BOT 517. PHYSIOLOGY OF THE FUNGI (5)
PR: BOT 417, BIO 510 or CI. The metabolism, morphogenesis, and genetics of the fungi. Lec.-lab.

Biology-Botany (BOT)

UPPER LEVEL COURSES

BOT 371. PLANTS AND MAN (4)
PR: Junior or Senior Standing or CI. The relation of plants to human history and contemporary life. Botanical and economic aspects of plants used as sources of foods, drugs, and other products of importance in everyday life. Origins of cultivated plants. For non-majors credit only.

BOT 417. MYCOLOGY (5)
PR: BOT 201-203. A survey of the fungi with emphasis on their taxonomy, morphology, physiology, and economic importance. Lec.-lab.

BOT 419. PLANT ANATOMY (5)
PR: BIO 201-203. Comparative studies of tissue and organ systems of fossil and present-day vascular plants. Functional and phylogenetic aspects stressed. Lec.-lab.

BOT 511. TAXONOMY OF FLOWERING PLANTS (4)
PR: BOT 311 or CI. A phylogenetic study of Angiosperms; relationship of the principal orders and families, problems of nomenclature, identification of specimens, comparisons of recent systems of classification, dissection of representative flower types. Field trips and lab work. Lec.-lab.

Biology-Microbiology (MIC)

UPPER LEVEL COURSES

MIC 451. APPLIED BACTERIOLOGY (5)
PR: MIC 351. A study of the application of microbiology to industry, agriculture, medicine, and sanitation engineering. Lec.-lab. Qtr. IV. (Formerly BOT 451).

MIC 491. SEMINAR IN MICROBIOLOGY (1)
PR: Senior or advanced junior standing and CI. May be repeated. (S/U only). Formerly BOT 491, in part

*Students will be required to pay travel expenses for field trips.
FOR SENIORS AND GRADUATE STUDENTS

MIC 518. MEDICAL MICROLOGY (5)
PR: MIC 351 or CI. A survey of the yeasts, molds, and actinomycetes most likely to be encountered by the bacteriologists, with special emphasis on the forms pathogenic for man. Lec.-lab. Qtr. I. (Formerly BOT 518)

MIC 519. ADVANCED BACTERIOLOGY (5)
PR: MIC 351. Ultrastructure, growth, metabolism, genetics and ecology of the bacteria and related proaryotes. Lec.-lab. Qtr. III. (Formerly BOT 552)

MIC 553. DETERMINATIVE BACTERIOLOGY (5)
PR: MIC 351 or equivalent; CHM 331-336 or equivalent. Survey of bacterial classification; detailed examinations of bacteria important in agriculture, in industry, and as pathogens. Lec.-lab. Qtr. II (Formerly BOT 553.)

MIC 556. MICROBIAL PHYSIOLOGY (5)
PR: MIC 351 or equivalent, CHM 331-334, and BIO 401, 402 or CI. A study of physiological and metabolic phenomena pertinent to the growth, development, regulation, inhibition, and death of microorganisms and to the chemical alterations they catalyze. Laboratory emphasis will be on quantitative methods for the study of microbic activity. Lec.-lab.

MIC 557. VIROLOGY (5)
PR: MIC 351 or equivalent and CI. The biology of viruses associated with plants, animals, and bacteria will be considered; the nature of viruses, mechanisms of viral pathogenesis, and interactions with host cells. Lec.-lab. Qtr. I. (Formerly BOT 557)

MIC 583. SELECTED TOPICS IN MICROBIOLOGY (1-4)
PR: CI. Each topic is a course in directed study under supervision of a faculty member. (Formerly BOT 583, BIO 583, in part)

FOR GRADUATE STUDENTS ONLY

MIC 654. BACTERIAL GENETICS (3)
PR: BIO 331, MIC 351, MIC 556 or CI. A survey of the recombinational systems found among the bacteria and bacterial viruses with emphasis on the molecular mechanisms of gene transfer, replication and expression and on the significance of these systems for our understanding of cellular functions. Lec. (Formerly BOT 654)

MIC 655. IMMUNOLOGY (5)
PR: MIC 351 or equivalent, CHM 331-336 or equivalent. Discussion of the basic immune reaction, nature of antigenicity; basic immunological techniques and their use in biological research and the medical sciences. (Formerly BOT 655)

