7. numerical analysis |
| 2. artificial intelligence | 8. programming languages |
| 3. formal languages | 9. sequential machines |
| 4. informational retrieval | 10. simulation languages |
| 5. linguistic analysis | 11. supervisory systems |
| 6. logical design | 12. utility programs |

Economics (Eco)

Dr. George E. Matlin, *Chairman*

Professor: Matlin

Associate Professors: Louis, Vikor, Dailey

Assistant Professors: Berger, Schade, Gelson, Kumar, Weiler

Instructors: Gupta

Part-time Instructor: Suttman

Eco 201-202 are prerequisites for all advanced courses in Economics. Minors are required to take Eco 340, 341, 342, and one elective.

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 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. 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. INTERNATIONAL ECONOMICS **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 371. LABOR ECONOMICS **THREE CREDIT HOURS**
Primarily for Economics majors. Considers wage theory, determinants of wage rates and employment. Examines union policy, economic stability and growth. Analyzes the economics of private governmental welfare and security programs.

Eco 430. 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 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. ECONOMETRICS
 Discusses the questions with which quantitative economics and operations research are concerned. Subject matter considered includes: Linear programming, the optimum path, the critical path, input-output analysis, econometric macromodels, economic forecasts, concept of a strategy, game theory, queues, and the statistical specification of economic relations and the consumer's dollar. Prerequisites: Quantitative Analysis 110-111, and Quantitative Analysis 210-211.

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 460. ECONOMIC DEVELOPMENT AND GROWTH **THREE CREDIT HOURS**
 Inquiries 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 480. CURRENT ECONOMIC PROBLEMS **THREE 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 economies.

Eco 499H. HONOR STUDIES IN ECONOMICS **THREE CREDIT HOURS**
 Directed readings and research in selected fields of Economics for senior Economics majors who have a cumulative point average of 3.0. The course will require a department approved treatise and/or comprehensive examination. Prerequisites: 12 hours in economics and permission of the Chairman of the Economics Department.

Education

Foundations of Education (EdF)

Sr. M. Audrey Bourgeois, Chairman
Professors: Panzer, Faerber
Associate Professors: Bourgeois, Britt
Assistant Professors: Anderson, Emling, Petit
Part-time Instructors: Wening, Werner

EdF 101. INTRODUCTION TO EDUCATION **NO CREDIT**
 An introduction to the study of education as a discipline. The meaning of commitment in teaching in relation to the purposes of the School of Education and the University of Dayton is stressed. Attendance at each session is mandatory.

EdF 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.

EdF 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 201 and Phl 207 may substitute.)

EdF 205. CHILD GROWTH AND DEVELOPMENT**THREE CREDIT HOURS**

Professional education course designed to study growth and development in childhood with emphasis on the elementary school child. Knowledge gained will be made relevant for successful classroom practice in the elementary school. Prerequisite: EdF 198 or equivalent.

EdF 206. ADOLESCENT GROWTH AND DEVELOPMENT**THREE CREDIT HOURS**

Professional education course designed to study growth and development in adolescence with emphasis on the junior and senior high school student. Content will be made relevant for successful classroom practice in the high school. Prerequisite: EdF 198 or equivalent.

EdF 207. HUMAN GROWTH AND DEVELOPMENT**THREE CREDIT HOURS**

Professional education course designed to study growth and development in childhood and adolescence. Intended for the teacher, the knowledge will be made relevant for successful classroom practice. Prerequisite: EdF 198 or equivalent.

EdF 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: EdF 198, EdF 207 or equivalents.

EdF 419. PHILOSOPHY OF EDUCATION**THREE CREDIT HOURS**

Culminating education course. By interrelating the principal concepts pertaining to man, society, and the school, the student should develop a constructive philosophy of education. Accredited in Philosophy. Prerequisites: EdF 198 or equivalent; EdF 205, EdF 206, or EdF 207; and EdF 208.

EdF 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 EdF 419. Prerequisite: EdF 198 or equivalent; EdF 205, 206, or 207; and EdF 208.

EdF 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*

Elementary Education (EdE)

Dr. Simon Chavez, *Chairman*

Professors: Chavez, O'Donnell

Assistant Professors: Frye, Klein, Klosterman, Mathews, Miles, Thomas, Waters, Windell

Instructor: Fuchs

Part-time Instructors: Blackford, Bankston, Carroll, Cherney, Hackman, Hill, Rudolph, Weaver

EdE 219. KINDERGARTEN—PRIMARY 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.

EdE 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. Prerequisite: EdF 205. Restricted to students who have had teaching experience in an Elementary School.

Summer

EdE 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. One half day per week devoted to field experience. Prerequisite: EdF 205.

EdE 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: EdE 303.

Summer

EdE 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: EdF 208.

Summer

EdE 330. RELIGION IN CCD (ELEMENTARY) **TWO CREDIT HOURS**
Principles and techniques for the effective teaching of religion. Prepares the student to teach Catholic pupils from the public elementary schools. Prerequisite: Four semester hours of Theology.

EdE 333. RELIGIOUS INSTRUCTION IN CCD PROGRAM **TWO CREDIT HOURS**
Designed to prepare the student to teach Catholic pupils from the public elementary schools. Prerequisite: Eight semester hours of Theology.

EdE 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: EdF 205, EdF 208 or equivalents.

EdE 360. CHILDREN'S LITERATURE **THREE CREDIT HOURS**
 Treats the history of children's literature, poetry for different age levels, folk tales, story telling. Required of and limited to students in Elementary Education.

EdE 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 EdF 205, EdF 208.

EdE 403. MATHEMATICS IN THE ELEMENTARY SCHOOL **THREE CREDIT HOURS**
 Deals with distribution of content according to grade levels; methods of presentation; diagnosis of learning difficulties; remedial instruction; testing. Directed observation of teaching. Prerequisite: Mth 204. In addition, Mth 205 required for students with a standard certificate or a minor in Mth.

EdE 412. STUDENT TEACHING—SUMMER **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 previous full-time teaching experience. Prerequisite: Special permission of the Dean.

EdE 413. STUDENT TEACHING (ELEMENTARY) **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; also EdE 320, EdE 350 or 352, and EdE 403.

EdE 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.

EdE 451. ADVANCED KINDERGARTEN-PRIMARY INSTRUCTION **THREE CREDIT HOURS**
 Deals with current problems and practices of kindergarten through the third grade in relation to child and curriculum. Prerequisite: EdE 219.

EdE 460. 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.

EdE 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.

EdE 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: EdE 480.

EdE 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: EdE 480.

EDE 486. MATHEMATICS 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: EdE 480.

EDE 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: EdE 480.

EdE 488. MATERIALS OF INSTRUCTION FOR SLOW LEARNING CHILDREN TWO CREDIT HOURS
This course deals with the preparation, selection, and adaptation of instructional materials for slow learning children at the primary, intermediate, and secondary level. It points out the imperative need to use materials that meet the special needs of slow learners, a need that is not adequately met by using materials that exist for a specific grade level. This course is required for state certification in Ohio for beginning teachers of slow learners.

Secondary Education (EdS)

Dr. Ellis Joseph, Chairman

Professor: Joseph

Associate Professors: Edgington, John Jansen, Powers, Morton, Hand, Kriegbaum

Assistant Professors: Joseph Jansen, Frazier, Gay, Petit, Taylor, Willis, Metzger

Instructor: Landis

Part-time Instructors: Levin, Campbell, Lewis, Rogus

EdS 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. Students should be prepared to devote one half a day each week to practicum experiences. Prerequisite: EdF 208.

First Term, Each Year

EdS 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.

EdS 333. RELIGIOUS INSTRUCTION IN CCD PROGRAM TWO CREDIT HOURS
Designed to prepare the student to teach Catholic pupils from the public secondary schools. Prerequisite: Eight semester hours of Theology.

EdS 351. THE SECONDARY SCHOOL TWO CREDIT HOURS
An examination of the interrelationships between school, self, and society utilizing group procedures when possible. Students should be prepared to devote one evening each week to practicum experiences. Prerequisite: EdF 208.

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

EdS 405. ENGLISH IN THE SECONDARY SCHOOL TWO CREDIT HOURS
Ways and means whereby the teacher can make his teaching more functional in the lives of students. Students should be prepared to devote one half a day each week to practicum experiences. Prerequisite: EdS 351 or EdS 353.

First and Second Term, Each Year

EdS 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. Students should be prepared to devote one half a day each week to practicum experiences. Prerequisite: EdS 351 or EdS 353.

First and Second Term, Each Year

EdS 407. SPEECH METHODS IN THE SCHOOLS TWO CREDIT HOURS
Designed to prepare teachers for speech work on the high school level. Demonstrates how to arrange syllabi and prepare and administer assignments that will enrich speech classes. Students should be prepared to devote one half a day each week to practicum experiences. Prerequisites: EdS 351 or EdS 353.

First Term, Each Year

EdS 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. Students should be prepared to devote one half a day each week to practicum experiences. Prerequisite: EdS 351 or EdS 353.

Second Term, Evening

EdS 409. MATHEMATICS IN THE SECONDARY SCHOOL TWO CREDIT HOURS
The objectives of high school mathematics; sequence and correlation of subject matter; methods of teaching. Students should be prepared to devote one half a day each week to practicum experiences. Prerequisite: EdS 351 or EdS 353.

Second Term, Each Year

EdS 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: EdS 351 or EdS 353.

EdS 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. Students should be prepared to devote one half a day each week to practicum experiences. Prerequisite: EdS 351 or EdS 353.

Second Term, Each Year

EdS 412. STUDENT TEACHING—SUMMER 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 previous full-time teaching experience. Prerequisite: Special permission of the Dean and EdS 351.

EdS 414. STUDENT TEACHING (SECONDARY) 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 and EdS 351.

EdS 415. STUDENT TEACHING (SPECIAL) SIX-TWELVE CREDIT HOURS
 Consists of teaching under close supervision in the specialized subject area in both elementary and high school grades for a minimum of twelve weeks. A seminar is held once a week. Prerequisite: Formal admission to student teaching a full semester in advance and EdS 351.

EdS 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: EdS 351.

EdS 455. PRACTICUM IN HIGH SCHOOL READING IMPROVEMENT TWO CREDIT HOURS
 Diagnosis and cause of reading disabilities. Study of techniques applicable to delayed readers. Implementing the high school developmental reading program.
First Term, Each Year

EdS 456. INDEPENDENT STUDY TWO CREDIT HOURS
 An opportunity for students to pursue (in groups or individually) various interests in education through self-appropriated learning. Prerequisite: permission of the chairman.

Physical and Health Education (EdP)

James B. LaVanche, *Chairman*
 Philip Stanley, *Director of Men's Division*
Associate Professor: LaVanche
Assistant Professors: Stanley, Schleppe
Instructors: Cathell, Donohoe, Frericks, McVay, Landis, Powers
 Doris Drees, *Director of Women's Division*
Associate Professor: Drees
Assistant Professor: Siciliano, Bowman
Instructors: Balata, Jeremiah, Monaghan, Roberts, Trent

General Program (Men)

EdP 101. SPORTS APPRECIATION ONE CREDIT HOUR
 Lecture course concerning the philosophy of sports, especially activities, functions, and personalities of sports in our culture. Required of all those excused from R.O.T.C. Open as an elective to all students.
First Term, Each Year

EdP 102. HEALTH ONE CREDIT HOUR
 Personal health knowledge for college students. Required of all those excused from R.O.T.C. Open as an elective to all students.
Second Term, Each Year

EdP 201-202. PHYSICAL EDUCATION ACTIVITIES ONE CREDIT HOUR EACH TERM
 Provision of fundamental skills and knowledge of sports activities for those excused from R.O.T.C. and for non-medical reasons. Open as an elective to all students.

EdP 201A-202A. ADAPTIVE PHYSICAL EDUCATION ONE CREDIT HOUR EACH TERM
 Provision of fundamental skills and knowledge of sports activities for those limited in participation by ruling of University Health Service.

General Program (Women)

EdP 130-131. PHYSICAL EDUCATION ONE CREDIT HOUR EACH TERM
Fundamentals of Physical Activities. The program includes knowledges and skills of team and individual sports, gymnastics, dance and body mechanics.

EdP 130A-131A. ADAPTIVE PHYSICAL EDUCATION ONE CREDIT HOUR EACH TERM
The teaching of recreational skills and limited motor activity. Designed for the student not able to take part in the regular activities course. (Medical recommendation from Health Center required.)

EdP 140. PERSONAL AND COMMUNITY HEALTH TWO CREDIT HOURS
Lectures and discussions concerning personal and community health.

Professional Program—Men's Division

EdP 103-104(M). FUNDAMENTALS OF PHYSICAL EDUCATION ACTIVITIES
ONE CREDIT HOUR EACH TERM
Fundamentals of physical activities for physical education majors. Development of skills and knowledge needed to teach team and individual sports. Prerequisite to EdP 200.

EdP 203-204(M). FUNDAMENTALS OF PHYSICAL EDUCATION ACTIVITIES
ONE CREDIT HOUR EACH TERM
Continuation of EdP 103-104(M). Prerequisite to EdP 200 and EdP 324.

EdP 212. COACHING BASEBALL, TRACK AND FIELD, AND WRESTLING TWO CREDIT HOURS
The theory, skills, strategies and methods of coaching baseball, track and field, and wrestling.
Second Term, Each Year

EdP 300. METHODS OF TEACHING TEAM AND INDIVIDUAL SPORTS TWO CREDIT HOURS
Methods to teach individual and team activities in the physical education classes.
Observation required.
Second Term, Each Year

EdP 310. COACHING BASKETBALL TWO CREDIT HOURS
The theory, skills, strategies and methods of coaching basketball. *First Term, Each Year*

EdP 312. COACHING FOOTBALL TWO CREDIT HOURS
The theory, skills, strategies and methods of coaching football. *Second Term, Each Year*

EdP 319M. THEORY AND TECHNIQUES OF OFFICIATING FOOTBALL
AND BASKETBALL (ELECTIVE) ONE CREDIT HOUR EACH TERM
An application of the rules and techniques of officiating to game situations. Students are required to officiate in intramurals. Opportunity for taking O.H.S.A.A. Officials Examination.

EdP 320M. THEORY AND TECHNIQUES OF OFFICIATING BASEBALL, TRACK
AND FIELD AND WRESTLING (ELECTIVES) ONE CREDIT HOUR EACH TERM
An application of the rules and techniques of officiating to game situations. Students are required to officiate in intramurals. Opportunity for taking O.H.S.A.A. Officials Examination.

Professional Program—Women's Division

EdP 103-104W. FUNDAMENTALS OF PHYSICAL EDUCATION ACTIVITIES

ONE CREDIT HOUR EACH TERM

Development of skills, knowledge and strategy of team and individual sport activities for physical education majors.

EdP 203-204W. FUNDAMENTALS OF PHYSICAL EDUCATION ACTIVITIES

ONE CREDIT HOUR EACH TERM

Continuation of EdP 103-104. Prerequisite to EdP 217 and EdP 324.

EdP 217. METHODS OF TEACHING TEAM SPORTS

TWO CREDIT HOURS

Methods and skills essential to teach and coach various team sports. Prerequisite: EdP 103-104. Observation required.

First Term, Each Year

EdP 245. MODERN DANCE

TWO CREDIT HOURS

Emphasis on basic and intermediate technique involved in modern dance directed toward methods and composition.

Second Term, Each Year

EdP 319W. THEORY AND TECHNIQUES OF OFFICIATING FIELD HOCKEY
AND BASKETBALL (ELECTIVE)

ONE CREDIT HOUR EACH TERM

An application of the rules and techniques of officiating to game situations. Students are required to officiate in intramurals. Prerequisite: EdP 103-104W.

EdP 320W. THEORY AND TECHNIQUES OF OFFICIATING, VOLLEYBALL,
SOFTBALL, AND TENNIS (ELECTIVE)

ONE CREDIT HOUR EACH TERM

An application of the rules and techniques of officiating to game situations. Students are required to officiate in intramurals. Prerequisite: EdP 103-104W.

EdP 334. METHODS OF TEACHING INDIVIDUAL SPORTS

TWO CREDIT HOURS

Methods and skills essential to teach and coach individual and dual sports. Prerequisites: EdP 203-204W.

First Term, Each Year

EdP 346. PROBLEMS IN PHYSICAL EDUCATION FOR WOMEN

TWO CREDIT HOURS

Theory and practice in the organization and administration of extra-curricular responsibilities.

Professional Program (Men and Women)

EdP 116. PERSONAL HEALTH

TWO CREDIT HOURS

The establishment of proper health attitudes, habits, and knowledge by studying the human body and its environment.

First Term, Each Year

EdP 118. COMMUNITY HEALTH

TWO CREDIT HOURS

Prevention and control of disease in the family, school and community.

Second Term, Each Year

EdP 205-206. HUMAN ANATOMY AND PHYSIOLOGY

SIX CREDIT HOURS

A study of the human body with emphasis on the interdependent relationships of structure and function. (Bio 101-102 prerequisite) Prerequisite to EdP 350 and EdP 408.

EdP 213. PRINCIPALS OF PHYSICAL EDUCATION TWO CREDIT HOURS
A study of the aims, scope, and biological aspects of physical education in regards to its role in the educational process.

EdP 251. ORGANIZATION AND ADMINISTRATION OF HEALTH EDUCATION THREE CREDIT HOURS
The organization and administration of a school health program with emphasis on principles of health education, health services, healthful school living and physical inspection.
Second Term, Each Year

EdP 309. METHODS AND MATERIALS OF HEALTH EDUCATION THREE CREDIT HOURS
Application of principles of methodology to health education in the elementary and secondary schools.
Second Term, Each Year

EdP 317. ORGANIZATION AND ADMINISTRATION OF CAMPING TWO CREDIT HOURS
Study and practice of the basic skills essential in planning and conducting a camping program.
Second Term, Each Year

EdP 324. PRINCIPALS AND PRACTICES OF PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL TWO CREDIT HOURS
Basic theory, techniques and methods of teaching physical education in the elementary school. Observation required.
First Term, Each Year

EdP 325. METHODS OF TEACHING DANCE TWO CREDIT HOURS
Materials and methods for teaching folk, square and ballroom dancing in elementary and secondary schools.
Second Term, Each Year

EdP 336. SAFETY EDUCATION AND FIRST AID THREE CREDIT HOURS
Prevention and care of injuries occurring from accidents in the home, school and community. The National Red Cross Standard, Advanced, and Instructors Certificates may be obtained.

EdP 348. ORGANIZATION AND ADMINISTRATION OF RECREATION TWO CREDIT HOURS
Study of the philosophy, leadership, standards, facilities and programs of recreation.
Second Term, Each Year

EdP 350. KINESIOLOGY THREE CREDIT HOURS
The investigation and analysis of human motion based on anatomical, physiological and mechanical principles. Prerequisites: EdP 205-206.

EdP 402. ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION TWO CREDIT HOURS
Organization and administration of programs in physical education.

EdP 405. TESTS AND MEASUREMENTS IN PHYSICAL EDUCATION TWO CREDIT HOURS
This course is designed to present a direct relationship of tests and measurements to the teaching situation.

EdP 407. MODERN PROBLEMS IN PUBLIC HEALTH TWO CREDIT HOURS
A seminar study of current health problems with special emphasis on preventive medicine and epidemiology.

EDP 408. PHYSIOLOGY OF EXERCISE TWO CREDIT HOURS
Detailed study of the effects of exercise on human functions; thus providing a basis for the study of physical fitness, motor skills, and athletic training.

EDP 410. ADAPTIVE PHYSICAL EDUCATION TWO CREDIT HOURS
A study of the atypical child in order to organize and administer a program which will meet each individual's needs. *Second Term, Each Year*

EDP 413. HEALTH EDUCATION IN THE ELEMENTARY SCHOOL THREE CREDIT HOURS
A study of the total school health program. The Standard First Aid Course is given. Elementary Education majors only.

EDP 414. PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL THREE CREDIT HOURS
Designed to equip the elementary education major with basic theory, techniques and methods for conducting a physical education program for the elementary students.

EDP 417. STUDENT TEACHING (COMPREHENSIVE AND SPECIAL) SIX-TWELVE CREDIT HOURS
Consists of teaching under close supervision in the specialized subject area in both elementary and high school grades for a minimum of twelve weeks. A seminar is held once a week. Prerequisite: Formal admission to student teaching a full semester in advance.

EDP 418. STUDENT TEACHING (PRINCIPAL TEACHING FIELD) SIX-TWELVE CREDIT HOURS
Consists of teaching under close supervision in the specialized subject area in high school grades only for a minimum of twelve weeks. A seminar is held once a week. Prerequisite: Formal admission to student teaching a full semester in advance.

EDP 420. AQUATICS (ELECTIVE) TWO CREDIT HOURS
The American Red Cross Senior Life Saving and the Water Safety Instructor's Course. Prerequisite: Advanced Swimming. Offered upon demand.

EDP 433. GYMNASTICS TWO CREDIT HOURS
The practice and methods of beginning and intermediate gymnastic skills essential to effective teaching.