MIC 699. MASTER'S THESIS (1-15)
PR: CI (S/U only) (Formerly BOT 699, in part)

Biology-Zoology (ZOO)

UPPER LEVEL COURSES

ZOO 311. COMPARATIVE VERTEBRATE ANATOMY (6)
PR: BIO 201-203. Anatomy of selected vertebrate types emphasizing evolutionary trends. Lec.-lab. Qtr. I, III

ZOO 313. INTRODUCTORY INVERTEBRATE ZOOLOGY (5)
PR: BIO 201-203. An introduction to the major invertebrate groups, with emphasis on local forms. Field work will be required. Lec.-lab. Qtr. II

ZOO 321. INTRODUCTORY ANIMAL PHYSIOLOGY (5)
PR: BIO 201-203. Functional histology and the primary functions of the organ systems will be stressed and related to the survival of the whole animal. The approach will be comparative and evolutionary and the emphasis will be on the vertebrates. Lec.-lab. Disc. Qtr. III

ZOO 411. HISTOLOGY (4)
PR: ZOO 311 and/or ZOO 422. Comparative approach to the study of tissues and the relation of their structure and function. Lec.-lab. Qtr. I

ZOO 415. INTRODUCTION TO ENTOMOLOGY (4)
PR: BIO 201-203. An introduction to general aspects of insect morphology, development, and classification. The identification of local forms will be emphasized. Lec.-lab. Qtr. III, IV

ZOO 422. DEVELOPMENTAL BIOLOGY (5)

ZOO 460. WILDLIFE AND FISH MANAGEMENT (3)
PR: BIO 201-203, BIO 445. An introduction to the principles of wildlife and fisheries management. Certain methods and techniques utilized in the management of exploited animal species will be introduced. Designed primarily for students interested in the wildlife and fish management profession. Qtr. II (odd-numbered years)

ZOO 461. ANIMAL SOCIAL BEHAVIOR (5)
PR: CI. An introduction to comparative ethology, with emphasis on social behavior and the evolution behavior. Lec.-lab. Qtr. I (odd-numbered years)

ZOO 491. SEMINAR IN ZOOLOGY (1)
PR: Upper level. May be repeated once (S/U only)

FOR SENIORS AND GRADUATE STUDENTS

ZOO 513. PARASITOLOGY (5)
PR: BIO 201-203. Fundamentals of animal parasitology and parasitism; the biology of selected animal parasites, including those of major importance to man. Lec.-lab. Qtr. II

ZOO 514. AQUATIC ENTOMOLOGY (4)
PR: ZOO 415. Taxonomy, development, and ecology of aquatic insects with emphasis on local forms. Lec.-lab. Qtr. II (odd-numbered years)

ZOO 515. LIMNOLOGY (5)
PR: CI. An introduction to the physical, chemical, and biological nature of fresh-water environments. Lec.-lab. Qtr. III

ZOO 517. ORNITHOLOGY (4)
PR: BIO 445, ZOO 311, and CI. The biology of birds. Field trips emphasize local avian fauna. Lec.-lab. Qtr. II

ZOO 518. MAMMALOGY (5)
PRL BIO 201-203 and CI. The biology of mammals, including systematics, ecology, natural history, and geographical distribution. Lec.-lab. Qtr. II

ZOO 519. ICHTHYOLOGY (5)
PR: ZOO 311. Systematics of fishes, including major classification, comparative anatomy, embryology, and general distribution. Lec.-lab. Qtr. IV

ZOO 520. BIOLOGY OF ECHINODERMS (5)
PR: ZOO 313, BIO 402. A study of the anatomy, physiology, and ecology of echinoderms. Lec.-lab. Qtr. (even-numbered years)

ZOO 521. COMPARATIVE PHYSIOLOGY (5)
PR: BIO 401, BIO 402. The evolution of physiological mechanisms. Lec.-lab. Qtr. I

ZOO 525. BIOLOGY OF THE AMPHIBIA (5)
PR: ZOO 311, BIO 445, and CI. Major aspects of amphibian biology emphasizing fossil history, evolutionary morphology, sensory physiology, life history, and reproductive behavior. Lec.-lab. Qtr. III (even-numbered years)

ZOO 526. BIOLOGY OF THE REPTILIA (5)
PR: ZOO 311, BIO 445, and CI. Major aspects of reptilian biology emphasizing fossil history, evolutionary morphology, sensory physiology, life history, and reproductive behavior. Lec.-lab. Qtr. III (odd-numbered years)