EDP 440. DRIVER EDUCATION THREE CREDIT HOURS
Teacher preparation with practical teaching experience in Driver and Traffic Safety Education.

EDP 450. SELECTED STUDIES IN PHYSICAL EDUCATION, HEALTH AND EDUCATION ONE-THREE CREDIT HOURS
Investigating, analyzing, and reporting on a problem in the areas of physical education, recreation or health education.

EDP 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.

Counselor Education (EdC)

Dr. Eugene K. Moulin, *Chairman*

Professor: Campanelle

Assistant Professors: Diethorn, Anderson

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

School Administration (EdA)

Dr. John O'Donnell, *Chairman*

Professor: O'Donnell

Associate Professors: Edgington, Morton

Part-time Instructors: Overly, Rogus

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

Electrical Engineering (ELE)

Bro. Louis H. Rose, S.M., *Chairman*

Professors: Holian, Morgan, Rose, Schmidt, Strnat

Associate Professors: Lewis, Tsui

Assistant Professors: Evers, Kubach, Moon

ELE 205. ALTERNATING CURRENT CIRCUITS THREE CREDIT HOURS

Vector and complex quantities applied to alternating currents; analysis of networks. Resonance. Three phase circuits. Corequisite: Mth 218.

ELE 231. CIRCUIT THEORY I THREE CREDIT HOURS

Basic principles of linear circuit theory. Network equations and topology, phasor algebra, resonance and the analysis of transient and steady state behavior of simple circuits. Prerequisite: Mth 119.

ELE 232. CIRCUIT THEORY II THREE CREDIT HOURS

Network theorems and network equivalence, magnetically coupled circuits, polyphase circuits and Fourier Series and Integral with circuit applications. Prerequisite: Ele 231.

ELE 233. FIELD THEORY I THREE CREDIT HOURS

Vector relations, static electric fields, dielectric materials, boundary conditions, field mapping, steady electric currents and their magnetic fields, motion of charged particles. Prerequisite: Mth 119.

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 309. ELECTRICAL TRANSIENTS THREE CREDIT HOURS

Application of the LaPlace Transform; poles and zeros; transient and steady-state response. Fourier series, integral, and transforms. Prerequisite: Mth 219.

ELE 310. CIRCUIT ANALYSIS **THREE CREDIT HOURS**
 Network theorems; wave filters; impedance transformation; long line theory; equalization. Prerequisite: Ele 312.

ELE 310L. CIRCUIT ANALYSIS LABORATORY **ONE CREDIT HOUR**
 Experiments to accompany topics outlined in Ele 310. Corequisite: Ele 310.

ELE 312. ENGINEERING ELECTRONICS I **THREE CREDIT HOURS**
 A first course on the terminal behavior of vacuum tubes and semiconductor devices. Topics include qualitative physical description, volt ampere curves, graphical solutions. Formulation of incremental and piecewise linear models. Analysis of simple circuits. Prerequisite: Ele 232.

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: Ele 309. 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 LABORATORY **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 331. CIRCUIT THEORY III **THREE CREDIT HOURS**
 LaPlace transform analysis, zero-pole structure of network impedance functions. Foster's reactance theorem, synthesis of simple networks. Prerequisites: Ele 232, Mth 219.

ELE 332. CIRCUIT THEORY IV THREE CREDIT HOURS
 Properties and applications of frequency selective networks. Design of image impedance filters, stagger-tuned interstage networks and impedance matching networks. Transient response of networks. Prerequisite: Ele 331.

ELE 333. FIELD THEORY II THREE CREDIT HOURS
 Ferromagnetic materials, time changing electric and magnetic fields, Maxwell's equations, relations between field and circuit theory, plane waves, Poynting vector, energy relations. Prerequisite: Ele 233.

ELE 334. FIELD THEORY III THREE CREDIT HOURS
 Boundary value problems, retarded potentials, radiation and propagation in unbounded media. Prerequisite: Ele 333.

ELE 335L. ELECTRICAL ENGINEERING LABORATORY I ONE CREDIT HOUR
 Theory and range of application of electrical instruments; measurement of resistance, inductance, capacitance, and impedance at audio frequencies. Prerequisite: Ele 232.

ELE 336L. ELECTRICAL ENGINEERING LABORATORY II ONE CREDIT HOUR
 Study of electric circuits including resonant circuits, currents and voltage loci, coupled circuits, polyphase circuits and power measurements, network theorems and circuit transients. Prerequisites: Ele 312, Ele 335L.

ELE 338L. ELECTRICAL ENGINEERING LABORATORY III ONE CREDIT HOUR
 Determination of terminal characteristic of vacuum, gaseous, and solid state electron devices; non-sinusoidal wave form frequency analysis; power supplies, three-phase rectifiers, single stage amplifiers. Prerequisite: Ele 312.

ELE 403. MACHINERY II THREE CREDIT HOURS
 Theory, construction and characteristics of polyphase induction motors, synchronous generators and motors, single phase motors and rotary converters. Selected topics on energy conversion. Prerequisite: Ele 318.

ELE 403L. MACHINERY LABORATORY ONE CREDIT HOUR
 Experiments covering series, shunt and compound DC machines. Transformer voltage regulation and efficiency. Polyphase operation of transformers. Synchronous generators and motors, single phase motors. Corequisite: Ele 403.

ELE 410A. SEMINAR ONE CREDIT HOUR
 Presentation of papers by the students and lectures by engineers in active practice. Attendance required by second term seniors only.

ELE 410B. SEMINAR ZERO CREDIT HOURS
 Presentation of papers by the students and lectures by engineers in active practice. Attendance required by Electrical Engineering juniors and first term seniors.

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 219.

ELE 413. COMMUNICATION ENGINEERING THREE CREDIT HOURS
 Treatment of Fourier series; Fourier transform, frequency and time domain; modulation; random signal theory; basic information theory; noise in communication system. Prerequisite: Ele 332.

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 219.

ELE 431. ENERGY CONVERSION THREE CREDIT HOURS
 Properties and theory of magnetic circuits as applied to electro-mechanical energy conversion. Non-linear magnetic devices. Introduction to rotating machine analysis. Field and circuit concepts of rotating machines. Rotating fields. Synchronous and induction machines. Prerequisites: Ele 232, Ele 233.

ELE 432. AUTOMATIC CONTROL SYSTEMS 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 413.

ELE 435L. ELECTRICAL ENGINEERING LABORATORY IV ONE CREDIT HOUR
 Tube and transistor multistage amplifiers and broadbanding; audio frequency power amplifiers. Prerequisites: Ele 313, Ele 338L.

ELE 436L. ELECTRICAL ENGINEERING LABORATORY V ONE CREDIT HOUR
 Amplitude modulation; demodulation of a modulated wave; production of shaped waveforms; switching and control circuit applications; design and evaluation of a single-frequency oscillator; filters. Transmission line parameters. Prerequisite: Ele 435L.

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 313.

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 331.

ELE 440. 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 219.

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

English (ENG)

Dr. B. J. Bedard, *Chairman*

Dr. Michael H. Means, *Assistant Chairman*

Professors: Bedard, Darby, Hand, Lees, O'Donnell

Associate Professors: Cochran, McCarthy, Means, Sturm

Assistant Professors: Arons, August, Cameron, Cochran, Deboo, Henninger, Horst, Labadie, LaBriola, Macklin, Marre, Means, Murphy, Palumbo, Patrouch, Pici, Rougier, Ruff, Stockum, Tiernan.

Instructors: Bozdech, Columbus, Deinlein, Farrelly, Kleine-Kreutzmann, McNally, Vernon

Eng 101 and Eng 106 are normally prerequisites for all courses listed as 200 or above. In addition to 12 hrs. of freshman and sophomore courses 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. Majors should consult the departmental chairman for advisor assignment. In addition to Freshman and Sophomore courses minors must take one course from the 300 level and three from the 400 level. Minors should consult the departmental chairman regarding the program of study when there is a question involved.

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

Students for whom English is a second language, in their first term, will be required to enroll in English 90, A Review of American English, offered through the Office of Special Sessions before their initial enrollment in Eng 101, unless they demonstrate sufficient proficiency in an examination given during Orientation Week.

✓ ENG 101. LANGUAGE AND THOUGHT THREE CREDIT HOURS

An analysis of the logical and linguistic structure of exposition and argument. Practical application aimed at developing perceptive readers and responsible writers. Required conferences. Required of every student.

✓ ENG 106. LANGUAGE AND LITERATURE THREE CREDIT HOURS

An analysis of the major literary forms with emphasis on precision in the use of language. Papers required involve the student with problems of language and structure. Required conferences. Prerequisite: Eng 101.

ENG 106H. LANGUAGE AND LITERATURE THREE CREDIT HOURS

Specific honors sections for first semester freshmen who show proficiency in the English Composition Test. Prerequisite: Superior scores in entrance exams.

ENG 108. TOPICS IN COMPOSITION THREE CREDIT HOURS

Exploration of subjects in composition or related problems in developing writing skills. This course may be substituted for Eng 101 or Eng 106 under special circumstances.

ENG 201. POETRY AND THE NOVEL THREE CREDIT HOURS

A study of representative examples of two major literary genres. Prerequisite: Eng 106.

- ENG 202. DRAMA AND SHORT FICTION THREE CREDIT HOURS
A study of representative examples of two major literary genres. Prerequisite: Eng 106.
- ENG 203. MAJOR BRITISH WRITERS THREE CREDIT HOURS
A study of four or five writers representative of the principal periods in English literature. Prerequisite: Eng 106.
- ENG 204. MAJOR AMERICAN WRITERS THREE CREDIT HOURS
A study of four or five writers representative of the principal periods in American literature. Prerequisite: Eng 106.
- ENG 205. MAJOR WORLD WRITERS THREE CREDIT HOURS
An examination of significant writings from the Western world, exclusive of English and American literature. Prerequisite: Eng 106.
- ENG 208. TOPICS IN LITERATURE THREE CREDIT HOURS
Exploration of varying approaches to the study of literature. This course may, under special circumstances, be substituted for the other 200 level courses in fulfilling a sophomore requirement. Prerequisite: Eng 106.
- ENG 204H-241H. SOPHOMORE HONORS THREE TO SIX CREDIT HOURS
A seminar in which selected works from the literature of western civilization would be studied. Prerequisite: Sophomore standing in Arts. By invitation only.
- 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. Prerequisite: Twelve hours of English.
- 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: Twelve hours of English.
- 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.
- ENG 321. EUROPEAN LITERATURE OF THE MIDDLE AGES THREE CREDIT HOURS
A consideration of selected literary masterpieces of Western civilization in the Middle Ages. Prerequisite: Twelve hours of English.
- 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. Not open to students who have had Eng 205. Prerequisite: Twelve hours of English.
- ENG 323. DANTE THREE CREDIT HOURS
A comprehensive study of the three Canticles of the *Divine Comedy*; Inferno, Purgatorio, and Paradiso. Prerequisite: Twelve hours of English.

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. Not open normally to students who have had Eng. 202. Prerequisite: Twelve hours of English.

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. Not open normally to students who have had Eng 202. Prerequisite: Twelve hours of English.

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. Prerequisite: Twelve hours of English.

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. Prerequisite: Twelve hours of English.

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. Not open to students who have had Eng 423, 424, or 425. Prerequisite: Twelve hours of English.

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*. Prerequisite: Twelve hours of English.

ENG 370. FRANCIS THOMPSON

THREE CREDIT HOURS

A study of his poems toward the discernment of their manifold spiritual and autobiographical implications. Prerequisite: Twelve hours of English.

ENG 382. DIRECTED READINGS

TWO CREDIT HOURS

A program of professionally oriented readings and reports in humanities and social sciences, utilizing seminars and individual conferences. Required of Juniors in Business Administration. Prerequisite: Six hours of English.

ENG 395H. JUNIOR HONORS TUTORIAL

THREE CREDIT HOURS

Independent directed study on special topics for selected students. May be repeated when topic or instructor changes. Permission required.

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. Prerequisite: Twelve hours of English.

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: Twelve hours in English.

ENG 407. MEDIEVAL ENGLISH LITERATURE THREE CREDIT HOURS
 A study of the dominant types in the literature of England from the beginning to 1500.
 Prerequisite: Twelve hours in English.

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: Twelve hours in English.

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: Twelve hours in English.

ENG 420. RENAISSANCE DRAMA THREE CREDIT HOURS
 A study of the drama of the Elizabethan, Jacobean, and Caroline periods, exclusive of Shakespeare. Prerequisite: Twelve hours in English.

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. Not open to students who have had Eng 362. Prerequisite: Twelve hours of English.

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. Not open to students who have had Eng 362. Prerequisite: Twelve hours of English.

ENG 425. HISTORIES OF SHAKESPEARE THREE CREDIT HOURS
 The same procedure as followed for Eng 423. All of the Histories are taken. Not open to students who have had Eng 362. Prerequisite: Twelve hours of English.

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: Twelve hours of English.

ENG 431. MILTON THREE CREDIT HOURS
 A study of the major and minor poems and of selected prose of Milton. Prerequisite: Twelve hours of English.

ENG 434. AGE OF WIT AND SATIRE THREE CREDIT HOURS
 The concern of the course is with the literature from Dryden to Pope, Addison, and Steele. Prerequisite: Twelve hours of English.

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: Twelve hours of English.

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: Twelve hours of English.

ENG 438. THE AGE OF ROMANTICISM THREE CREDIT HOURS
 A study of the major poets and critics of the Romantic Age. Prerequisite: Twelve hours of English.

ENG 441. THE VICTORIAN AGE I THREE CREDIT HOURS
 A study of the major British poets from Tennyson to Housman. Prerequisite: Twelve hours of English.

ENG 442. THE VICTORIAN AGE II THREE CREDIT HOURS
 English prose writers from Carlyle to Pater. Eng 441 is not a prerequisite. Prerequisite: Twelve hours of English.

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. Prerequisite: Twelve hours of English.

ENG 446. MODERN ENGLISH POETRY THREE CREDIT HOURS
 A study of tradition and innovation in English poetry from Yeats to the present day. Prerequisite: Twelve hours of English.

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. Prerequisite: Twelve hours of English.

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: Twelve hours of English.

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: Twelve hours of English.

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: Twelve hours of English.

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: Thirty hours of English.

ENG 495H. SENIOR HONORS TUTORIAL THREE CREDIT HOURS
 Independent directed study on special topics for selected students. May be repeated when topic or instructor changes. Permission required.

Fine Arts (ART)

Bernard E. Plogman, *Chairman*

Assistant Professors: Barrish, Weber

Part-time Instructors: Black, Carmichael, Dreisbach, Emery, Fiehler, Henry, Martino, Petrovich, Riesing, Robohm, Smith, Vongruenigen

Art Consultant: Edw. Burroughs

The Fine Art Department offers three degreed programs:

1. Bachelor of Fine Arts
2. Bachelor of Arts with a Major in Fine Arts
3. Bachelor of Science in Art Education

Minors are required to take 19 credit hours in art, 4 hours of which must be in upper level courses. All art students, regardless of their programs, are required to take Art 101-102 Introductory Drawing, and Art 111-112 Principles of Design before taking intermediate and advanced courses.

Students entering degreed programs are required to present an art portfolio of at least five pieces of work. Transfer students entering a BFA program if possible should present a few samples of artwork to chairman. Seniors must present to the full-time faculty a portfolio of at least ten pieces of their best work as a requirement for graduation. Three dimensional work will also qualify.

~~ART 101-102.~~ INTRODUCTORY DRAWING FOUR CREDIT HOURS

Introduction to drawing from a variety of objects, as well as from the imagination, as a means of visual communication. Contact with a wide range of drawing media is encouraged to develop capabilities. One two-hour course each week.

ART 111-112. PRINCIPLES OF DESIGN FOUR 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 the course. One two-hour course each week.

ART 191-192. LETTERING AND CALLIGRAPHY FOUR 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. One two-hour course each week.

ART 208-209. INTERMEDIATE DRAWING FOUR CREDIT HOURS

Studio course offering further disciplined study in various drawing media such as pencil, crayon, charcoal, and ink as a means of expression. One two-hour course each week.

ART 217-218. THREE DIMENSIONAL DESIGN FOUR CREDIT HOURS

The application of the principles of design and aesthetic factors to the development of form; creative use of a wide variety of materials experimentally; development of the knowledge, skills, and techniques necessary to design within limitations imposed by materials. Art 101-102 Introductory Drawing, and Art 111-112 Principles of Design are prerequisites for this course.

ART 226-227. INTRODUCTORY PAINTING**FOUR 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. Use of imaginative subject matter will also be encouraged. One two-hour course each week.

ART 228-229. WATERCOLOR.**FOUR CREDIT HOURS**

In this course the basic principles and techniques of transparent watercolors are studied. Emphasis is placed on picture composition, value and color sketching as preparatory steps in painting.

In the second course, varying expressions and interpretations of subject material are encouraged. Prerequisites are: Art 101-102 Drawing, Art 111-112 Design, and Art 226-227 Introductory Painting. One two-hour course each week.

ART 231-232. SCULPTURE**FOUR CREDIT HOURS**

Consideration of forms as a means of developing an understanding of mass, shape, and control of medium. Direct use of the widest possible range of materials with special emphasis on the integration of their characteristics with the expression. One two-hour course each week.

ART 251-252. GRAPHIC ARTS**FOUR CREDIT HOURS**

The principal processes of the graphic arts are studied as they pertain to contemporary expression in the fine arts and advertising. One two-hour course each week.

ART 261-262. INTRODUCTORY ENAMELING**FOUR CREDIT HOURS**

Basic principles and techniques of enameling on copper are studied. The student works out original pieces employing elementary processes. In the second term the student progresses into other enameling processes. The course prerequisites are Art 101-102 Introductory Drawing, and Art 111-112 Principles of Design. One three-hour course each week.

ART 263-264. JEWELRY: INTRODUCTORY CASTING**FOUR CREDIT HOURS**

A complete experience in designing original pieces, making wax models, burning out, casting, and finishing pieces. The course prerequisites are Art 101-102 Introductory Drawing, and Art 111-112 Principles of Design. These courses must be taken in sequence.

ART 281. PRACTICAL ARTS: KINDERGARTEN THROUGH PRIMARY GRADES**TWO CREDIT HOURS**

Art teaching methods and experiences geared to the primary grade level. Problems and projects are assigned with meaningful theory. Required course for all primary school teachers. One two-hour course each week.

ART 282. PRACTICAL ARTS: INTERMEDIATE GRADES**TWO CREDIT HOURS**

Same as Art 281, adjusted to the maturity of children in the intermediate grades. Emphasis placed on creative teaching techniques. Required of all intermediate elementary school teachers. One two-hour course each week.

ART 303-304. ADVANCED DRAWING**FOUR CREDIT HOURS**

Observational and expressive drawing. The use of accumulated knowledge from previous drawing experiences in the introductory program, to assist in the development of an individual creativity and original style. One two-hour course each week.

ART 317-318. INTERMEDIATE DESIGN **FOUR CREDIT HOURS**

Principles and practices in the application of design to the Fine Arts as well as the Practical Arts. The assignments are designed to motivate the student in design solutions of projects requiring research into original concepts. The project-oriented program includes assignments in the areas of graphic design, and product design. One two-hour course each week.

ART 321-322-323-324. ADVANCED PAINTING **EIGHT CREDIT HOURS**

A Continuation of Art 221-222 Introductory Painting, with increased emphasis on the personal interpretation of the subject. The use of various painting media are encouraged, such as oils, water color, opaque water color, and synthetic paints. These courses must be taken in sequence.

ART 331-332. ADVANCED SCULPTURE **FOUR CREDIT HOURS**

Contemporary consideration of sculptural form. Individual expression, employing the use of modern techniques and experimental as well as traditional materials. One two-hour course each week. Prerequisites for this course are Art 231-232.

ART 355-356. SILK SCREEN—SERIGRAPHY **TWO CREDIT HOURS**

Basic principles and techniques of the silk screen process exploiting the unique characteristics of the medium as a creative expression. All operations of screen printing are covered including stencil and resist techniques, selecting and preparing the color material, printing and displaying the finished print.

ART 371. HISTORY OF ANCIENT ART **THREE CREDIT HOURS**

A Study of great art and the masters of art and the influences upon their work beginning with the ancient period and continuing through the medieval and Gothic periods.

ART 372. RENAISSANCE ART **THREE CREDIT HOURS**

A continuation of Art 271, beginning with the Renaissance and continuing through the Baroque and Rococo periods.

ART 411-412. ADVANCED DESIGN **FOUR CREDIT HOURS**

The widest possible latitude for experimentation and development of the student's own direction is provided during this third year of study. At this time the student is considered mature enough to have developed certain convictions about his work. One two-hour course each week.

ART 471. DEVELOPMENT OF MODERN ART **THREE CREDIT HOURS**

New art forms are studied in the development of art history in the late 18th Century and the complete flowering in the 19th Century throughout Europe and the Americas.

ART 472. ART IN THE TWENTIETH CENTURY **THREE CREDIT HOURS**

The development of twentieth century art from 1900 to the present, covering the early cubistic movement, abstract expressionism, and the various aspects of other minor art movements to the present.

ART 481. CREATIVITY IN TEACHING ART **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. One two-hour course each week.

ART 482. TEACHING ART IN SECONDARY SCHOOLS**TWO CREDIT HOURS**

Basic principles of teaching art more creatively at the secondary school level. The elements of teaching techniques, arts student learning processes, creative personality involvement, and creative art performance will be explored. The course is required of all prospective secondary school art teachers and is open to interested art teachers in service. One two-hour course each week.

ART 483W. 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 interests of pupils and to holiday observances. May substitute for Art 281 or Art 282. *Summer*

ART 484W. CREATIVITY IN TEACHING HIGH SCHOOL ART**THREE CREDIT HOURS**

Intended primarily for the art teacher on the high school level; creative art expression, use of materials, study of handwork and organization of units of work. May substitute for Art 481. *Summer*

ART 490. SPECIAL PROBLEMS**TWO TO SIX CREDIT HOURS**

A course reserved for senior art students and devoted to advanced work in art. Permission must be granted by the chairman. Students may work privately under the supervision of full time staff. They are encouraged to explore advanced problems in such areas as drawing, painting, design, graphics, crafts, sculpture and art research.

HONORS PROGRAM. Each year a group of high school seniors, outstanding in art, is invited to take art courses at the University of Dayton. The courses may be offered at various times of the year and are taught by the Fine Arts Staff. The purpose of the program is to further develop and encourage art talent prior to the students' entering either the University of Dayton, or other accredited art institutions offering work beyond high school levels. It is, in effect, a modified advanced placement program, originated to advance highly talented high school seniors in art at the University of Dayton.

Interdisciplinary (GE)**GE 200H. INTERDISCIPLINARY SEMINAR****GE 400H. INTERDISCIPLINARY SEMINAR**

Opportunities for students to explore relationships meaningful to them in symbolics, empirics, aesthetics and synoptics.

Geology (GEO)

George H. Springer, *Chairman*

Professor: Springer

Assistant Professors: Gray, Horvath, Murtaugh, Ritter

Assistant Instructor: Cella

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. Does not satisfy science requirement for Arts and Sciences.

GEO 109. GENERAL GEOLOGY THREE CREDIT HOURS
 An introduction to the earth as a planet, its composition, structure, and evolutionary development; a brief consideration of the life of the past. Designed for the non-science major.

GEO 109L. GENERAL GEOLOGY LABORATORY ONE CREDIT HOUR
 Course to accompany Geo 109. Two hours per week.

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.

GEO 115L. PHYSICAL GEOLOGY LABORATORY ONE CREDIT HOUR
 Course to accompany Geo. 115. Two hours per week.

GEO 116. HISTORICAL GEOLOGY THREE CREDIT HOURS
 A comprehensive study of earth history as interpreted from the rocks of the crust. Prerequisite: Geo 115.

GEO 116L. HISTORICAL GEOLOGY LABORATORY ONE CREDIT HOUR
 Course to accompany Geo 116. Two hours per week.

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, 1969-1970*

GEO 301L. STRUCTURAL GEOLOGY LABORATORY ONE CREDIT HOUR
 Course to accompany Geo 301. Two hours per week. *First Term, 1969-1970*

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, 1969-1970*

- GEO 302L. GLACIAL GEOLOGY LABORATORY ONE CREDIT HOUR
Course to accompany Geo 302. Two hours per week. *Second Term, 1969-1970*
- 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, 1970-1971*
- GEO 307L. GEOMORPHOLOGY LABORATORY ONE CREDIT HOUR
Course to accompany Geo 307. Two hours per week. *Second Term, 1970-1971*
- GEO 309. PETROGRAPHY THREE CREDIT HOURS
A study of the composition of igneous, sedimentary, and metamorphic rocks through the use of thin sections and hand specimens. Prerequisites: Geo 204. *First Term, 1969-1970*
- GEO 309L. PETROGRAPHY LABORATORY ONE CREDIT HOUR
Course to accompany Geo 309. Four hours per week. *First Term, 1969-1970*
- GEO 310. STRATIGRAPHY THREE CREDIT HOURS
The interpretation of specific lithotypes and the synthesis of the stratigraphic record. Prerequisites: Geo 116, 301. *Second Term, 1970-1971*
- GEO 310L. STRATIGRAPHY LABORATORY ONE CREDIT HOUR
Course to accompany Geo 310. Two hours per week. *Second Term, 1970-1971*
- GEO 401. PALEONTOLOGY THREE CREDIT HOURS
A study of animal life of the geologic past as shown by the fossil record. *First Term, 1969-1970*
- GEO 401L. PALEONTOLOGY LABORATORY ONE CREDIT HOUR
Course to accompany Geo 401. Two hours per week. *First Term, 1969-1970*
- GEO 403. SEDIMENTATION THREE CREDIT HOURS
Detailed study of sediments; their sources, environments of deposition, and methods of consolidation. Sedimentary rock classifications and analyses. Prerequisites: Geo 201, 204, 301. *First Term, 1970-1971*
- GEO 403L. SEDIMENTATION LABORATORY ONE CREDIT HOUR
Course to accompany Geo 403. Two hours per week. *First Term, 1970-1971*
- 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, 1969-1970*

GEO 411L. IGNEOUS PETROLOGY LABORATORY ONE CREDIT HOUR
 Course to accompany Geo 411. Two hours per week. *Second Term, 1969-1970*

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, 1970-1971*

GEO 415L-416L. MICROPALAEONTOLOGY LABORATORY TWO CREDIT HOURS
 Course to accompany Geo 415-416. Two hours per week. *Full Year Course, 1970-1971*

History (HST)

Dr. Wilfred J. Steiner, *Chairman*

Dr. Rocco M. Donatelli, *Assistant Chairman*

Professors: Beauregard, Maras, Ruppel, Steiner

Associate Professors: Donatelli, King, Sha

Assistant Professors: Bannan, Eid, Grant, Isaacs, Jegen, Mathias, Rhee, Soffer, Taylor, Yaple

Instructors: Edwards, Gorie, Ridgway, Vines

Part-time Instructors: Perkins, Peters, Whelan

History courses in the 100-200 series 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 (12 credit hours) should be selected from the 300-350 and 403-450 sequences;
- (2) Four courses (12 credit hours) should be selected from the 351-399 and 451-495 sequences;
- (3) History 401—2 credit hours;
- (4) Honors Colloquium courses (Hst 497H and 498H) may be substituted for any course except History 401.

The course requirement for History minors is 12 credit hours. Two courses should be selected from the 300-350 and 403-450 sequences, and two courses from the 351-399 and 451-495 sequences.

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.

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 120. HISTORY OF ENGLAND THREE CREDIT HOURS
 This course is designed to acquaint undergraduate students with the major forces and trends in the history of England from earliest times to the present.

HST 125. 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.

HST 130. 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.

HST 135. HISTORY OF AFRICA**THREE CREDIT HOURS**

Attuned to the new approach to African history, this survey, covering early times to the present, aims to display Africa's significance by examples of political grandeur, commercial ingenuity, intellectual ferment, and religious revolutions.

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 on those social, economic, and political problems, a knowledge of which is essential to an understanding of contemporary America.

HST 260. SOCIAL AND CULTURAL HISTORY OF THE UNITED STATES**THREE CREDIT HOURS**

Social and cultural development of the American people. Emphasis upon the growth of national spirit, the impact of expansion, conflict over slavery, and problems of industrialization and urbanization.

HST 265. 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.

HST 270. ECONOMIC HISTORY OF THE UNITED STATES**THREE CREDIT HOURS**

A survey of the economic theories and institutions peculiar to the United States with special reference to their influence on social and political development.

HST 275. LATIN AMERICAN REPUBLICS**THREE CREDIT HOURS**

A survey of the development of the Latin American republics from independence to the present. Stress will be placed on political, economic, and social development.

HST 300. ROMAN HISTORY**THREE CREDIT HOURS**

A survey of the political, cultural, religious, and socio-economic history of the Roman Republic and Empire, 509 B.C. to 476 A.D. A study of early Christianity and the Byzantine Empire is included.

First Term, 1970-1971

- 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. *Second Term, 1969-1970*
- 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, 1970-1971*
- 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. *Second Term, 1970-1971*
- 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 *First Term, 1969-1970*
- 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, 1970-1971*
- HST 309. ANCIENT HISTORY** THREE CREDIT HOURS
 A survey of ancient civilizations between 5000 B.C. and 30 B.C., including Egyptian, Mesopotamian, Anatolian, Syro-Palestinian, Persian, Aegean, Hellenic, and Hellenistic. *Second Term, 1970-1971*
- 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, 1970-1971*
- 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. *First Term, 1969-1970*
- 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. *First Term, 1970-1971*
- HST 328. HISTORY OF EASTERN EUROPE** THREE CREDIT HOURS
 The course surveys the history of the nations lying between Germany and the Soviet Union, the Baltic and Aegean Seas. Medieval and early modern background will be stressed as a foundation for understanding the profound trends of contemporary history. *Second Term, 1969-1970*

- HST 333. NORTH AFRICA IN MODERN TIMES** THREE CREDIT HOURS
 A study of Morocco, Algeria, Tunisia, and Libya since the 16th century. Stress is placed on the institutional histories of these countries which enabled them ultimately to expel European imperialism.
First Term, 1969-1970
- HST 334. SOUTH AFRICA IN MODERN TIMES** THREE CREDIT HOURS
 The establishment of the Bantu people and institutions and their subjection to assaults by Boers and British. Such study seeks to illuminate the present dominant governmental policy of apartheid.
Second Term, 1969-1970
- HST 335. WEST AFRICA IN MODERN TIMES** THREE CREDIT HOURS
 West Africa's significance since the 18th century, with special references to the slave trade, the commercial revolution, religious ferment, imperialistic rivalry, and the recent independence movement.
First Term, 1970-1971
- 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, 1970-1971
- 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, 1970-1971
- 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, 1970-1971
- 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, 1969-1970
- 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.
Second Term, 1970-1971
- HST 374. THE GILDED AGE, 1877-1900** THREE CREDIT HOURS
 A study in the political, diplomatic, economic, social, and cultural developments of the age. The rise of big business, organized labor, and the Populist revolt will be studied.
Second Term, 1969-1970
- HST 375. THE PROGRESSIVE PERIOD, 1900-1920** 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.
First Term, 1969-1970

- HST 391. HISTORY OF CANADA** THREE CREDIT HOURS
 A general survey of Canadian History from early settlement to the present, with stress placed on the years after 1867. *First Term, 1969-1970*
- HST 396. HISTORY OF THE NEGRO IN THE NEW WORLD** THREE CREDIT HOURS
 A study of the role of the Negro in the history of the New World, stressing the problems of integration, race relations, and the achievements and contributions of the Negro. *Second Term, 1969-1970*
- HST 397. HISTORY OF CIVIL LIBERTIES IN THE U.S.** THREE CREDIT HOURS
 The issues of religious liberty, discrimination, defendants' rights and individual rights will be studied with an overview of the historical development of all human rights in the U.S. *First Term, 1970-1971*
- 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. *Second Term, 1970-1971*
- 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, 1969-1970*
- HST 413. DIPLOMATIC HISTORY OF THE FAR EAST SINCE 1840** THREE CREDIT HOURS
 A survey of the diplomatic relations of China, Korea, and Japan among themselves and with other powers. The course selects major diplomatic events from 1840 to the present. *First Term, 1970-1971*
- HST 415. SOVIET UNION SINCE 1917** THREE CREDIT HOURS
 A detailed survey and analysis of the historical development of the USSR from the Revolution of 1917 to the present time. *Second Term, 1969-1970*
- 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. *First Term 1969-1970*
- HST 422. ENGLISH CONSTITUTIONAL HISTORY** THREE CREDIT HOURS
 The study of the origin and development of English legal, constitutional and institutional history. *Second Term, 1970-1971*
- 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. *First Term, 1969-1970*

HST 433. SOCIAL AND CULTURAL HISTORY OF THE MIDDLE EAST THREE CREDIT HOURS
 Social and cultural development of the Middle-Eastern people. Emphasis upon the growth of national spirit, the impact of westernization and industrialization, stressing transition and innovation in social and cultural traits.
Second Term, 1969-1970

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, 1970-1971

HST 442. MODERN CHINA THREE CREDIT HOURS
 A survey of the political, cultural and international developments in China from the eighteenth century to the present.
Second Term, 1969-1970

HST 446. SOUTHEAST ASIA THREE CREDIT HOURS
 A survey of the cultural and political history of Southeast Asian countries, emphasizing recent developments.
First Term, 1969-1970

HST 451. CIVIL WAR AND RECONSTRUCTION THREE CREDIT HOURS
 Remote and immediate causes of the Civil War, especially from 1850 to 1861: problems of North and South during the war; consequences of the war; efforts to create a new Union, 1865 to 1877; problems created by those efforts.
First Term, 1969-1970

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.
Second Term, 1970-1971

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.
Second Term, 1970-1971

HST 460. CARIBBEAN SINCE 1801 THREE CREDIT HOURS
 Study of the cultural, social, economic and political history of the islands and the northern shore of South America in modern times, stressing areas that have gained independence or autonomy.
First Term, 1970-1971

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, 1969-1970

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, 1969-1970

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 influences of the Church on the cultural, political, economic and religious customs of the American people is explained.
First Term, 1970-1971

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, Each Year*

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, Each Year*

HST 492. EMINENT AMERICANS THREE CREDIT HOURS
 A study in depth of the work of Americans who have had an enduring effect on our history; e.g., Washington, Franklin, Hamilton, Jefferson, Lincoln, and the Roosevelts. *Second Term, 1969-1970*

HST 495. AMERICAN HISTORIANS THREE CREDIT HOURS
 Intensive readings and discussion to foster understanding of American history, as written and interpreted in various periods and intellectual environments. *Second Term, 1969-1970*

HST 497. HONORS COLLOQUIUM I (HONORS) THREE CREDIT HOURS
 A course devoted to the study of a special topic in American History to be selected by the instructor. Applicants will be admitted on the basis of academic record. Limited to ten students. *First Term, Each Year*

HST 498. HONORS COLLOQUIUM II (HONORS) THREE CREDIT HOURS
 A course devoted to the study of a special topic in non-American History to be selected by the instructor. Applicants will be admitted on the basis of academic record. Limited to ten students. *Second Term, Each Year*

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.

HEC 101L. CLOTHING I LABORATORY ONE CREDIT HOUR
 A course to accompany Hec 101 lecture. One three-hour period per week.

HEC 102. FOODS I TWO CREDIT HOURS
 Basic concepts and practices in food planning, preparation, preservation and serving. Two lecture periods per week.

HEC 102L. FOODS I LABORATORY ONE CREDIT HOUR
A course to accompany Hec 102 lecture. One three-hour period per week.

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.

HEC 201L. FOODS II LABORATORY ONE CREDIT HOUR
Course to accompany Hec 201 lecture. One three-hour laboratory period per week.

HEC 211. CLOTHING II TWO CREDIT HOURS
Detailed emphasis on principles of fitting and creative construction. Two lecture periods per week. Prerequisite: Hec 101 or equivalent.

HEC 211L. CLOTHING II LABORATORY ONE CREDIT HOUR
Course to accompany Hec 211 lecture. One three-hour laboratory per week.

HEC 214. TEXTILES THREE CREDIT HOURS
A study of the natural, thermoplastic and non-thermoplastic fibers including the construction and finishing of fabrics for their use and care. Three class periods per week.
Second Term, Each Year

HEC 221. HOME MANAGEMENT I AND CONSUMER EDUCATION THREE CREDIT HOURS
A study of home management and the use of resources to promote the development of home and family life. The resources of time, energy, money and material goods are stressed. 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. Two 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. Hours arranged.

HEC 308. INSTITUTIONAL BUYING THREE CREDIT HOURS
Selection and methods of purchasing institutional food and equipment. Three class periods per week.
As Needed

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. Emphasis is placed upon students giving lecture-demonstrations. Two class periods per week.

HEC 327. EXPERIMENTAL FOODS

TWO CREDIT HOURS

Comparative and experimental approach to food preparation as it affects quality. Introduction to the standard experimental procedures leading to independent project of student's choice. Prerequisite: Hec 201

HEC 327L. EXPERIMENTAL FOODS LABORATORY

ONE CREDIT HOUR

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

HEC 328. HOUSING AND HOME FURNISHINGS

THREE CREDIT HOURS

A study of housing and exterior design and the selection of furnishings for the home, including arrangements, furniture 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. Two lecture periods, plus observation. 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. Prerequisites: Hec 303, Chm 400. *Second Term, Each Year*

HEC 402. DIET IN DISEASE

THREE CREDIT HOURS

Metabolic processes of the body in diseased conditions and dietary modifications. Three class periods per week. Prerequisite: Hec 303. *As Needed*

HEC 405. TEACHING OF HOME ECONOMICS IN SCHOOLS THREE CREDIT HOURS
 A study of Vocational Home Economics philosophy and Techniques of Teaching. Planning and preparing scope and sequence 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 managing 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. *As Needed*

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
 Individual problems of refinishing furniture, upholstering, slip covering and draperies. Assessment of fabrics, buying, use and care of tools, techniques and materials. Two class periods per week. Prerequisite: Hec 105. *First Term, Each Year*

HEC 430L. HOME FURNISHINGS LABORATORY ONE CREDIT HOUR
 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*

Professors: Schmid, Gephart

Associate Professors: Kovacs, Mitchell

***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 202. ENGINEERING ECONOMY** THREE CREDIT HOURS
Emphasizes rational, scientific methods of economic analysis for engineering and management decision-making. Prerequisite: Mth 118.

***INE 220-221. STATISTICAL METHODS FOR ENGINEERS I AND II** SIX CREDIT HOURS
Discrete and continuous probability distributions, parameter and interval estimations, tests of hypothesis, regression, analysis of variance and experimental designs, non-parametric methods. Emphasizes application to Engineering problems. Prerequisite: Mth 119.

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. Prerequisite: Mth 118.

***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

*Recommended to students from other departments as appropriate elective.

INE 341. WORK DESIGN I**THREE CREDIT HOURS**

Introduction to design and analysis of work systems. Application of models to work study. Study of symbolic chart models, physical analog models, mathematical and statistical models. Prerequisites: Cps 233, Ine 332.

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. Prerequisite: Mee 106L.

*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**

Full time students other than those classified as freshmen are required to enroll in Ine 410 each semester until they graduate regardless of the number of such courses for which they receive credit. No student will be graduated without having received credit in at least one such Seminar course, during which his selected topic must be presented.

*Recommended to students from other departments as appropriate elective.

INE 411. 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. Prerequisite: Ine 320 or Ine 408.

INE 412. 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. Prerequisites: Ine 320 and 321, or Ine 408.

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 430. ENGINEERING SYSTEMS DESIGN I**THREE 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. An introduction to the theory of control with emphasis upon general principles as contrasted with a detailed study of specific control systems. Prerequisite: Mth 331.

INE 431. ENGINEERING SYSTEMS DESIGN II**THREE CREDIT HOURS**

The use of industrial engineering concepts in research and development undertakings including the design of products, programming of effort, assigning probabilities to event, time or cost schedules. Prerequisite: Ine 430.

INE 442. WORK DESIGN II**TWO CREDIT HOURS**

Advanced studies of work systems. Development and analysis of techniques to standardize and measure work. Development of standards through the use of MTM, time study and WMS. Development of standard data and applications of its use in production control and work systems. Prerequisite: Ine 341.

INE 442L. WORK DESIGN LABORATORY II**ONE CREDIT HOUR**

Practice in the application of MTM, time study, and WMS. Development of rating and its application to time study. WMS and work sampling. Studies conducted under both actual and simulated industrial conditions. Corequisite: Ine 442.

INE 443. WORK DESIGN III**TWO CREDIT HOURS**

Application of work design techniques to the development of work systems. Studies of computerized techniques to design and control work systems. Application of simulation and O.R. optimizing techniques to production scheduling, inventory control and plant layout problems. Prerequisites: Ine 442, 442L.

*Recommended to students from other departments as appropriate elective.

INE 443L. WORK DESIGN LABORATORY III ONE CREDIT HOUR
Practice in the development and application of models (mainly, but not limited to, computerized statistical models) to the solution of typical industrial problems in work design. Corequisite: Ine 443.

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

Program of Judaic Studies (JUD)

Liaison: Fr. John Kelley, S.M.

The Program of Judaic Studies brings Jewish scholars to our campus for specialized offerings relative to the literature of the Hebrew scriptures, the archeology and history of Israel, the Hebrew language and culture. Scholarship funds from the Joseph and Pearl Thal Scholarship Fund (1966) are available for deserving students.

Visiting Instructors: Rabbi Herbert Brichto, Dr. Samuel Greengus, Rabbi Alvin Reines, Dr. Ellis Rivkin, Rabbi Ezra Spicehandler

JUD 320. HISTORY OF ISRAEL TWO CREDIT HOURS
A survey of the history of the chosen people from Abraham unto modern times with stress on biblical history and the contemporaneous resurgence of a national state.

First Term

JUD 321. BIBLICAL VIEW OF HISTORY ONE CREDIT HOUR
Seminar dealing with the biblical view of history.

First Term

JUD 330. JUDAIC LITERATURE TWO CREDIT HOURS
An introduction to and overview of the field of Judaic literature with emphasis upon literary forms.

Third Term

JUD 331. SELECTED TEXTS FROM JEWISH LITERATURE ONE CREDIT HOUR
Seminar discussing selected texts of Judaic literature.

Third Term

JUD 340. ARCHAEOLOGY AND THE BIBLE TWO CREDIT HOURS
An historical and synthetic analysis of the development of archaeology in Palestine and the subsequent impact upon the understanding of the culture of Judaism.

Second Term

JUD 341. SEMINAR: MODERN DEVELOPMENTS IN ARCHAEOLOGY ONE CREDIT HOUR
Second Term

JUD 350. MARTIN BUBER, LIFE AND WORK TWO CREDIT HOURS
An overview of the life and writings of Martin Buber and the significance of his work for philosophy, sociology and psychology, as well as his contribution to the dialog of Christian and Jew.

Third Term

JUD 351. SEMINAR: SELECTED WRITINGS OF MARTIN BUBER ONE CREDIT HOUR
Examination of texts from *I and Thou* and other writings.

Third Term

JUD 360. JUDAISM AND ISLAM

TWO CREDIT HOURS

An historical and comparative analysis of the development of Islam from Judaic and Christian elements; a survey of the Koran in its literary dependence on scripture.

To be announced

JUD 361. SEMINAR: THE BIBLE AND THE KORAN

ONE CREDIT HOUR

To be announced

JUD 370. THE WORLD OF THE PSALMIST

THREE CREDIT HOURS

A general course on the psalms in the world of the Hebrew bible. The conceptual world of the Hebrew scriptures reflected in the book of Psalms, and the relation of the Psalms to religious life today.

First Term

JUD 371. SEMINAR: PROBLEMS OF THE PSALMS

ONE CREDIT HOUR

Selection of passages in the psalms which present special difficulties in understanding the sacred songs. (No student will be permitted to take Jud 371 without taking Jud 370.)

First Term

LANGUAGES

Dr. James M. Ferrigno, *Chairman*

Professors: Ferrigno, Perz

Associate Professor: McKenzie

Assistant Professors: Bartholomew, Boenninghofen, Castelló-Lamas, Conard, Darby, Frazier, Galeano, Rus, Saquel, Sory, Walter, Zeinz

Instructors: Chiodo, Franklin, Greely, Markus, Paglierani, Rock, Thompson, Treacy

Part-Time Instructors: Anduze, Baumann, Bruggeman, Fox, Nersoyan

A language major may arrange his courses, with the approval of the department chairman, in one of these two forms 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 language (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.

A composite major in Classical Languages (Greek and Latin) may be earned by completing the following program:

- (a) minimum of 24 credit hours of courses in the Latin Language at the 300-400 level;
- (b) minimum of 12 credit hours of courses in the Greek Language at any level;
- (c) electives to minimum total of 42 credit hours, such electives to be chosen from courses in Greek or Roman History, Ancient Philosophy, Greek, or Latin.

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*

Note: French 307 and French 308 are prerequisites for all other upper level courses in French.

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, Each Year*

FRN 310. RAPID READING IN FRENCH **THREE CREDIT HOURS**
 Continuation of Rapid Reading in French 309. *Second Term, Each Year*

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 principal authors and works of the seventeenth century. Lectures, discussions and reports on area material. *First Term, 1969-1970*

FRN 312. FRENCH LITERATURE TO 1700 **THREE CREDIT HOURS**
 Continuation of French Literature to 1700, Frn 311. *Second Term, 1969-1970*

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, 1969-1970*

FRN 406. FRENCH LITERATURE OF THE TWENTIETH CENTURY **THREE CREDIT HOURS**
 Continuation of French Literature of the Twentieth Century, Frn 405. *Second Term, 1969-1970*

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, Each Year*

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, Each Year*

German (GER)

GER 101. ELEMENTARY GERMAN I

THREE CREDIT HOURS

Introduction to German speech and grammar. A structural approach, i.e., stress on audio-lingual as well as syntactical elements of the target language. Language lab required. No prerequisite.

GER 102. ELEMENTARY GERMAN II

THREE CREDIT HOURS

Continuation of German 101. Prerequisite: Ger 101 or equivalent.

GER 201. INTERMEDIATE GERMAN

In this course the knowledge of syntax and morphology of German is deepened. The vocabulary is enlarged, the student is exposed to German prose and poetry. Emphasis on conversation and composition. Prerequisite: successful completion of German 102 or equivalent.

GER 202. INTERMEDIATE GERMAN II

THREE CREDIT HOURS

Continuation of German 201. The student is exposed to the development of German civilization and culture. Reading, conversation and composition. Prerequisite: successful completion of German 201 or equivalent.

GER 201S. GERMAN FOR SCIENCE MAJORS I

THREE CREDIT HOURS

In this course the student is exposed to prose of the various scientific fields. The stress here is on translating and understanding the peculiarities of scientific, expository German, its grammar and vocabulary. Prerequisite: successful completion of German 102 or equivalent.

GER 202S. GERMAN FOR SCIENCE MAJORS II

THREE CREDIT HOURS

Continuation of German 201S. Prerequisite: successful completion of German 201S.

GER 305. ADVANCED COMPOSITION AND CONVERSATION

THREE CREDIT HOURS

Further stress on mastery of syntax and morphology, enlarging vocabulary. Discussion of readings on German Culture and civilization. Required for German majors and minors. *First Term, Each Year*

GER 306. BIBLIOGRAPHY AND METHODS

THREE CREDIT HOURS

An intensive course in methods of literary criticism. A study of the development of German literary history. The student learns to use the standard reference works. Required for German majors and minors. *Second Term, Each Year*

GER 405. SURVEY OF GERMAN LITERATURE THREE CREDIT HOURS
 German Literature and its development from 750 AD to end of the Baroque period. The student is exposed to exemplary works of each century and period and gets an understanding of literary movements and trends. Required for German majors.

First Term, 1969-1970

GER 406. SURVEY OF GERMAN LITERATURE THREE CREDIT HOURS
 Continuation of German 405. German Literature from the end of the Baroque period to the death of Goethe, excluding Romanticism. Required for German majors.

Second Term, 1969-1970

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, 1969-1970

GER 410. GERMAN LITERATURE OF THE NINETEENTH CENTURY THREE CREDIT HOURS
 A continuation of German Literature of the Nineteenth Century, Ger 409.

Second Term, 1969-1970

GER 411. TWENTIETH CENTURY GERMAN LITERATURE THREE CREDIT HOURS
 A survey of the outstanding authors and works in the first half of the present century up to the World War II. Lectures, discussions and reports on assigned readings.

First Term, 1970-1971

GER 412. TWENTIETH CENTURY GERMAN LITERATURE THREE CREDIT HOURS
 Continuation of German 411; German literature since 1945. Lectures, discussions and reports on assigned readings.

Second Term, 1970-1971

GER 413. THE CLASSICAL PERIOD THREE CREDIT HOURS
 A study of the principal authors of this period, with emphasis on Schiller.

First Term, 1970-1971

GER 414. THE CLASSICAL PERIOD THREE CREDIT HOURS
 Continuation of German 413, with emphasis on Goethe.

Second Term, 1970-1971

GER 415. MODERN GERMAN DRAMA THREE CREDIT HOURS
 A study of the Modern German Theater with emphasis on Brecht.

Offered as needed

GER 416. MODERN GERMAN DRAMA THREE CREDIT HOURS
 The German Theater since Brecht.

Offered as needed

GER 417. KAFKA THREE CREDIT HOURS
 Study of Kafka's works, with emphasis on Kafka as the forerunner of the absurd, and how his world-view developed.

Offered as needed

GER 418. MODERN GERMAN PROSE AFTER KAFKA THREE CREDIT HOURS
 German literary reaction to the two wars; influences of Kafka, Hemingway, Dos Passos, Faulkner, Joyce, and Camus on Döblin, Kasack, Koeppen, Andresch, Böll, and Lind; the *nouveau roman* illustrated by Johnson and one work by Grass.

Offered as needed

GER 495. SEMINAR

TWO CREDIT HOURS
First Term, Each Year

GER 496. SEMINAR

TWO CREDIT HOURS
Second Term, Each Year

Greek (GRK)

GRK 101. ELEMENTARY GREEK

THREE CREDIT HOURS

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

GRK 102. ELEMENTARY GREEK

THREE CREDIT HOURS

Continuation of Elementary Greek 101. Prerequisite: Grk 101.

GRK 201. INTERMEDIATE GREEK

THREE CREDIT HOURS

Continuation of the study of grammar, Readings from Herodotus, Xenophon, and Plato. 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 Term

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

Hebrew (HEB)

HEB 101. ELEMENTARY HEBREW

THREE CREDIT HOURS

Brief history of the language. Basic grammar; nouns and adjectives with their pronominal suffixes; regular verbs in the seven ordinary conjugations; prepositions and their suffixes. Reading, translation, writing, and conversation.

First Term, Each Year

HEB 102. INTRODUCTION TO CLASSICAL HEBREW

THREE CREDIT HOURS

Further study of the verb. Chapters 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.
- ITA 301. MASTERPIECES OF ITALIAN LITERATURE THREE CREDIT HOURS
 Major works from Dante to Tasso, presented in literary-historical perspective. Prerequisite: Ita 202 or permission of the Department. *First Term, 1970-1971*
- ITA 302. MASTERPIECES OF ITALIAN LITERATURE THREE CREDIT HOURS
 The major works from Marino to D'Annunzio presented in literary-historical perspective. Prerequisite: Ita 202 or permission of the Department. *Second Term, 1970-1971*
- ITA 307. ADVANCED ITALIAN COMPOSITION AND CONVERSATION THREE CREDIT HOURS
 Practice in composition based on area material. Intensive drill in the aural-oral aspects of the language. Discussions, reports, debates. Three class hours and two laboratory hours. Prerequisite: Ita 202 or permission of the Department. *First Term, 1969-1970*
- ITA 308. ADVANCED ITALIAN COMPOSITION AND CONVERSATION II THREE CREDIT HOURS
 Continuation of Ita 307. *Second Term, 1969-1970*

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 302. INTENSIVE LATIN** EIGHT CREDIT HOURS
 An intensive course in Latin Composition and Conversation with special emphasis on philosophical and ecclesiastical Latin. Prerequisite: Latin 301. *Summer*
- 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 methods and literary form.
- LAT 335. ROMAN SATIRE** THREE CREDIT HOURS
 Origins, development and influence of Roman satire. Reading in the original of selections from the chief writers of Roman satire, with emphasis on Horace and Juvenal. *First Term, 1969-1970*
- 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 teaching 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 101. 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 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 305. RUSSIAN CULTURE AND CIVILIZATION THREE CREDIT HOURS
 Survey in Russian of the country's history, politics, religion, music, art, geography and literature. Emphasis on key ideas and basic terminology. Useful as background for other Russian courses or a summation of courses, readings. Third term (I), each year.
 Prerequisite: Rus 202 or equivalent. *First Half, Third Term*

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, 1969-1970*

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, 1969-1970*

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, 1970-1971*

RUS 406. L. N. TOLSTOY 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, 1970-1971*

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, 1970-1971*

SPN 302. SPANISH LITERATURE THREE CREDIT HOURS
 A continuation of Spanish Literature, Spn 301. *Second Term, 1970-1971*

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, 1969-1970*

SPN 304. SPANISH-AMERICAN LITERATURE **THREE CREDIT HOURS**
A continuation of Spanish-American Literature, Spn 303. *Second Term, 1969-1970*

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*

Note: Spanish 307 and Spanish 308 are prerequisites for all other upper level Spanish courses.

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, 1969-1970*

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, 1969-1970*

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, 1970-1971*

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, 1970-1971*

Marketing (MKT)

Harry C. Murphy, *Chairman*

Professor: Murphy

Associate Professors: Comer, Densmore

Assistant Professors: Jain, Kline, Royer

Part-time Instructors: Booher, Gupta

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 organization, location, buying and selling, cost reductions, current practices and trends. Prerequisite: Mkt 305.
- MKT 318. RETAIL ADVERTISING AND SALES PROMOTION** **THREE CREDIT HOURS**
Principles and practices of retail advertising and other sales promotional activities; where, when, and what to promote; budgeting and planning of special events and activities; emphasis upon coordination. Prerequisite: Mkt 315.
- MKT 335. ADVANCED MARKETING** **THREE CREDIT HOURS**
Applications of the principles of marketing; marketing policies of manufacturers and/or wholesalers; analysis of current problems and literature relating to marketing efficiency. Prerequisite: Mkt 305.
- MKT 340. INDUSTRIAL MARKETING** **THREE CREDIT HOURS**
Fundamental basis and problems of marketing industrial goods and services. Analysis of the industrial market, channels of distribution, industrial sales, promotional practices, research, and marketing policies. Illustrative case studies utilized. 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. Prerequisite: Mkt 305.
- MKT 417. RETAIL BUYING AND MERCHANDISING** **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. Prerequisite: Mkt 315.
- 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. Prerequisite: Mkt 305.
- 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.
- MKT 430. MARKETING RESEARCH** **THREE CREDIT HOURS**
A study of the application of the scientific method to the definition and solution of marketing problems. Examines the range of activities and the problems faced in market research. Prerequisite: Mkt 305.

MKT 450. MARKET DEVELOPMENT, PROGRAMMING AND POLICIES THREE CREDIT HOURS
Marketing responsibilities approached from the managerial perspective utilizing the systems view of today's complex business organization. Comprehensive discussion of cases involving a variety of products and environmental circumstances. Prerequisites: Six hours of Marketing including Mkt 305.

MKT 499H. PROBLEMS IN MARKETING (HONORS CREDIT) ONE TO SIX 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*

Professor: Schraut

Associate Professors: Back, Esser, Peterson, T. Schoen, Stander

Assistant Professors: Cada, Friel, T. Ganter, McCloskey, Mushenheim, Neuendorf, Rice, Steinlage, Shaughnessy

Instructors: Kauflin (on leave), H. Schoen, C. Gantner

HONORS PROGRAM

The Honors committee of the Department of Mathematics will, upon review, extend invitations to second semester freshmen with a minimum 3.5 average in mathematics and a minimum 3.0 cumulative average. Students entering with advanced placement would be considered as exceptional cases and would be reviewed by the committee.

MTH 245H. SOPHOMORE HONORS MATHEMATICS FOUR CREDIT HOURS
Finite Dimensional Vector Spaces, Linear Transformations and Matrices, Linear Differential Equations. Prerequisites: Mth 128 and the permission of the Honors Committee of the Department.

MTH 246H. SOPHOMORE HONORS MATHEMATICS FOUR CREDIT HOURS
Multidimensional calculus, exterior derivatives, Stokes' Theorem. Jordan canonical form, bilinear forms. Prerequisite: Mth 245 and the permission of the Honors Committee of the Department.

MTH 345H. JUNIOR HONORS MATHEMATICS THREE CREDIT HOURS
Introduction to real analysis: real number system, convergence, series, sequences, derivatives, and integration. Prerequisite: Permission of the Honors Committee of the Department.

MTH 346H. JUNIOR HONORS MATHEMATICS THREE CREDIT HOURS
Continuation of real analysis. Introduction to the theory of functions of a complex variable. Cauchy Integral Theorems. Prerequisite: Mth 345 and the permission of the Honors Committee of the Department.

MTH 445H. (SPECIAL TOPICS IN NAMED AREA) **ONE TO THREE CREDIT HOURS**
 Lectures in the specialized areas listed below. May be taken more than once for additional credit. Prerequisite: Permission of the Honors Committee of the Department.

- | | |
|------------------------|-------------------------|
| 1. Abstract Algebra | 7. Game Theory |
| 2. Applied Mathematics | 8. General Topology |
| 3. Complex Variables | 9. Normed Linear Spaces |
| 4. Differential forms | 10. Probability Theory |
| 5. Functional Analysis | 11. Real Variables |
| 6. Galois Theory | 12. Topological Groups |

In his senior year, each student in the Honors Program will be required to enroll in one graduate course.

GENERAL OFFERINGS OF THE DEPARTMENT:

MTH 101. PRECALCULUS MATHEMATICS **FOUR CREDIT HOURS**
 For students whose achievement in mathematics is insufficient to profit from instruction in Mathematics 112, Mathematics 118, or Mathematics 128. Topics from algebra and trigonometry chosen to satisfy the needs of the class.

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 112-113. INTRODUCTORY MATHEMATICAL ANALYSIS **THREE 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: Satisfactory score on prescribed placement test.

MTH 118. ANALYTICAL GEOMETRY AND CALCULUS I **FOUR CREDIT HOURS**
 Fundamentals of analytic geometry, differentiation of algebraic functions with applications to geometry and physics, indefinite and definite integrals with application to geometry and physics and engineering. A more applied presentation than is followed in Mth 128. Prerequisite: Satisfactory score on prescribed placement test.

MTH 119. ANALYTICAL GEOMETRY AND CALCULUS II **FOUR CREDIT HOURS**
 Continuation of Math 118. Conic sections, differentiation of transcendental functions with applications to geometry and physics, indefinite and definite integrals with applications to geometry and physics and engineering. Prerequisite: Mth 118.

MTH 128. ANALYTICAL GEOMETRY AND CALCULUS I **FOUR CREDIT HOURS**
 The material in this course is equivalent to Mth 118. It is presented with greater rigor and is designed for students in the mathematical and physical sciences. Prerequisite: Satisfactory score on prescribed placement test.

MTH 129. ANALYTICAL GEOMETRY AND CALCULUS II **FOUR CREDIT HOURS**
 Continuation of Mth 128. Essentially the material is equivalent to Mth 119, but presented with a greater degree of abstraction. Prerequisite: Mth 128.

MTH 204. MATHEMATICAL CONCEPTS I **THREE CREDIT HOURS**
 Concepts necessary for an understanding of the structure of arithmetic and its algorithms. Prerequisite: One year of high school algebra and one year of high school geometry.

MTH 205. MATHEMATICAL CONCEPTS II **THREE CREDIT HOURS**
 Concepts necessary for an understanding of operations and structure of algebra and geometry. Prerequisite: Mth 204.

MTH 215. BASIC STATISTICS FOR THE BIOMEDICAL SCIENCES **THREE CREDIT HOURS**
 A discussion of probability, sample, normal distribution, confidence intervals, tests of hypotheses, proportions, chi-square test. F-distribution, regression & correlation. Prerequisite: Mth 113 or consent of instructor.

✓ **MTH 218. ANALYTICAL GEOMETRY AND CALCULUS III** **FOUR CREDIT HOURS**
 Continuation of Mth 119. Improper integrals, infinite series, expansion of functions, solid analytic geometry, partial differentiation, multiple integrals. Prerequisite: Mth 119.

MTH 219. APPLIED DIFFERENTIAL EQUATIONS **THREE CREDIT HOURS**
 Linear differential equations of higher order with constant coefficients, power series solutions, Bessel's equation. Legendre's equation, the Laplace transformation, applications to problems in engineering. Prerequisite: Mth 218.

MTH 228. ANALYTICAL GEOMETRY AND CALCULUS III **FOUR CREDIT HOURS**
 Continuation of Mth 129. The material is essentially equivalent to Mth 218, but presented with a greater degree of abstraction. Prerequisite: Mth 129.

MTH 229. 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 218 or Mth 228.

MTH 331. STATISTICS FOR ENGINEERS **THREE CREDIT HOURS**
 Probability distributions including binomial, hypergeometric, Poisson, normal. Estimation of mean and standard deviation. Sampling distributions. Quality control procedures including acceptance and inspection sampling. Confidence intervals and tests of hypotheses using t, chi-square, and F statistics. Prerequisite: Mth 218 or Mth 228.

MTH 332. INDUSTRIAL AND ENGINEERING APPLICATIONS OF STATISTICS **THREE CREDIT HOURS**
 Correlation. Least squares estimation. Regression. Analysis of variance. Design of experiments. Distribution free methods including rank tests, sign test, and Kolmogorov-Smirnov test. Prerequisite: Mth 331.

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 218 or 228.

MTH 362. INTRODUCTION TO LINEAR ALGEBRA AND MATRICES **THREE CREDIT HOURS**
 Fundamental concepts of vector spaces, systems of linear equation, determinants, linear transformations and matrices. Prerequisite: Mth 218 or Mth 228.

MTH 367. STATISTICAL METHODS **THREE CREDIT HOURS**
 See Cps 367. Prerequisite: Mth 218 or 228 and Cps 233 or 241.

MTH 370. INTRODUCTION TO HIGHER GEOMETRY **THREE CREDIT HOURS**
 Euclidean, projective, affine, and metric geometries using synthetic and analytic methods. Prerequisite: Mth 218 or Mth 228.

MTH 383. LOGIC AND SET THEORY **THREE CREDIT HOURS**
 See Cps 383. Corequisite: Mth 119 or 129.

MTH 390. INTRODUCTION TO THE FOUNDATIONS OF MATHEMATICS **THREE CREDIT HOURS**
 Introduction to mathematical logic and set theory, the history and development of the various schools of mathematical thought. Offered in alternate years. Prerequisite: Mth 218 or 228 and Mth 361.

MTH 403. APPLIED ANALYSIS I **THREE CREDIT HOURS**
 Introduction to vector integral calculus, line and surface integrals, Green's theorem, Stokes' theorem, the divergence theorem. The Sturm-Liouville problem. Orthogonal functions. Prerequisite: Mth 219 or 229.

MTH 404. APPLIED ANALYSIS II **THREE CREDIT HOURS**
 Introduction to functions of a complex variable, conformal mapping, solution of real integrals by contour integration. Special functions. Calculus of variations. Prerequisite: Mth 403.

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 limit theorem. Prerequisite: Mth 218 or Mth 228.

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.

MTH 413. PROBABILITY AND STATISTICS III **THREE CREDIT HOURS**
 Statistical decision theory, partitioning of sums and squares, analysis of variance, regression on several independent variables, multiple regression approach to analysis of variance, design of experiments. Prerequisite: Mth 412.

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 218 or 228.
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 455-456. NUMERICAL ANALYSIS **SIX CREDIT HOURS**
 See Cps 455-456.

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 or 228.

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 or 228.

MTH 481. MATHEMATICAL LOGIC **THREE CREDIT HOURS**
 See Cps. 481.

MTH 482. AUTOMATA THEORY **THREE CREDIT HOURS**
 See Cps 482. Prerequisite: Mth 481.

MTH 490. READINGS IN (NAMED AREA) **ONE TO THREE CREDIT HOURS**
 Individual study in specialized areas carried out under the supervision of a staff member. May be taken more than once for additional credit. Prerequisite: Permission of the Department.

Mechanical Engineering (MEE)

Howard Smith, *Chairman*

Professor: Csaky

Associate Professors: Minardi, Nielsen, Ray, Smith, Thorne

Assistant Professors: Bauer, Boehman, Bornhorst, Chuang, Luming, Schauer, Schmall

Instructors: Hery, Scott

MEE 106L. 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 106L.

MEE 211. MATERIALS AND PROCESSES TWO CREDIT HOURS
Crystalline nature of solids, work hardening, mechanical properties of metals, common industrial processes, metal cutting, economics of machining and processing. Prerequisites: Chm 125, Mee 106L, Phy 196; 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 221. THEORY OF MACHINES TWO CREDIT HOURS
Kinematic and dynamic analysis of mechanisms and machines; study of machine elements such as linkages, cams, gears, differentials; analog computing mechanisms; balancing; flywheels. Prerequisite: Egm 301; Corequisites: Mee 221L, Mee 301.

MEE 221L. THEORY OF MACHINES LABORATORY TWO CREDIT HOURS
Laboratory exercises based on the principles covered in Mee 221. Prerequisite: Egm 301; Corequisites: Mee 221, Mee 301.

MEE 301. THERMODYNAMICS I THREE CREDIT HOURS
The zeroth, first and second laws of thermodynamics for both closed systems and control volumes; properties and processes of gases and vapors. Prerequisite: Mth 218.

MEE 302. THERMODYNAMICS II THREE CREDIT HOURS
Review of second law and entropy. Treatment of irreversibility and availability; mixtures and solutions; chemical reactions; chemical phase equilibrium. Prerequisite: Mee 301.

MEE 303. METALLURGY TWO CREDIT HOURS
Electronic structure, bonding, crystal structure, imperfections in crystals, strengthening mechanisms, phase transformations, equilibrium diagrams, heat treatment, mechanical behavior and corrosion. Prerequisites: Mee 211, Phy 437, or permission of instructor.

MEE 303L. METALLURGY LABORATORY ONE CREDIT HOUR
Heat treatment, hardness testing, preparation of specimens for metallurgical examinations, use of metallograph, examination of metallic structures, thermal analysis. Corequisite: Mee 303.

MEE 305L. MECHANICAL ENGINEERING LABORATORY I ONE CREDIT HOUR
Purpose and planning of experimental projects; measurements, data analysis and error estimation; techniques of selection, application and calibration of instruments used for the measurement of fundamental quantities, such as pressure, temperature, shaft speed, fluid flow rate, frequency, torque, power, area, and sound level. Prerequisite: Mee 211L.

MEE 308. FLUID MECHANICS THREE CREDIT HOURS
Laws and theory relative to incompressible fluids; continuity, momentum and energy relations in flow situations; internal and external flow in laminar and turbulent regimes. Prerequisite: Mee 301.

MEE 310. THERMAL ENGINEERING THREE CREDIT HOURS
Steam power plants; fossil and nuclear fuels; introduction to power reactors, gas turbine power plants, total energy concept and direct energy conversion devices. Prerequisite: Mee 301.

MEE 312L. MECHANICAL ENGINEERING LABORATORY II ONE CREDIT HOUR
 Determination of thermodynamic and physical properties of fuels and lubricants, study of energy release or transfer mechanisms, such as, combustion and measurement of fluid flow. Prerequisite: Mee 305L.

MEE 316. MECHANICAL ENGINEERING ANALYSIS THREE CREDIT HOURS
 Mathematical modeling and simulation of engineering systems. Solutions and evaluation by digital and analog methods. Prerequisite: Mth 219.

MEE 319. MECHANICAL VIBRATIONS THREE CREDIT HOURS
 Undamped free vibration; damped free vibration; forced vibration; vibration isolation and absorption; vibrations of systems with several degrees of freedom; mechanical and electrical models of vibration systems. Prerequisites: Egm 301, Mee 316.

MEE 320. THERMAL ENGINEERING I TWO CREDIT HOURS
 Steam power plants; fossil and nuclear fuels; introduction to power reactors, gas turbine power plants, total energy concept, and direct energy conversion devices. Prerequisite: Mee 301.

MEE 407. MACHINE DESIGN I TWO CREDIT HOURS
 Development of mathematical equations for analysis and design of static and dynamic machine members. Prerequisites: Egm 304, Mee 221; Corequisite: Mee 407L.

MEE 407L. MACHINE DESIGN LABORATORY I ONE CREDIT HOUR
 Problems involving the application of principles covered in Mee 407. Solution of complex problems involving statics, dynamics and strength of materials to develop engineering judgment. Corequisite: Mee 407.

MEE 408. MACHINE DESIGN II TWO CREDIT HOURS
 Continuation of Mee 407. Prerequisite: Mee 407; Corequisite: Mee 408L.

MEE 408L. MACHINE DESIGN LABORATORY II ONE CREDIT HOUR
 Problems involving the application of principles covered in Mee 407 and Mee 408. Solution of complex problems with emphasis on synthesis and creative design of mechanical systems. Corequisite: Mee 408.

MEE 410. HEAT TRANSFER THREE CREDIT HOURS
 Laws of conduction, radiation and convection; heat transfer to boiling liquids and condensing vapors; steady state and variable flow heat transfer. Prerequisites: Mee 308, Mee 316.

MEE 414A. SEMINAR ONE CREDIT HOUR
 Presentation of papers by students and lectures by engineers in active practice. Registration required by all students in their last term prior to graduation.

MEE 414B. SEMINAR ZERO CREDIT HOURS
 Presentation of papers by the students and lectures by engineers in active practice. Registration required by all junior and senior students not registered in Mee 414A.

MEE 416. MECHANICAL VIBRATIONS TWO CREDIT HOURS
 Undamped free vibration; damped free vibration; forced vibration; vibration isolation and absorption; vibration of systems with several degrees of freedom; mechanical and electrical models of vibration systems. Prerequisites: Mee 221, Mth 219.

MEE 417. THERMAL ENGINEERING II THREE CREDIT HOURS
 A study of combustion and energy release processes; theoretical flame temperature, degree of dissociation and ionization, reaction rates. Applications to spark and compression ignition systems, thermal jet and rocket engines, gas turbine power plants; fuel requirements for each. Engine testing. Prerequisites: Mee 302 and Mee 310 or Mee 320. Corequisite: Mee 312L.

MEE 418. ADVANCED FLUID MECHANICS THREE CREDIT HOURS
 Application of fundamental fluid mechanics and thermodynamic laws and auxiliary equations to compressible flows. Isentropic flows; normal and oblique shock waves; convection heat transfer. Prerequisites: Mee 308, Mth 219; Corequisite: Mee 410.

MEE 419. MECHANICAL ENGINEERING ANALYSIS TWO CREDIT HOURS
 The application of mathematics to the solution of engineering problems. Prerequisite: Mth 219.

MEE 424L. MECHANICAL ENGINEERING LABORATORY III ONE CREDIT HOUR
 Analysis and testing of selected power generation devices and turbo-machinery, such as turbines, internal combustion engines, pumps, fans, fuel cells, solar cells, thermoelectric and thermionic power generators. Prerequisite: Mee 305L; Corequisites: Mee 410, Mee 417.

MEE 425L. MECHANICAL ENGINEERING LABORATORY IV ONE CREDIT HOUR
 Analysis and testing of heat transfer devices involving principles of conduction, convection, condensation, and refrigeration; gas dynamics experiments. Prerequisites: Mee 305L, Mee 410, Mee 418.

MEE 426L. MECHANICAL ENGINEERING LABORATORY III TWO CREDIT HOURS
 Testing of selected devices or machines which employ engineering principles; such as, turbines, combustion engines, pumps, fans and heat exchangers. Corequisites: Mee 410, Mee 417.

Mechanical Engineering Electives

MEE 420. ENVIRONMENTAL CONTROL THREE CREDIT HOURS
 Application of thermodynamics, heat flow and fluid flow to the investigation and design of thermal environmental control systems and subsystems. Prerequisite: Mee 302; Corequisite: Mee 410. Offered once each year.

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 430. PRODUCTION CONTROL AND PROCESSES THREE CREDIT HOURS
 Introduction to statistics, quality control, and reliability. Production methods and processes; automation. Prerequisites: Mth 218, Mee 211. Offered once each year.

MEE 499. SPECIAL PROBLEMS IN MECHANICAL ENGINEERING THREE 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, Good Samaritan Hospital or Kettering 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 association 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 CREDIT

The student familiarizes himself with the ordering of supplies, office procedures, and with basal metabolism techniques.

MET 490. NORMAL PATHOLOGIC PHYSIOLOGY

NO CREDIT

A series of lectures stressing the correlation of theory and practical laboratory testing as it relates to disease states.

Military Science (MIL)

LTC William F. Murley, *Chairman (Acting)*

Professor: Murley

Assistant Professors: Gannon, Hoerning, Barker, Kosty, McCollum, Renn, Sullivan, Anderson, Hovey, Morris, Newman, O'Brien, Rowzee, Smith, Van Horn, Kwieciak, MacLellan, Fawcett

Students desiring to obtain a commission as an officer in the United States Army are required successfully to complete four years of Military Science and be awarded a Bachelor's Degree from the University.

MIL 101-102. FIRST YEAR BASIC COURSE

TWO CREDIT HOURS

Instruction provided in those subjects common to all branches of the Army; U.S. Military Establishment; Leadership Principals; individual weapons; map reading; organization of the Army and R.O.T.C.; and leadership laboratory. One period of classroom instruction and one period of leadership laboratory each week.

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; and leadership laboratory. Prerequisites: Mil 101-102. Two periods of classroom instruction and one period of leadership laboratory each week.

MIL 301-302. FIRST YEAR ADVANCED COURSE

FOUR CREDIT HOURS

Subjects: Military teaching principles; service branches; small unit tactics-communications; pre-camp orientation; internal defense/development; leadership; summer camp. Prerequisites: Mil 101, 102, 201, 202, pass physical and selection. Three periods of classroom instruction and one period of leadership laboratory each week.

MIL 401-402. SECOND YEAR ADVANCED COURSE

FOUR CREDIT HOURS

Continuation of above. Subjects: Logistics; Army administration; military justice; operations; service orientation; leadership; world change and military implication; internal defense development. Prerequisites: Mil 301-302 and Summer Camp. Three periods of classroom instruction and one period of leadership laboratory each week.

Music (MUS)

Maurice R. Reichard, *Chairman*

Professors: Reichard, Thomas

Associate Professors: Tagg, Zech

Assistant Professors: Ritter, Weaver

Instructor: Faust

Part-time Instructors: Christopher, Minton, Schnieder, Wiggenhorn

Special Applied Music Instructors: Blagg, Enoch, Katz, Needham, Odum, Reger, Wildman

MUS 101. FUNDAMENTALS OF MUSIC **TWO CREDIT HOURS**

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

MUS 103. MUSIC 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 108.

MUS 108. INTRODUCTION TO MUSIC LITERATURE **TWO CREDIT HOURS**

A study of the masterpieces in 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 103.

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 101.

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 101.

Second Term—Evenings

- 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 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 the piano keyboard, two- and three-part singing. Materials for grades 4, 5, 6, and their presentation. Prerequisite: Mus 183.
- MUS 296. APPLIED MUSIC—CLASS PIANO I** ONE CREDIT HOUR
- MUS 297. APPLIED MUSIC—CLASS PIANO II** ONE CREDIT HOUR
- MUS 298. APPLIED MUSIC—CLASS PIANO III** ONE CREDIT HOUR
- MUS 299. APPLIED MUSIC—CLASS PIANO IV** ONE CREDIT HOUR
- 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 304. HISTORY OF AMERICAN MUSIC** THREE CREDIT HOURS
Development of music in America dating from its early psalmody of the 17th century to its present day forms and styles.
- MUS 305. CONTEMPORARY TRENDS IN AMERICAN MUSIC** THREE CREDIT HOURS
Survey of the contemporary American composers and their styles of writing. The relationship of American music to the other arts.

MUS 308. CONTEMPORARY MUSIC**TWO CREDIT HOURS**

A survey of contemporary music; its relationship to modernism in the other arts and to present-day society.

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.

MUS 315. THE OPERA**TWO CREDIT HOURS**

A survey of operas written in classical, romantic, and modern periods; particular attention is given to works currently performed by major opera companies.

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

Scoring for 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.

*Second Term, Each Year***MUS 327. BRASS INSTRUMENTS****ONE CREDIT HOUR**

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

*First Term, Each Year***MUS 328. PERCUSSION INSTRUMENTS****ONE CREDIT HOUR**

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

*Second 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.

First 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. *First Term, Each Year*
- MUS 361. PIANO PEDAGOGY I** TWO CREDIT HOURS
A systematic preparation for the development of piano technique and tone: a survey and study of graded teaching material of Grades I and II. Prerequisite: Four terms of piano study or the equivalent. *First Term, Each Year*
- MUS 362. PIANO PEDAGOGY II** TWO CREDIT HOURS
A continuation of Piano Pedagogy I through the material of Grades III and IV. Prerequisite: Piano Pedagogy I or five terms of piano study or equivalent. *Second Term, Each Year*
- MUS 383. TEACHING MUSIC IN PAROCHIAL SCHOOLS—JUNIOR HIGH SCHOOLS** 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 399. APPLIED MUSIC** TWO CREDIT HOURS
Private instruction in Piano, Voice, Organ, Orchestral Instruments.
- MUS 411-412. MUSICAL COMPOSITION** FOUR CREDIT HOURS
Prerequisites: Mus 251, 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 COUNTERPART** 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. *First Term, Each Year*

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 451-452. CHAMBER MUSIC AND SYMPHONY**FOUR CREDIT HOURS**

Formal and harmonic analysis of Chamber Music and the symphonies of the Classicists, the Romanticists, and the Impressionists. Prerequisite: Mus 251, 262.

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*

MUS 499. APPLIED MUSIC (FOR MAJORS IN APPLIED MUSIC)**FOUR CREDIT HOURS**

Private instruction in Piano, Voice, Organ, Orchestral Instruments, admission by permission of instructor-advisor.

MAJOR IN APPLIED MUSIC: Twenty four credit hours for Bachelor of Music degree; sixteen to twenty credit hours for Bachelor of Science in Music Education degree.

APPLIED MUSIC

Credit in Applied Music may be earned in Mus 296-299, Class Piano, or in private instruction courses, Mus 399 and Mus 499 (Applied Music Majors) at the following rates:

MUS 296-299 **ONE CREDIT HOUR** (one class lesson per week)

MUS 399 **TWO CREDIT HOURS** (one private lesson per week)

MUS 499 **FOUR CREDIT HOURS** (two private lessons per 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. 1; 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 Grieg, 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:

Mus 296 to 299 Class Piano.....Term fee \$10.00

Mus 399 Piano, Organ, Voice, Woodwind or Brass Instruments.....Term fee \$20.00

Mus 499 Applied Music Majors.....Term fee \$40.00
 N.B. Applied Music courses which involve private study with special teachers who are not full-time members of the University faculty must incur private lesson fees paid to the instructorTerm fee \$40.00 to \$80.00

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, Vocal, Woodwind Ensembles)

Credit may be earned in Orchestra, Band, Choir, Glee Club and Ensembles 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.

Philosophy (PHL)

Dr. Richard R. Baker, *Chairman*

Professors: Baker, Dieska

Associate Professors: Baltazar, Rhodes

Assistant Professors: Bloemer, Cartagenova, Chrisman, Dombro, Edelenyi, Greene, Herbenick, Hoy, Kunkel, Monasterio, Nersoyan, O'Brien, Opalek, Petritz, Seman, Thompson, Ulrich, Wening.

Instructor: Rinderly

Courses required for a major: Phl 106, 206, 303, 304, 306, 308, 310, three electives (9 hrs.)

Courses required for a minor: Phl 106, 206, 304, 306, 308, one elective (3 hrs.)

Students should consult the chairman concerning electives.

Phl 106 and Phl 206 are prerequisites for all 300 and 400 courses.

PHL 106. BASIC PROBLEMS IN PHILOSOPHY I

THREE CREDIT HOURS

An introduction to the problem of the nature of philosophic inquiry, the problem of knowledge, the problem of being, and the problem of God.

PHL 206. BASIC PROBLEMS IN PHILOSOPHY II**THREE CREDIT HOURS**

An introduction to the problem of man, the problem of morality, and to such problems in politics, aesthetics, education, etc., as chosen by the instructor.

PHL 301. LOGIC**THREE CREDIT HOURS**

Correct methods of defining and dividing concepts and terms; analysis of propositions and their immediate implications; rules for valid inference; introduction to symbolic logic; induction; fallacies.

PHL 303. PHILOSOPHY OF NATURE**THREE CREDIT HOURS**

A consideration of the fundamental problems inherent in the physical universe and a critique of various solutions. An examination of the philosophical presuppositions and implications of contemporary physical theories. A philosophical analysis of such phenomena as motion, quantity, time and space.

PHL 304. PHILOSOPHY OF MAN**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.

PHL 306. PHILOSOPHY OF KNOWLEDGE**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.

PHL 308. PHILOSOPHY OF BEING**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.

PHL 310. PHILOSOPHY OF GOD**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.

PHL 312. 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.

PHL 350. 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.

PHL 351. 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.

PHL 352. HISTORY OF MODERN PHILOSOPHY**THREE CREDIT HOURS**

A consideration of the rise and development of modern philosophic thought from the Renaissance to the 20th century.

PHL 401H. HONORS COURSE IN METAPHYSICS THREE CREDIT HOURS
 An investigation of such special problems as the possibility and conditions of metaphysical inquiry, the proper object of metaphysics, and the methodology proper to metaphysics. By permission of the chairman.

PHL 409. RECENT PHILOSOPHY THREE CREDIT HOURS
 A consideration of the trends in philosophy since 1900, especially viewed as a logical outgrowth of the thought of Kant and of Hegel. Among the trends to be considered are Positivism, Mathematical Logic, Analytic Philosophy, Phenomenology and Existentialism.

PHL 410. HISTORY OF POLITICAL PHILOSOPHY THREE CREDIT HOURS
 A study of the principle political opinions of the Western philosophers; Plato, Aristotle, and the leading Roman, medieval, and modern political philosophers. Required of all political science majors.

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.

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*.

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*.

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*.

PHL 436. PHILOSOPHY OF DESCARTES THREE CREDIT HOURS
 A detailed examination of the logical, epistemological, psychological, and metaphysical concepts in the philosophy of Descartes, together with an exposition of his place in the history of philosophy as the "Father of Modern Philosophy".

PHL 438. PHILOSOPHY OF KANT THREE CREDIT HOURS
 A close analysis of Kant's monumental work, the *Critique of Pure Reason*, with emphasis on its metaphysical implications, followed by a brief study of Kantian ethics in the *Foundations of the Metaphysics of Morals*.

PHL 440. PHILOSOPHY OF HEGEL THREE CREDIT HOURS
 A detailed examination of Hegel's *Phenomenology of Mind*, with additional reference to his *Science of Logic*, *Lectures on the Philosophy of Religion*, and *Lectures on the History of Philosophy*.

PHL 450. SPECIAL 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. May be repeated when topic varies.

PHL 451. SEMINAR IN INDIVIDUAL PHILOSOPHERS **THREE CREDIT HOURS**

The objective of this seminar is to study in depth the thought of an individual philosopher of sufficient importance to warrant special study. May be repeated when topic varies.

PHL 455. PHILOSOPHY OF ART **THREE CREDIT HOURS**

An analysis of the nature of art, beauty, and the aesthetic judgment in the light of the philosophical principles and distinctive conditions found in each. A discussion of the permanent and inward relationship of the values of truth, goodness and beauty.

PHL 456. THE PHILOSOPHY OF CREATIVITY **THREE CREDIT HOURS**

An effort at a more adequate understanding of the process of artistic creation. Such concepts as "inspiration," "genius," "creative imagination," etc., are examined, together with an investigation of methods, techniques, and suggestions for enriching the creative dimension of one's life. Prerequisite: Consent of Instructor.

PHL 457. AESTHETICS OF THE CINEMA **THREE CREDIT HOURS**

A general discussion of the aesthetics of the cinema, using films and criticism for analysis, from Chaplin's "aesthetic existence" to the formalism of Alain Resnais. Particular attention will be given to the contemporary dichotomy between style and content. Prerequisite: permission of chairman.

PHL 458. PHILOSOPHY OF LITERATURE **THREE CREDIT HOURS**

An analysis of the structure, the creation, and the criteria of literature, with a selective study of some of the philosophical implications which underlie certain influential works from antiquity to the present.

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.

PHL 465. SPECIAL PROBLEMS IN ETHICS **THREE CREDIT HOURS**

The application of ethical principles to the special problems in the life of the individual, the family, and the state. A consideration of the values, rights, and duties involved in such problems as ownership, contracts, education, labor, war and peace, government, international law, etc.

PHL 470. CLASSICAL AMERICAN PHILOSOPHY **THREE CREDIT HOURS**

A survey of the major trends and issues of American thought from the 18th century to the present, especially as reflected in the writings of Edwards, Jefferson, Emerson, Royce, Peirce, James, Dewey, and Santayana. The development of democratic traditions; transcendentalism; the significance of recent European importations.

Physics (PHY)*Dr. Joseph J. Kepes, Chairman**Professors: L. Mann, Bueche**Associate Professors: Kepes, Schick**Assistant Professors: Bransky (visiting), Cothorn, Crivello, Frank, Graham, Kreitman, R. Mann, O'Hare, Schneider, Yaney**Instructor: Huffman*

A major in Physics should have completed as a minimum 24 hours (15 hours from Group I below and 9 hours from Group II) of upper level course work in Physics plus at least 12 hours of course work in a minor field. In particular circumstances, substitutions in other disciplines can be made in the Group II courses with permission of the Department Chairman. Students may also fulfill the minor requirement by taking at least 12 hours from the Group II and III courses below. Normally students going to do graduate study in Physics will follow this latter program, i.e., courses in Groups I, II, III (Recommended open electives in Mathematics are listed in Group IV).

<i>Group I</i>	<i>Group II</i>	<i>Group III</i>	<i>Group IV</i>
Phy 301	Phy 430	Phy 304	Mth 351
Phy 303	Phy 431	Phy 404	Mth 411
Phy 390	Phy 432	Phy 409	Mth 412
Phy 408	Phy 433	Phy 411	Mth 421
Phy 421	Phy 460	Phy 412	Mth 422
		Phy 441	
		Mth 403	
		Mth 404	

The minor can be chosen from any Department in the University with the provision that the student have the permission of the Physics Chairman and the Chairman in the minor field. This should be done some time in the Sophomore year. It is recommended that students choosing a minor use the open electives where feasible to strengthen their background in either Physics or in the minor.

PHY 100. SEMINAR**NO CREDIT**

The student has an opportunity to acquaint himself with the broad spectrum of modern science through periodic meetings with the entire department. Films, talks, book reviews, and informal discussions. Required of Freshmen and Sophomores in physics.

PHY 105. THE PHYSICAL SCIENCES**FOUR CREDIT HOURS**

Applies fundamental principles of nature to physics, chemistry, astronomy, meteorology. Gives the student a broad understanding of man's physical environment. Four class periods per week. Does not satisfy science requirement in Arts and Sciences.

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 151L. GENERAL PHYSICS LABORATORY**ONE CREDIT HOUR**

A course designed to accompany Phy 151. Designed to verify and apply theory through a selected program of experiments and demonstrations. Corequisite: Phy 151. One two-hour period per week. *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 152L. GENERAL PHYSICS LABORATORY**ONE CREDIT HOUR**

A course designed to accompany Phy 152. Designed to verify and apply theory through a selected program of experiments. Corequisite: Phy 152. One two-hour period per week. *Second Term, Each Year*

PHY 196. GENERAL PHYSICS I MECHANICS**THREE CREDIT HOURS**

An introductory course in Mechanics using the calculus. Three lectures, one and $\frac{1}{4}$ hours recitation per week. Corequisite: Mth 118 or Mth 128.

PHY 196H. GENERAL PHYSICS I MECHANICS (HONORS)**THREE CREDIT HOURS**

An introductory course in Mechanics for students with a strong background in Physics. Three lectures, one and $\frac{1}{4}$ hours recitation per week. By invitation only.

PHY 196L. GENERAL PHYSICS LABORATORY I**ONE CREDIT HOUR**

Introduction to laboratory methods, handling of data, analysis, experiments in classical mechanics for students in Science. One three hour period per week. Corequisite: Phy 196.

PHY 201. GENERAL PHYSICS**THREE CREDIT HOURS**

A discussion of mechanics and heat without the formalism of the calculus. Three class periods per week.

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.

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.

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.

PHY 207. GENERAL PHYSICS II ELECTRICITY AND MAGNETISM**THREE CREDIT HOURS**

The basic principles of electricity and magnetism are studied. Three lectures, one and $\frac{1}{4}$ hours recitation per week. Prerequisite: Phy 196, Mth 128.

PHY 207H. GENERAL PHYSICS II ELECTRICITY AND MAGNETISM (HONORS)**THREE CREDIT HOURS**

Basic principles of electricity and magnetism. Three lectures, one and $\frac{1}{4}$ hours recitation. per week. By invitation only.

PHY 207L. GENERAL PHYSICS LABORATORY II ONE CREDIT HOUR
 Open-ended experiments in mechanics and electricity and magnetism, tailored to the background of students. One three hour period per week. Prerequisite: Phy 196L; Corequisite: Phy 207.

PHY 208. GENERAL PHYSICS III MECHANICS OF WAVES THREE CREDIT HOURS
 Introduction to wave phenomena including sound, light and matter waves leading to basic concepts in Modern Physics. Three lectures per week. Prerequisite: Phy 207, Mth 129.

PHY 208H. GENERAL PHYSICS III MECHANICS OF WAVES (HONORS) THREE CREDIT HOURS
 An introduction to Modern Physics through a study of wave phenomena including sound, light and matter waves. Three class meetings per week. By invitation only.

PHY 208L. GENERAL PHYSICS LABORATORY III ONE CREDIT HOUR
 The students perform a number of experiments emphasizing Modern Physics. One three-hour period per week. Prerequisite: Phy 207L; Corequisite: Phy 208.

PHY 301. STATISTICAL THERMODYNAMICS THREE CREDIT HOURS
 The thermodynamical description of many particles systems obtained from microscopic statistical considerations. Topics include: laws of thermodynamics, kinetic theory of dilute gases and Fermi-Dirac and Bose Einstein statistics. Three class periods per week. Corequisite: Mth 219 or Mth 229.
First Term, Each Year

PHY 303. INTERMEDIATE MECHANICS I THREE CREDIT HOURS
 The fundamental concepts of mechanics. The topics covered include virtual work, kinematics, special theory of relativity, Lagrange's equation and central forces, particle dynamics. Three class periods per week. Corequisite: Mth 219 or Mth 229.
First Term, Each Year

PHY 304. INTERMEDIATE MECHANICS II THREE CREDIT HOURS
 A continuation of Phy 303. Topics include scattering of particles, fluid flows, rotating systems, rigid bodies, small oscillations and transition to wave mechanics. Three class periods per week. Prerequisite: Phy 303.
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 228, Phy 208.

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.

PHY 390. INTRODUCTION TO QUANTUM MECHANICS THREE CREDIT HOURS
 Basic postulates of Quantum Mechanics, applications made to atomic physics. Prerequisite: Phy 303, or consent of instructor.
Second Term, Each Year

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. Prerequisite: Phy 208; Corequisite: Mth 229.

- PHY 408. INTERMEDIATE 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. Prerequisite: Phy 207. *First Term, Each Year*
- PHY 409. INTERMEDIATE 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: Ph 408. *Second Term, Each Year*
- PHY 411. THEORETICAL PHYSICS I** THREE CREDIT HOURS
Calculational techniques in Modern Physics, complex variable theory, dispersion relations, linear vector spaces, operators, matrix mechanics, eigenvalue equations. Prerequisites: Mth 403-4, or consent of department.
- PHY 412. THEORETICAL PHYSICS II** THREE CREDIT HOURS
Orthogonal functions, Dirac delta function, Laplace's equation, Poisson's equation, D'Alembert's equation, transformation theorems, Green's function. Prerequisites: Mth 403-4, or consent of department.
- 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 390 or consent of department.
- PHY 421. 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 390 or consent of instructor. *First Term, Each Year*
- PHY 430. ADVANCED LABORATORY I**
A laboratory course in basic electronic circuit elements and devices. One four hour period per week.
- PHY 430H. INDEPENDENT RESEARCH I** TWO CREDIT HOURS
Student performs independent experiments in electronics. Approximately four hours per week. Prerequisite: Previous experience in circuitry, permission of departmental chairman required.
- PHY 431. ADVANCED LABORATORY II** 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.
- PHY 431H. INDEPENDENT RESEARCH II** TWO CREDIT HOURS
Student performs independent experiments in classical physics. Approximately four hours per week. By invitation only.
- PHY 432. ADVANCED LABORATORY III** TWO CREDIT HOURS
A continuation of Phy 431 with emphasis on solid state physics but may be taken without having had Phy 431. One four-hour period per week. Corequisite: an advanced course in physics.

PHY 432H. INDEPENDENT RESEARCH III

TWO CREDIT HOURS

Senior thesis, a laboratory problem in solid state, nuclear physics or other modern research areas. By invitation only.

PHY 433. ADVANCED LABORATORY IV

TWO CREDIT HOURS

A continuation of Phy 431, 432, but may be taken without having had either. Basic experiments in Nuclear Physics. One four-hour period per week. Corequisite: an advanced course in physics.

PHY 433H. INDEPENDENT RESEARCH IV

TWO CREDIT HOURS

Senior thesis, a laboratory problem in solid state, nuclear physics or other modern research areas. By invitation only.

PHY 437. MODERN PHYSICS FOR ENGINEERS

THREE CREDIT HOURS

Basic postulates of Quantum Mechanics, Special Relativity with practical application to Atomic, Nuclear and Solid State Physics. Prerequisite: Phy 208.

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. Prerequisite: Phy 390 or consent of instructor.

PHY 441. TOPICS IN MODERN PHYSICS

THREE CREDIT HOURS

Includes elements of Modern Optics, Solid State and other selected subjects. Prerequisite: Phy 390 or equivalent, consult chairman of department.

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: Phy 301, 303, 351, 390, or consent of department.

PHY 451. INTERMEDIATE PHYSICS I

FOUR CREDIT HOURS

The practical nature of matter; application to classical mechanics, astronomy, special relativity and modern physics. Three hours of lecture and three hours of laboratory experience, demonstrations and presentation of topical reports. Prerequisite: Phy 208 and Mth 219 or equivalent.

PHY 452. INTERMEDIATE PHYSICS II

FOUR CREDIT HOURS

The electrical and magnetic nature of the universe; problems in basic electricity and electronics with applications made first to modern circuits and atomic physics. Three hours of lecture and three hours of laboratory experience and demonstrations. Corequisite: Phy 451.

PHY 453. INTERMEDIATE PHYSICS III

FOUR CREDIT HOURS

The nature of waves as applied to optics, quantum mechanics, nuclear physics and elementary particles. Three hours of lecture and three hours of laboratory experience, demonstrations and presentation of optical reports. Prerequisite: Phy 451-2.

PHY 460. SEMINAR**ONE CREDIT HOUR**

Presentation of papers by undergraduate students, faculty and guest lecturers on topics of concern to the modern physicist. Reviews of books and films appropriate to the group are also given. Two meetings per week. Required of Juniors and Seniors.

PHY 499. SPECIAL PROBLEMS IN (NAMED AREA) HONORS**ONE TO SIX CREDIT HOURS**

Laboratory, tutorial or library work in one of the selected topics (a) Solid State Physics (b) Polymer (c) X-Rays (d) Nuclear Physics (e) Modern Optics (f) Theoretical Physics (g) General Physics. Taken with permission of department chairman.

Police Administration (PAD)

Dr. Norbert C. Brockman, S.M., *Coordinator*

Part-time Instructors: Clift, Makley, Stamm

Students in the B.A. programs may minor in Police Administration. A minor requires fourteen hours, which is to include Pad 200 and Pad 313.

PAD 101. POLICE PHYSICAL TRAINING**FOUR CREDIT HOURS**

Replaces Phe 101-102, 201-202 for police officers who have completed an approved police academy program. Elements of first aid and health, Judo instruction, and general physical training.

PAD 150. POLICE OPERATIONS**THREE CREDIT HOURS**

The process of law enforcement from detection of crime to parole, evaluation of police services, patrol functions.

PAD 200. INTRODUCTION TO POLICE ADMINISTRATION**TWO CREDIT HOURS**

Principles of organization and management as applied to police administration. Emphasis on management process rather than structures.

PAD 250. POLICE SYSTEMS**THREE CREDIT HOURS**

Study of the organization of police agencies at national, state, and local levels, with consideration of areas of cooperation and relationships with other areas of administration.

PAD 301. CRIMINALISTICS**THREE CREDIT HOURS**

The application of scientific principles to police work. Students will become familiar with laboratory procedures and basic chemical tests.

PAD 305. TRAFFIC ADMINISTRATION**TWO CREDIT HOURS**

Problems of traffic administration and public safety. Accident prevention, licensing, safety education, and traffic engineering.

PAD 309. CRIMINAL INVESTIGATION**TWO CREDIT HOURS**

The application of various investigatory techniques to criminal situations. Some consideration of accident investigation.

PAD 313. CRIMINAL LAW AND PROCEDURE THREE CREDIT HOURS
Principles of criminal liability, preparation of case materials, court procedures and case disposition, and basic rules of evidence are considered.

PAD 320. LAW OF EVIDENCE TWO CREDIT HOURS
A comprehensive study of the rules of evidence; evaluation of evidence and proof; physical evidence; testimony.

PAD 350. READINGS IN POLICE ADMINISTRATION TWO CREDIT HOURS
Directed readings in police administration, with emphasis on problems of supervision and recent legal developments.

PAD 360. JUVENILE PROCEDURES TWO CREDIT HOURS
A study of juvenile problems and the role of police in their management and control, and the modification of police procedures in juvenile crime prevention.

PAD 401. ADVANCED POLICE ADMINISTRATION TWO CREDIT HOURS
Principles of supervision and control procedures. Teaching of police academy programs. Comparative study of police training systems.

PAD 410. CORRECTIONAL ADMINISTRATION TWO CREDIT HOURS
The administration of correctional institutions and other detention facilities. Special problems of the mentally disturbed. Rehabilitation and parole administration.

PAD 425. COMMUNITY RELATIONS TWO CREDIT HOURS
Contemporary problems of police-community relations; policy development and implementation; training programs.

PAD 450. PRACTICUM IN POLICE ADMINISTRATION TWO CREDIT HOURS
Intensive studies of particular practical problems in police administration. Field trips, lectures, and readings are combined to give both a practical and theoretical orientation.

PAD 460. RESEARCH IN POLICE ADMINISTRATION TWO CREDIT HOURS
Directed research on specific problems, enabling the student to take responsibility for investigating an area of particular interest to him. A field project will be required.

PAD 470. SEMINAR IN POLICE ADMINISTRATION TWO CREDIT HOURS
A coordinating seminar to integrate the studies in Police Administration with contemporary social science, with a focus on community mobilization for crime prevention.

Political Science (POL)

Dr. Norbert C. Brockman, S.M., Chairman

Professors: Rose, Steinbicker

Associate Professors: Brockman, Liebler, Patyk

Assistant Professors: Abbott, Kerns

Lecturer: Carrell

Part-time Instructor: Wilson

A major in Political Science includes Pol 101 and Pol 201, plus eight advanced courses.

One course must be chosen from each of the following areas, and residents of Ohio must choose Pol 302 as part of the major sequence. A minor in Political Science includes Pol 201 and any four advanced courses.

<i>Group I</i> <i>Government</i>			<i>Group II</i> <i>International</i>		<i>Group III</i> <i>Theory</i>		<i>Group IV</i> <i>Research</i>	
302	312	410	306	402	414	471	421	431
303	360	411	314	407	417	475	422	495
310	401	450	316	408				

POL 101. INTRODUCTION TO POLITICAL SCIENCE THREE CREDIT HOURS
An introduction to political phenomena from a number of approaches: behavioral, institutional, and normative.

POL 101H. INTRODUCTION TO POLITICAL SCIENCE (HONORS) THREE CREDIT HOURS
By permission only. Limited enrollment.

POL 201. AMERICAN NATIONAL GOVERNMENT 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 201H. AMERICAN NATIONAL GOVERNMENT (HONORS) THREE CREDIT HOURS
By permission only. Limited enrollment.

POL 300. PRINCIPLES OF GOVERNMENT THREE CREDIT HOURS
An advanced survey of American governmental systems, with emphasis on the federal establishment. Not open to majors or minors in Political Science, nor to students who have taken Pol 201.

POL 301. INTRODUCTION TO LAW THREE CREDIT HOURS
A study of the American legal system, with emphasis on the courts and the bar. The criminal and civil legal processes are taken in detail.

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 303. STATE AND LOCAL GOVERNMENT THREE CREDIT HOURS
A comparative survey of the governments of the states and their local jurisdictions, with emphasis on current developments and issues. Local government is treated within the context of the federal system.

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.

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. Prerequisite: Pol 201.

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. Prerequisite: Pol 201.

POL 314. INTERNATIONAL RELATIONS **THREE CREDIT HOURS**
An exposition of the dynamic forces influencing nations in their conduct of world affairs.

POL 314H. INTERNATIONAL RELATIONS (HONORS) **THREE CREDIT HOURS**
By permission only. Limited enrollment.

POL 316. INTERNATIONAL ORGANIZATIONS **THREE CREDIT HOURS**
A study of origins and evolution of organized international collaboration with an emphasis on the United Nations.

POL 360. URBAN POLITICS **THREE CREDIT HOURS**
Examination of contemporary urban problems and the response of the governmental and political system. Locus of power and decision-making; community mobilization; citizen participation.

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. Prerequisite: Pol 201.

POL 402. WESTERN EUROPEAN GOVERNMENTS **THREE CREDIT HOURS**
A comparison of the governments of the United Kingdom, France, Germany, and others. Operation of legislative, administrative and judicial institutions.

POL 403. RUSSIA AND EAST EUROPE **THREE CREDIT HOURS**
A study of the philosophy, structure, and practical operation of the political and economic institutions of the Soviet Union and other countries with a similar system.

POL 407. POLITICAL GEOGRAPHY **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.

POL 410. PUBLIC ADMINISTRATION **THREE CREDIT HOURS**
A study of basic principles of organization and management in executive departments of government at all levels. Questions of planning, leadership, and control are also considered. Prerequisite: Pol 201.

POL 411. THE AMERICAN CONSTITUTION **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. Prerequisite: Pol 201.

- POL 414. PHILOSOPHY OF LAW** THREE CREDIT HOURS
 Nature of law; natural and positive law; implications and juridical origin and effect of law; justice; origin of law; legal reasoning.
- POL 416. LATIN AMERICAN GOVERNMENTS** THREE CREDIT HOURS
 An examination of the social, cultural, and political systems of the American states with special consideration of recent developments.
- 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.
- POL 417H. HISTORY OF POLITICAL PHILOSOPHY (HONORS)** THREE CREDIT HOURS
 By permission only. Limited enrollment.
- POL 421. GOVERNMENT SEMINAR** THREE CREDIT HOURS
 Research and conferences on current problems and issues in Political Science. Prerequisite: Permission of professor.
- 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.
- POL 431. RESEARCH IN POLITICAL SCIENCE** THREE CREDIT HOURS
 Individual research on selected topics, under the direction of a member of the faculty.
- POL 431H. RESEARCH IN POLITICAL SCIENCE (HONORS)** THREE CREDIT HOURS
 By permission only.
- POL 450. CIVIL LIBERTIES** THREE CREDIT HOURS
 An analytical examination of civil liberties in the United States with special emphasis upon the Supreme Court as arbiter in the endless conflict between the demand for individual liberty and the needs of constitutional authority. Prerequisite: Pol 201.
- POL 460. GOVERNMENT AND POLITICS OF THE FAR EAST** THREE CREDIT HOURS
 A study of the political systems of Japan and China, with some consideration of the smaller states of the Far Eastern area.
- POL 465. AFRICAN POLITICAL SYSTEMS** THREE CREDIT HOURS
 A survey of the governments and politics of Africa, with emphasis on Black Africa. Some consideration is given to Pan-African movements.
- POL 467. POLITICS OF THE NEAR EAST** THREE CREDIT HOURS
 Study of the political systems, problems, and philosophies of the Near East. Problems of Arab unity and Middle East international relations are considered.
- POL 471. CATHOLIC POLITICAL THOUGHT** THREE CREDIT HOURS
 A study of basic Catholic social doctrine, with emphasis on the teachings of recent Popes on political and economic questions and movements, in the light of contemporary Catholic theology.

POL 475. AMERICAN POLITICAL THOUGHT

THREE CREDIT HOURS

A careful study of the significant ideas that have shaped the American political system as it is today. Concentration on the impact of puritanism, the American Revolution, Hamiltonianism, Jeffersonianism, racism, nativism, social Darwinism, the New Deal and contemporary liberalism and conservatism.

POL 480. POLITICAL BEHAVIOR

THREE CREDIT HOURS

A survey of the important literature and an analysis of the relevant concepts and techniques in the behavioral approach to political science. Emphasis on the importance of surveys, quantitative analysis and the psychology of political relationships.

POL 495. INTERNSHIP

THREE CREDIT HOURS

Supervised experience in government agencies and programs. Pre-law students are assigned to law firms and judicial chambers. Prerequisite: permission of supervising professor.

Psychology (PSY)

Dr. Samuel M. Bower, Acting Chairman

Mr. L. T. Kempel, Administrative Assistant to Chairman

Professor: Rancurello

Associate Professor: Noland

Assistant Professors: Bower, Davis, Rosa, Shine, Upson

Instructors: Kempel, Rueth

Part-time Instructors: Debons, Kuntz, Matthews, Riley, Scheidler, Smith, Stevens, Zink

Lecturers: Erlick, Hanes, Hughes, Kuhr

Psychology majors must complete the required courses as follows: Psy 201, 302, and 308. In addition to these basic courses, the student must elect in consultation with his advisor, elective credits in Psychology corresponding to the program he selects. Majors will be assigned to individual advisors. They should contact the department chairman for assignments as soon as possible. A Psychology major will be advised to follow one of three psychology programs. The first leads to a B.S. degree, the second to a B.S. degree with Biology emphasized, and the third to a B.A. degree which provides general training and allows for an allied minor in an Arts & Sciences department. Students with a minor in Psychology are required to complete a minimum of 15 credit hours in psychology courses, including Introductory Psychology.

All 400 level courses are open for graduate credit to candidates for a Master's degree in Psychology upon permission of advisor, but not to exceed six (6) credit hours.

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. Required of all Psychology majors.

PSY 302. ELEMENTARY STATISTICS **THREE CREDIT HOURS**
Measures of central tendency, dispersion, and correlation. Basic concepts involved in estimating parameters and testing hypotheses. Presumes usual high school training in mathematics. Required of all Psychology majors. Prerequisite: Psy 201 or equivalent.

PSY 303. EXPERIMENTAL DESIGN AND INFERENCE **THREE CREDIT HOURS**
Develops rationale for the design and interpretation of experiments, including analysis of variance, correlational analyses, and data transformations. Prerequisite: Psy 302 or equivalent.

PSY 304. ADOLESCENT PSYCHOLOGY **THREE CREDIT HOURS**
Treats interrelated physical, social, and emotional development of adolescents. Child Psychology is recommended as prerequisite though not required. Prerequisite: Psy 201 or equivalent.

PSY 306. CHILD PSYCHOLOGY **THREE CREDIT HOURS**
A longitudinal study of childhood from birth to 12 years stressing the importance of developmental sequences in motor, emotional, social, language, intelligence and imaginative life. Concentrates on recent research findings in this field. Prerequisite: Psy 201 or equivalent.

PSY 308. EXPERIMENTAL PSYCHOLOGY **THREE CREDIT HOURS**
Introduces the student to the basic concepts of scientific methods as applied to psychological problems. Prerequisite: Psy 302. Required of all Psychology majors.

PSY 308L. EXPERIMENTAL PSYCHOLOGY LABORATORY **ONE CREDIT HOUR**
Experiments are conducted to familiarize student with the application of scientific methodology to the study of psychological processes of man. Must be taken with lecture course. One two-hour laboratory period each week.

PSY 311. DYNAMICS OF ADJUSTMENT **THREE CREDIT HOURS**
Explains the continuous adjustment process through an examination of psychological, social, biological, philosophical and other interrelated conceptions. Emphasizes personality dynamics and effective behavior. Prerequisite: Psy 201 or equivalent.

PSY 313. BEHAVIOR DISORDERS **THREE CREDIT HOURS**
Examines patterns of disordered behavior. Discusses cultural, social, psychological and biological relationships and approaches to behavior modification. Prerequisite: Psy 311 or permission of the instructor.

PSY 314. COGNITIVE PROCESSES **THREE CREDIT HOURS**
The cognitive approach to the mental functions of attention, perception, memory, imagery, and thought. Theoretical structures including neuron modeling of higher cognitive and experiential process. Prerequisite: Psy 201.

PSY 315. PERSONALITY **THREE CREDIT HOURS**
Introduction to the scientific study of personality as reflected in both clinical and experimental findings. Prerequisite: Psy 311, or permission of the instructor.

PSY 321. HUMAN FACTORS ENGINEERING **THREE CREDIT HOURS**

Designed to provide engineer and psychologist with essential psychological concepts and methods to optimize use of men and equipment. Principles governing design of equipment which account for the capacities and limitations of human processes are outlined, and discussed within the framework of prevailing man-machine systems. Prerequisite: Psy 201.

PSY 321L. HUMAN FACTORS ENGINEERING LABORATORY **ONE CREDIT HOUR**

Selected experiments on displays and other equipment to illustrate the application of human factors principles to design of equipment. Must be taken with lecture course. One two-hour laboratory period each week.

PSY 322. LEARNING **THREE CREDIT HOURS**

The foundations of the learning process. Classical and instrumental and variants of each are considered prior to investigations of complex learning. Prerequisite: Psy 201.

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, and aptitude. Prerequisite: Psy 302 or equivalent.

PSY 406. COMMUNITY PROBLEMS AND PSYCHOLOGY **THREE CREDIT HOURS**

A more advanced course in the practical application of psychology to the home, industry, marketing and advertising, law, criminology, social relations, medicine, music, art and warfare. Prerequisite: Psy 201.

PSY 407. PSYCHOLOGY OF EXCEPTIONAL CHILDREN **THREE CREDIT HOURS**

An evaluation of the field of atypicalities existing throughout childhood. This includes intellectual superiority and mental retardation. Stress is placed on deviations existing because of organic pathology resulting in varying kinds of mental and physical aberrations. Etiology, diagnosis, and testing techniques are included. Prerequisite: Psy 306.

PSY 408. SOCIAL PSYCHOLOGY **THREE CREDIT HOURS**

Presents systematic treatment of social forces affecting human behavior. Emphasizes methods of social psychology. Prerequisite: Psy 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 in psychology or with permission of instructor.

PSY 412. INTERVIEWING AND COUNSELING **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 412L. INTERVIEWING AND COUNSELING LABORATORY **ONE CREDIT HOUR**

Demonstrations, role-play and interviewing practice are used to give students meaningful experiences in this area. Two hours per week. Must be taken with lecture course (Psy 412).

PSY 415. SMALL GROUP DYNAMICS**TWO CREDIT HOURS**

Experimental and experiential analysis of the dynamics of small group behavior. Interpersonal behavior at various levels and in differing settings will be investigated, e.g., school, work, family; formal and informal organization. Introduction to sensitivity training and group therapy. Permission of instructor required.

PSY 415L. LABORATORY IN SMALL GROUP DYNAMICS**ONE CREDIT HOUR**

Designed to provide demonstrations and experiences in group dynamics, group therapy, sensitivity training and the diagnosis and restructuring of group behavior. Limited to ten students. One two-hour lab period per week.

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, and incentives. Prerequisite: Psy 302.

PSY 451. DIFFERENTIAL PSYCHOLOGY**THREE CREDIT HOURS**

Discusses the problems, methods and results of differential psychology, including the nature and distribution of individual differences, role of heredity and environment, organization of psychological traits, sex differences, and characteristics of racial, national and other common groupings.

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: Psy 201.

PSY 465. PSYCHOLOGY AND RELIGION**THREE CREDIT HOURS**

The conscious and unconscious mental processes which together modify the religious experience: the rational, irrational, personal and social characteristics of religious experience and the manner in which this experience emanates from a total psychic entity. Prerequisite: 311 or 315.

PSY 490. SPECIAL PROBLEMS IN PSYCHOLOGY (HONORS)**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 (HONORS)**ONE CREDIT HOUR PER SEMESTER**

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: M. Civile, V. Miller

Instructors: J. Huff, J. Webster

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. FUNDAMENTAL SHORTHAND

THREE CREDIT HOURS

Gregg Shorthand is the method employed in this course. Using the Diamond Jubilee series, the entire theory is covered during the first semester. Transcription is introduced. Five class periods a week.

SEC 101A. FUNDAMENTAL SHORTHAND (REFRESHER)

THREE CREDIT HOURS

Shorthand Review. Emphasis is placed upon the mastery of the basic principles, brief forms, and phrasing of Gregg Diamond Jubilee shorthand through immediate reading and writing practice. 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 mastered. Additional emphasis is placed on the function and care of various models and makes of typewriters. Manuscript writing, tabulation, and letter writing are introduced. Five class periods a week.

SEC 103A. FUNDAMENTAL TYPEWRITING (REFRESHER)

THREE CREDIT HOURS

Typewriting Review. A thorough review of the keyboard and its operative parts is followed by a careful analysis of typewriting techniques and work habits. Manuscript writing, tabulation, and letter writing are introduced. Five class periods a week.

SEC 104. INTERMEDIATE TYPEWRITING

THREE CREDIT HOURS

The development of further basic skill in the operation of the typewriter. Introduces basic office typing problems and stresses fundamentals needed in office employment. Five 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.

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

This course is intended to develop greater competency in dictation and transcription. It qualifies the student for high-level positions of responsibility. Five class periods a week.

SEC 203. ADVANCED TYPEWRITING THREE CREDIT HOURS
 Prepares for employment in the office occupations. Stresses advanced typing problems and emphasizes techniques, knowledges, and skills involved in office work. Five class periods a week.

SEC 204. PRODUCTION TYPEWRITING THREE CREDIT HOURS
 Specifically designed for job preparation in high-level office employment. Five class periods a week.

SEC 205. SECRETARIAL PRACTICE THREE CREDIT HOURS
 A study of filing techniques and duplicating processes. Dictating-transcribing machines are used; principles of data processing are introduced. Four class periods a week. Prerequisite: Intermediate Typewriting.

SEC 206. ADVANCED SECRETARIAL PRACTICE THREE CREDIT HOURS
 Advanced training in duplication processes, dictating-transcribing machines, and communications. Four class periods a week. Prerequisite: Sec 205 (Secretarial Practice).

SEC 207. BUSINESS MACHINES THREE CREDIT HOURS
 The student is given the opportunity to become acquainted with and correctly use the principal types of ten key adding machines, full-bank adding machines, printing calculators, rotary calculators, and key-driven calculators. Three class periods a week. Prerequisite: Sec 110 (Secretarial Mathematics) or equivalent.

SEC 208. 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. Prerequisite: Sec 110 (Secretarial Mathematics) or equivalent.

SEC 209. 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.

Sociology, Anthropology, and Social Work

Dr. Mary Jo Huth, Chairman

Full-time Faculty:

Professor: S. C. Lee

Associate Professor: M. Huth

Assistant Professors: Bregenzer, Fakhouri, McDonald, Shaskolsky, Thomas

Part-time Faculty: Balachandran, Curran, Dickson, E. Huth, Merrick, Ward

STATEMENT OF PURPOSE: The curriculum of the Department of Sociology, Anthropology and Social Work is organized around eight major fields: anthropology, pre-professional social work, social organization, social disorganization, social change, population and ecology, methods, and sociological theory. The department's objectives are: (1) to promote understanding of the social character of human life in both primitive and advanced societies through an analysis of social structures, interaction processes and

institutions; (2) to present a balanced perspective of current social issues and problems; and (3) to encourage the objective study of society by instruction in scientific research methods. Courses in the Department of Sociology, Anthropology, and Social Work are designed for various groups of students: (1) those desiring scientific knowledge of social relationships as a part of their general equipment for living; (2) those planning to enter a public service profession such as social work, nursing, medicine, dentistry and law; (3) those expecting to engage in a form of public relations work that will require a broad grasp of the nature of society, public opinion, and social change; (4) those anticipating a career in social research and planning; (5) those looking forward to the teaching of social studies, social work, sociology or anthropology; and (6) those intending to pursue graduate training in social work, sociology or anthropology.

REQUIREMENTS FOR MAJORS AND MINORS

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. Majors must complete 30 hours of course work in the department, including Sociology 205, 401-2, 415, 420, and 422; Soc. 204 and any 300 or 400 level sociology or anthropology courses may be chosen to complete the remaining 12 hours. Minors must complete 15 hours in the department, including Sociology 205.

Major or Minor in Anthropology: Majors and Minors in Anthropology 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. Majors must complete 30 hours of course work in the department, including Sociology 401-2 and Anthropology 320, 321, 322, 400, 403, 406, 408. Minors must complete 15 hours in the department, including Anthropology 320.

Major in Social Work: The Department of Sociology, Anthropology and Social Work 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. Majors in Social Work should consult the chairman of the department in planning their course programs. Forty-five (45) hours of course work must be completed in the department, including Soc 205 and 401-2; Ant 320; and SW 305, 306, 418, 424, and 432.

SOCIOLOGY COURSES

SOC 204. MODERN SOCIAL PROBLEMS

THREE CREDIT HOURS

The study of the extent, causes, prevention and treatment of abnormal conditions affecting contemporary society. Will be accepted as upper division elective course; required in most Bachelor of Arts degree programs.

SOC 205. PRINCIPLES OF SOCIOLOGY

THREE CREDIT HOURS

The basic course in the principles of sociology: an introduction to the fundamental concepts of sociology. Restricted to Sociology Majors and Minors and to Social Work Majors, for whom the course is required.

SOC 301. MARRIAGE AND THE FAMILY **THREE CREDIT HOURS**
A fundamental course concerned with mate selection, husband-wife relationships, parenthood, family disorganization and rehabilitation.

SOC 303. POPULATION **THREE CREDIT HOURS**
The study of population growth, composition, distribution, problems and theory, with special reference to the United States. *Second Term, Each Year*

SOC 307. CRIMINOLOGY AND PENOLOGY **THREE CREDIT HOURS**
The study of crime: its extent, etiology, prevention and treatment; probation and parole; punishment theory and practice in historical perspective; prison reform and the objectives of modern penology. *Second Term, Each Year*

SOC 313. JUVENILE DELINQUENCY **THREE CREDIT HOURS**
Analysis of the relationship of the home, school, church, peer group, neighborhood, mass media and other elements in the community—the child guidance clinic, detention home, and juvenile court—to delinquency as regards its causes, prevention and treatment. *First Term, Each Year*

SOC 315. INDUSTRIAL SOCIOLOGY **THREE CREDIT HOURS**
An analysis of the characteristics of industrial society; occupational roles and relationships; technological progress and its repercussions; industrial relations problems. *Second Term, Each Year*

SOC 318. SOCIAL STRATIFICATION **THREE CREDIT HOURS**
Status, class, and social mobility in selected societies; conditions affecting the flexibility of a society's stratification system; the influence of class position on life habits; implications for research and social policy. *First Term, Each Year*

SOC 325. AMERICAN ETHNIC AND RACIAL MINORITIES **THREE CREDIT HOURS**
The study of the cultures of the major immigrant and racial groups in this country and of their assimilation into the dominant culture. *First Term, Each Year*

SOC 328. COLLECTIVE BEHAVIOR **THREE CREDIT HOURS**
The nature of crowds, mobs, manias, panics, fashions, fads, social movements, reforms, and revolutions; consideration of public opinion and propaganda in relation to these phenomena. *Second Term, Each Year*

SOC 401-2. SOCIAL RESEARCH METHODS AND STATISTICS **SIX CREDIT HOURS**
Principal methodological approaches and basic statistical techniques in social research. Required of Sociology, Anthropology, and Social Work Majors. *First and Second Terms, Each Year*

SOC 412. SCHOOL AND SOCIETY **THREE CREDIT HOURS**
Teacher-student, teacher-administration, and school-community relationships; educational processes, deviant behavior in schools, education for social responsibility. *Second and Third Terms, Each Year*

SOC 415. SENIOR SEMINAR IN SOCIOLOGY **THREE CREDIT HOURS**
Individual and group projects developed around such topics as: Marriage and Family Problems, Urban Renewal, and Deviant Behavior. Required of Sociology Majors. *First and Second Terms, Each Year*

SOC 420. CLASSICAL SOCIOLOGY THEORY THREE CREDIT HOURS
 Examination of the important questions concerning man's relationship to society, drawing upon the classical literature of the Western tradition. Required of Sociology Majors.
First Term, Each Year

SOC 422. CONTEMPORARY SOCIOLOGY THEORY THREE CREDIT HOURS
 Consideration of leading sociological theorists' works and of major trends in sociological thought during the 19th and 20th centuries. Required of Sociology Majors.
Second Term, Each Year

SOC 426. URBAN SOCIOLOGY THREE CREDIT HOURS
 Physical and social characteristics of urban areas; urban ecology; major problems of urban life; urban planning and renewal.
First Term, Each Year

SOC 435W. HUMAN RELATIONS WORKSHOP SIX CREDIT HOURS
 The objective of this workshop is to provide an opportunity for gaining greater knowledge and understanding of the principles and techniques leading to good human relations. Causes of tension and conflict in American society are examined and effective solutions for interpersonal and intergroup problems will be studied and evaluated. Lectures by the workshop staff and by community leaders, discussions in small groups, individual projects, demonstration of audio-visual materials, field trips, library research, daily lunch together and a picnic are all considered integral facets of the workshop process.
Third Term, Each Year

ANTHROPOLOGY COURSES

ANT 320. INTRODUCTION TO CULTURAL ANTHROPOLOGY THREE CREDIT HOURS
 Survey of man's adaptation to, and creation of his environment by means of culture. A prerequisite for all specialized courses in Anthropology, except 321; required of Anthropology Majors and Minors and of Social Work Majors.
First and Second Terms, Each Year

ANT 321. INTRODUCTION TO PHYSICAL ANTHROPOLOGY AND ARCHAEOLOGY THREE CREDIT HOURS
 Survey of man's biological and cultural evolution from pre-human ancestors until the development of settled city-states. Required of Anthropology Majors.
First and Second Terms, Each Year

ANT 322. CULTURE AND PERSONALITY THREE CREDIT HOURS
 The development of personality in relation to patterns of culture and subcultures in which one grows up; materials are drawn from both literate and non-literate societies. Required of Anthropology Majors.
First Term, Each Year

ANT 400. LANGUAGE AND CULTURE THREE CREDIT HOURS
 Introduction to the scientific study of language and its relationship to other aspects of human behavior. Required of Anthropology Majors.
Second Term, Each Year

ANT 403. PRIMITIVE RELIGION THREE CREDIT HOURS
 Comparative study of the religious beliefs and practices of non-literate peoples of the world. Required of Anthropology Majors.
Second Term, Each Year

ANT 408. CULTURE AREA STUDIES**THREE CREDIT HOURS**

One major cultural area of the world—North America, South America, the Middle East, Africa, Asia, or Oceania—is studied each time the course is offered. Required of Anthropology Majors.

ANT 433. ANTHROPOLOGICAL FIELD WORK**SIX CREDIT HOURS**

Formulation and carrying out of a research design in archaeology, physical anthropology, linguistics, or cultural anthropology. Prerequisite: consent of instructor.

*Third Term, Each Year***SOCIOLOGY OR ANTHROPOLOGY COURSES****SOC OR ANT 406. SOCIAL CHANGE****THREE CREDIT HOURS**

The process of social change in the modern world; culture lag and conflict of norms; individual and social problems arising from conflicting systems of values and norms. Required of Anthropology Majors.

*First Term, Each Year***SOC OR ANT 439. SEMINAR IN COMMUNITY DEVELOPMENT****THREE CREDIT HOURS**

This seminar will introduce the student to the basic concepts of community, with a focus on their application to community planning and action.

SOCIAL WORK COURSES**S.W. 305. INTRODUCTION TO SOCIAL WORK****THREE CREDIT HOURS**

A comprehensive survey of social work, including social casework, social group work, community organization, social research, social action, and social administration. A prerequisite for specialized courses in Social Work.

*First and Second Terms, Each Year***S.W. 306. CASEWORK****THREE CREDIT HOURS**

An introduction to the basic principles and processes involved in helping people solve their problems; the techniques of interviewing and history-making; the relationship between caseworker, client and community; a critical evaluation of referral and treatment plans. Required of Social Work Majors.

*First and Second Terms, Each Year***S.W. 418. COMMUNITY ORGANIZATION****THREE CREDIT HOURS**

The mobilization of community resources to meet community needs; methods for developing, maintaining, extending, and coordinating social welfare agencies. Required of Social Work Majors.

*First and Second Terms, Each Year***S.W. 424. GROUP WORK****THREE CREDIT HOURS**

Principles and concepts of group work as a method of social work; role of the worker with groups and individuals in groups; understanding the group process; use of program media. Required of Social Work Majors.

First and Second Terms, Each Year

SOC 432. SOCIAL WORK FIELD EXPERIENCE**SIX CREDIT HOURS**

Students majoring in Social Work are required to complete an internship involving 10 hours of service each week for two terms in a local community welfare agency or institution under the combined supervision of the University of Dayton's full-time Field Experience Program Director and a licensed agency staff member. The former will have frequent individual conferences with each student in the Field Experience Program during the first few weeks of placement to correct any difficulties as soon as possible. Field experience will enable the student to gain firsthand knowledge of the operation of health and welfare services; to observe social workers in their professional roles; to assess their own interest in, and motivation for, a career in Social Welfare; and to test their capacity to enter the Social Work profession directly after graduation or to undertake graduate social work education. Prerequisites: Soc 205, Soc 306, Soc 418, and Soc 424.

*First and Second Terms, Each Year***Theological Studies (THL)**Rev. Matthew F. Kohmescher, S.M., *Chairman**Professor: Cole**Associate Professors: Boulet, Burns, Kohmescher, Middendorf**Assistant Professors: Anderson, Barnes, Brady, Buby, Fox, Friedland, Griffin, Harrington, McDonald, Richards, Rolwing, Ryan, Van Hees, Vrasdonk, Weber**Instructors: Fellenz, Frick, Gasper, McBride, Maloney, Murray*

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.

Twelve credits in theology are required of all Catholic students. Freshmen take Thl 112 or Thl 195H. Transfer students who have not had the equivalent must take Thl 112. In addition students elect nine credits from the various courses offered.

Majors (30 credits, including Thl 112) and minors (18 credits, including Thl 112) should consult the chairman. With permission specific courses from the Program of Judaic Studies and also Pol 471 may be counted.

THL 110. INTRODUCTION TO THEOLOGY**THREE CREDIT HOURS**

A study of the nature, sources and method of theology and its place in the Church today. Includes a practicum, i.e., an investigation of the theological process as it relates to selected current issues and problems.

THL 112. FOUNDATIONS IN THEOLOGY**THREE CREDIT HOURS**

The basic foundations and presuppositions in scripture and in theology which are necessary for all advanced work in scripture and in theology.

THL 152. INTRODUCTION TO SACRED SCRIPTURE**THREE CREDIT HOURS**

The Bible studied 1) As the Word of God in the words of men; and 2) As the chronicle of God's saving action in history. Place of the Bible in the Church, in Theology, in Christian living. Selected readings.

- THL 153. INTRODUCTION TO OLD TESTAMENT THREE CREDIT HOURS
Survey of the Old Testament—history of Israel, archaeology, institutions, literary traditions, nature of inspiration, literary forms. Selected readings.
- THL 154. INTRODUCTION TO THE NEW TESTAMENT THREE CREDIT HOURS
Survey of the writings of the New Testament with a special emphasis on modern developments in Bible studies. Selected readings.
- THL 195H. THEOLOGY HONORS THREE CREDIT HOURS
A seminar in which selected topics in theology are studied. By permission only.
- THL 240. WORLD RELIGIONS I THREE CREDIT HOURS
A survey of the origins, literature, beliefs and practices of significant eastern Mediterranean religions including Christianity, Judaism, Gnosticism, Islam and others.
First Term, Each Year
- THL 241. WORLD RELIGIONS II THREE CREDIT HOURS
A survey of the origins, literature, beliefs and practices of important Far Eastern religions including Hinduism, Buddhism, Confucianism, Shinto and others.
Second Term, Each Year
- THL 242. PROTESTANT CHRISTIANITY THREE CREDIT HOURS
A survey of the development of Protestant thought from the Reformation.
- THL 265. CHRISTIAN MORALITY THREE CREDIT HOURS
Basic Christian morality seen as the personal response to the redemptive Word of God.
- THL 268. FAITH-MORAL PROBLEMS THREE CREDIT HOURS
A layman in crisis with God in morals and in faith.
- THL 295H. THEOLOGY HONORS II THREE CREDIT HOURS
A seminar in which selected topics in theology are studied. By permission only.
- THL 320. THEOLOGY OF CHRIST THREE CREDIT HOURS
Study of Christ as the fulfillment of the Divine Plan—His coming, His life, His mission. Christ—the central mystery of Christianity.
- THL 325. SACRAMENTS THREE CREDIT HOURS
Scriptural approach to the notion of sacramentality; sacramental types and sacrifices of the Old Testament; sacraments of the New Testament; contemporary developments in sacramental theology.
- THL 340. JUDAISM THREE CREDIT HOURS
This course is a basic introduction to Judaism: its history, its faith, its worship.
- THL 343. EASTERN ORTHODOXY THREE CREDIT HOURS
This course is a basic introduction to Eastern Orthodoxy: its history, its faith, its worship.
- THL 355. THE PENTATEUCH THREE CREDIT HOURS
A critical, historical study of the books of the Pentateuch with special emphasis on their formation and with a consideration of pertinent problems and themes, especially from Genesis, Exodus, and Deuteronomy.

- THL 358. THE GOSPELS** THREE CREDIT HOURS
Findings of modern Bible scholars and recent pronouncements of the Church applied to the questions: How historical are the Gospels? What is their message? How relevant are they? Readings in Matthew, Mark and Luke-Acts.
- THL 360. CHRISTIAN MORALITY** TWO CREDIT HOURS
Basic Christian morality seen as the personal response to the redemptive Word of God.
- THL 365. THEOLOGY OF MARRIAGE** TWO CREDIT HOURS
Analysis of the sanctifying dignity of Christian marriage as a sacrament and commitment to share in the divine creative plan.
- THL 369. CHURCH-GOD-WORLD** TWO CREDIT HOURS
A frank and open discussion of the problems of Church, God and the World. Not open to those who have credit for Thl 268.
- THL 371. CHURCH AND WORLD PEACE** THREE CREDIT HOURS
Study of order among men in society and the principles needed for relationships between governments for the establishment of a world community.
- THL 375. THEOLOGY OF REVOLUTION** THREE CREDIT HOURS
Study and evaluation of current thinkings on the whole range of social change from individual change to the cataclysmic movement of revolution; relationship of change to the act of social justice and social charity.
- THL 395H. THEOLOGY HONORS III** THREE CREDIT HOURS
A seminar in which selected topics in theology are studied. By permission only.
- THL 400. SPECIAL PROBLEMS IN THEOLOGY** ONE OR TWO CREDIT HOURS
Investigation and discussion of current problems in Christian belief and living, and of theology as an integrating factor in life. May be taken more than once.
- THL 401. QUESTIONS IN THEOLOGY** THREE CREDIT HOURS
A detailed treatment of specific areas of Catholic theology. Topics covered can vary from term to term. May be taken more than once.
- THL 403. GREAT THEOLOGIANS** THREE CREDIT HOURS
A study of the life, thought and times of a selected theologian. May be taken more than once.
- THL 409H. READINGS IN THEOLOGY (HONORS)** THREE CREDIT HOURS
Directed readings in a specific area of theology are done under the supervision of a staff member. A written or oral report is required. May be taken more than once. By permission only.
- THL 416. GOD: THE EVOLVING DIALECTIC** THREE CREDIT HOURS
A study of some recent contributions made by theology, philosophy, psychology and the humanities to the current discussion of God's existence, nature and relationship to man.
- THL 424. THEOLOGY OF MARY** THREE CREDIT HOURS
Study of the place of the Mother of God in the great truths of faith in the light of chapter eight of the Constitution on the Church.

- THL 431. THEOLOGY OF THE CHURCH** **THREE CREDIT HOURS**
 Contemporary theology of the mystery of the church: its nature, its constitution, its mission. Special treatment of current problems: authority, collegiality, membership, etc.
- THL 436. THEOLOGY OF THE LITURGY** **THREE CREDIT HOURS**
 An historical and theological study of the worship life of the church with special consideration of current problems.
- THL 455. THE PROPHETS** **THREE CREDIT HOURS**
 A study of the prophetic movement in Israel with special treatment of selected prophets.
- THL 456. THE WISDOM LITERATURE** **THREE CREDIT HOURS**
 A study of the setting, development and insights of the wisdom movement in Israel. Selected writings of the Hebrew sages will be examined in light of their relevance for the Christian of today.
- THL 457. STUDIES IN ST. JOHN** **THREE CREDIT HOURS**
 The Fourth Gospel, I John and the Apocalypse will be studied with special emphasis on St. John's style, literary characteristics, plan, symbolism, message and theology.
- THL 458. STUDIES IN ST. PAUL** **THREE CREDIT HOURS**
 Selected Pauline epistles will be studied in detail with special emphasis on style, literary characteristics, plan, message and theology.
- THL 461. FAITH AND DOUBT** **THREE CREDIT HOURS**
 A study of the modern problem of unbelief and of the role of doubt in the formation of an adult faith.
- THL 475. CHRISTIAN COMMUNITY LIVING** **TWO CREDIT HOURS**
 An investigation into the problem of insecurity and its solution; the nature, functions and problems of the Christian community today.
- THL 477. THE CHURCH AND THE MODERN WORLD** **THREE CREDIT HOURS**
 A careful study of the attitudes of the Christian of the future toward the world and its problems.
- THL 479. THEOLOGY OF THE LAY LIFE** **THREE CREDIT HOURS**
 Meaning, structure, spirituality and apostolate of the lay Catholic living in the world; survey of Catholic social principles, a review of certain specialized problems as the relation of Religion and Science, Politics, History and Industry.
- THL 482. RELEVANCE OF THEOLOGY** **THREE CREDIT HOURS**
 The relation between doctrines and systems of theology and the contemporary problems and issues of life; how theology applies to life and how it grows out of the human situation.
- THL 485. ISSUES IN SCIENCE AND RELIGION** **THREE CREDIT HOURS**
 A study of the way in which science and religion have interacted in Western history and a theological understanding of some of the issues which arise from that interaction.

THL 486. THE SACRED IN MODERN WRITING THREE CREDIT HOURS
 A joint study of literature and theology, seeking the sacred in the secular, discussing the doctrines of man and of God in major modern writings, especially those of current collegiate interest. Prerequisite: English major or minor.

THL 492. INTERDISCIPLINARY SEMINAR THREE TO SIX CREDIT HOURS
 A seminar in which the perspectives of various academic disciplines are brought to bear on specific issues. By permission only.

THL 494H. SEMINAR (HONORS) THREE CREDIT HOURS
 A seminar in which selected topics in theology are studied. It may be taken more than once. By permission only.

1. Seminar—Dogma
2. Seminar—Moral
3. Seminar—Scripture
4. Seminar—Modern Theological Thought

THL 495H. THEOLOGY HONORS IV THREE CREDIT HOURS
 A seminar in which selected topics in theology are studied. By permission only.

Technical Institute

Director: James L. McGraw

Chemical Technology (CTI)

Instructors: Lawless, Shaw

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 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 106.

CTI 203L. PHYSICAL CHEMISTRY LABORATORY ONE CREDIT HOUR
To accompany Cti 203. 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 208. ORGANIC CHEMISTRY I THREE CREDIT HOURS
A systematic study of the aliphatic classes of organic compounds. Prerequisite: Cti 101.

CTI 208L. ORGANIC CHEMISTRY LABORATORY I 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 LABORATORY II ONE CREDIT HOUR
To accompany Cti 209. Three hours of laboratory a week.

CTI 301. METALLURGY THREE CREDIT HOURS
An introduction to the basic fundamentals of metallurgy and metallurgical applications. Includes study of metallurgical processing, extractive metallurgy, and foundry technology.

CTI 302. CHEMICAL ENGINEERING TECHNOLOGY THREE CREDIT HOURS
Designed to acquaint the student in chemical technology with the fundamentals of chemical engineering including process variables, material balances, energy balances, and equilibrium conditions.

CTI 302L. CHEMICAL ENGINEERING TECHNOLOGY LABORATORY ONE CREDIT HOUR
Designed to acquaint the student with Unit Operations equipment and its utilization. To accompany Cti 302.

CTI 307. 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 400. SELECTED CHEMICAL TOPICS ONE-FOUR CREDIT HOURS
Investigation and discussion of current technical topics in chemical technology. May be taken more than once. Prerequisite: Permission of the department chairman.

Electronic Engineering Technology (ETI)

Richard R. Hazen, *Chairman*

Associate Professor: Hazen

Assistant Professors: Farren, Hanneman

Instructors: Fischer, Rooney

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. Prerequisite: 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, Sti 106.

ETI 103L. ELECTRICAL CIRCUITS LABORATORY **ONE CREDIT HOUR**
 To accompany Eti 103. Three hours of laboratory a week.

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 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. Prerequisite: Eti 204. Corequisite: Eti 206.

ETI 205L. ELECTRONIC MEASUREMENTS LABORATORY **ONE CREDIT HOUR**
 To accompany Eti 205. Three hours of laboratory a week.

ETI 206. ELECTRON DEVICES I **THREE CREDIT HOURS**
 Fundamentals of vacuum tubes, gas tubes, semi-conductor diodes and their associated circuits. Prerequisite: Eti 103, Sti 205.

ETI 206L. ELECTRON DEVICES I LABORATORY **ONE CREDIT HOUR**
 To accompany Eti 206. 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 222L. ELECTRONIC CIRCUIT DIAGRAMS **ONE CREDIT HOUR**
 Standards and symbols used on electronic circuit diagrams. Three hours of laboratory a week.

ETI 226. INTRODUCTION TO ANALOG COMPUTERS AND SERVOMECHANISMS**THREE CREDIT HOURS**

Fundamentals and design of synchros and related error detectors, rate generators, magnetic amplifiers and friction dampers. Prerequisite: Eti 206.

ETI 226L. ANALOG COMPUTER AND SERVOMECHANISM LABORATORY **ONE CREDIT HOUR**

To accompany Eti 226. Three hours of laboratory a week.

ETI 300. SEMINAR**ZERO CREDIT HOURS**

An exchange of ideas in the area of electronics which includes student lectures, guest lectures, and industrial visitations. Required of all Eti students enrolled in, or who have taken Eti 103.

ETI 306. ELECTRON DEVICES II**THREE CREDIT HOURS**

Fundamentals of transistors, photoelectric devices, silicon controlled rectifiers and their associated circuits. Prerequisite: Eti 206.

ETI 306L. ELECTRON DEVICES II LABORATORY**ONE CREDIT HOUR**

To accompany Eti 306. Three hours of laboratory a week.

ETI 324. DIGITAL COMPUTER FUNDAMENTALS**THREE CREDIT HOURS**

Fundamental theory and techniques of electronic data-processing to include binary arithmetic, switching theory (Boolean algebra) and basic circuitry (gates, adders, registers and memory). Prerequisite: Eti 201 or Eti 206.

ETI 327. PULSE CIRCUITS**THREE CREDIT HOURS**

Selected topics relating to radar, television, and computer circuits including integrators, differentiators, blocking oscillators, multivibrators and time-base generators. Prerequisite: Eti 206 and Eti 324.

ETI 327L. PULSE CIRCUITS LABORATORY**ONE CREDIT HOUR**

To accompany Eti 327. Three hours of laboratory a week.

ETI 328. ELECTRONIC COMMUNICATIONS**THREE CREDIT HOURS**

Principles of operation of filters, modulators, demodulators and converters. Prerequisite: Eti 206.

ETI 328L. ELECTRONIC COMMUNICATIONS LABORATORY**ONE CREDIT HOUR**

To accompany Eti 328. Three hours of laboratory a week.

ETI 330. 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 206.

ETI 400. SELECTED ELECTRONIC TOPICS**ONE-FOUR CREDIT HOURS**

Investigation and discussion of current technical topics in Electronic Engineering Technology. May be taken more than once. Prerequisite: Permission of department chairman.

Industrial Engineering Technology (ITI)

Raymond B. Puckett, *Chairman*

Associate Professor: Puckett

Assistant Professor: Staudter

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.

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 230. 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 105.

ITI 230L. MOTION AND TIME STUDY LABORATORY I ONE CREDIT HOUR
To accompany Iti 230. Three hours of laboratory a week.

ITI 305. 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 318. STATISTICAL QUALITY CONTROL THREE CREDIT HOURS
An introduction to the techniques of industrial process control using statistical methods. Prerequisite: Sti 105.

ITI 331. 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. Prerequisites: Iti 230.

ITI 331L. MOTION AND TIME STUDY LABORATORY II**ONE CREDIT HOUR**

To accompany Iti 331. Three hours of laboratory a week.

ITI 332. 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 332L. PLANT LAYOUT LABORATORY**ONE CREDIT HOUR**

To accompany Iti 332. Three hours of laboratory a week.

ITI 400. SELECTED INDUSTRIAL TOPICS**ONE TO FOUR CREDIT HOURS**

Investigation and discussion of current technical topics in industrial engineering technology. May be taken more than once. Prerequisite: Permission of department chairman.

Mechanical Engineering Technology (MTI)

Jesse H. Wilder, *Chairman*

Professor: Wilder

Associate Professor: Golden

Assistant Professors: Morgana, Mott, Wolff

Instructors: Kretzler, Rolle

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**

Descriptive geometry drawing problems involving points, lines, planes and geometric shapes presented and solved in orthographic projection form. Six hours of laboratory per week. Prerequisites: Mti 103L, Sti 105.

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.

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, Sti 105.

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 AND DYNAMICS THREE CREDIT HOURS
Principles of applied engineering mechanics. Three hours of class 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. Three hours of class per week. Prerequisites: Mti 220 or Mti 224, Sti 206.

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. Two hours of class per week. Prerequisite: Sti 114.

MTI 225. DYNAMICS TWO CREDIT HOURS
Principles of applied engineering dynamics. Two hours of class per week. Corequisite: Mti 224.

MTI 226L. MECHANISM TWO CREDIT HOURS
Motions, displacements, velocities, friction wheels, flexible connectors, cams, linkages and gears. One hour of class and three hours of laboratory a week. Prerequisite: Mti 103L; Corequisite: Mti 220 or Mti 225.

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. Prerequisites: Sti 214, Sti 205 or Sti 206.

MTI 231. FLUID MECHANICS THREE CREDIT HOURS
Property of fluids, hydrostatic and buoyant forces, Bernoulli's equation, energy equation, flow of real fluids in pipes, friction losses, measurement flow. Prerequisite: Sti 205 or Sti 206.

MTI 321L. DIES, JIGS AND FIXTURES TWO CREDIT HOURS
Design calculation and sketching of dies, jigs and fixtures used in industrial production. One hour of class and three hours of laboratory a week. Corequisite: Mti 221.

MTI 323. MACHINE DESIGN THREE CREDIT HOURS
Analytical design of springs, shafts, couplings, bearings, gears; applying laws governing simple, variable and combined stresses. Two hours class and three hours laboratory a week. Prerequisites: Mti 221, Mti 226L, Mti 231 and Sti 205 or Sti 206.

MTI 328. INDUSTRIAL AUTOMATION ACTUATION THREE CREDIT HOURS
Application of hydraulic, pneumatic, and electric actuators in the design of industrial automation for production systems. Two hours class and three hours laboratory a week. Prerequisites: Mti 226L, Mti 231. Corequisite: Sti 213.

MTI 400. SELECTED MECHANICAL TOPICS ONE TO FOUR CREDIT HOURS
Investigations and discussion of current technical optics in mechanical engineering technology. May be taken more than once. Prerequisite: Permission of the department chairman.

Technical Institute Service Courses

Associate Professor: Averdick

Assistant Professors: Fehlmann, Patrick, Staub, Strange

Instructor: Croy

STI 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 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 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 106.

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

To accompany Sti 114. Two 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.

STI 122L. INDUSTRIAL CHEMISTRY LABORATORY ONE CREDIT HOUR

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

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 205. MATHEMATICS FOR ELECTRICAL TECHNOLOGY THREE CREDIT HOURS

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

STI 213. PHYSICS: ELECTRICITY TWO CREDIT HOURS
The basic principles of electricity and their application in industry. Prerequisite: 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 114.

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

STI 234. REPORT WRITING TWO CREDIT HOURS
The preparation and presentation of industrial reports. Prerequisite: Eng 101.

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.

STI 305. ADVANCED TECHNICAL INSTITUTE MATHEMATICS II THREE CREDIT HOURS
Selected topics from ordinary differential equations with an emphasis on operational methods of solution. Stresses problems encountered in engineering technology. Prerequisite: Sti 205 or Sti 206.

STI 499A. SEMINAR ONE CREDIT HOUR
Selected technical and occupational topics. Required of all Bachelor of Technology students in the second term of their senior year.

STI 499B. SEMINAR ZERO CREDIT HOURS
Selected technical and occupational topics. Required of all Bachelor of Technology students in the first term of their senior year.