ZOO 545. ZOOGEOGRAPHY (3)

ZOO 556. TERRESTRIAL ANIMAL ECOLOGY (4)
PR: BIO 445. Field and laboratory investigations of the basic principles of ecology as applied to terrestrial animals. Lec.-lab. Qtr. I

ZOO 557. MARINE ANIMAL ECOLOGY (5)
PR: BIO 445 and ZOO 313. Investigations of energy flow, biogeo-chemical cycles and community structure in marine environments. Lec.-lab. Qtr. III
ZOO 562. MECHANISMS OF ANIMAL BEHAVIOR (5)
PR: BIO 201-203, CHM 311-333, and CI. A comparative approach to communication and orientation in animals including homing behavior and biological clocks. Lec.-lab. Qtr. I.
ZOO 583. SELECTED TOPICS IN ZOOLOGY (1-4)
PR: CI. Each topic is a program in directed study under supervision of a faculty member. (Formerly ZOO 483)

FOR GRADUATE STUDENTS ONLY
ZOO 611. EXPERIMENTAL EMBRYOLOGY (4)
PR: BIO 401, BIO 402, ZOO 422 and CI. Lectures, laboratories, readings, and discussions relating to contemporary advances in the area of biochemistry of development. Experimental techniques will be studied.
ZOO 618. ADVANCED MAMMALOLOGY (4)
PR: ZOO 518. Important literature and developments in mammalogy. Students will undertake individual research problems. Lec.-lab.
ZOO 621. PHYSIOLOGICAL ECOLOGY (5)
PR: CI. Effect of environmental factors on animal function at

BOTANY (BOT)—see Biology

CHEMISTRY (CHM)

(See also courses in the Physical Science section entitled PHS 209 and PHS 210, section 002)


LOWER LEVEL COURSES
CHM 101. FOUNDATIONS OF UNIVERSITY CHEMISTRY (5)
A survey of modern chemistry designed particularly for those with a poor preparation in algebra and/or chemistry as a preliminary to CHM 211. Lec. Qtr. I, III, IV.
CHM 211. GENERAL CHEMISTRY I (4)
CHM 211 students are expected to have performed well in high school chemistry or to have satisfactorily completed CHM 101. Fundamentals of chemistry; mass and energy relationships in chemical changes, equilibrium, chemical kinetics, atomic and molecular structure, descriptive chemistry of selected elements. Lec.-lab and discussion. Qtr. I, II, III, IV.
CHM 212. GENERAL CHEMISTRY II (4)
PR: CHM 211 or equivalent. Continuation of General Chemistry. Lec.-lab and discussion. Qtr. I, II, III, IV.
CHM 213. GENERAL CHEMISTRY III (4)
PR: CHM 212 or equivalent. Continuation of General Chemistry. Lec.-lab and discussion. Qtr. I, II, III, IV.
CHM 214. BASIC LABORATORY TECHNIQUES (4)
PR: CHM 212 or equivalent. Fundamental techniques of chemical research, including basic manipulations and equipment. One-quarter course for non-chemistry majors. Lec.-lab.
CHM 215. ACCELERATED GENERAL CHEMISTRY I (5)
This course is designed for the beginning student who has a superior background in science and mathematics. The laboratory is project oriented. Entrance is by examination only. CHM 215-216 is equivalent to CHM 211-212-213. Lec.-lab and discussion. Qtr. I.
CHM 216. ACCELERATED GENERAL CHEMISTRY II (5)
PR: CHM 215. Continuation of Accelerated General Chemistry. Lec.-lab and discussion. Qtr. II.
CHM 271. CURRENT ISSUES IN CHEMISTRY (4)
A survey of the important current issues in which chemistry affects our lives; e.g., environment, drugs, cancer, warfare, etc. No credit for chemistry majors.
CHM 291. JUNIOR SEMINAR (1)
PR: CHM 213 or CHM 216. Interrelations of previous courses, the chemical literature, and examination of the nature of the industrial, government, and academic chemistry. Lecture and discussion. (S/U only.) Qtr. I, III, IV.

UPPER LEVEL COURSES
CHM 303. ELEMENTARY ORGANIC CHEMISTRY (4)
PR: CHM 213 or equivalent. Fundamental organic chemistry principles. One-quarter course for non-chemistry majors only. Lec.-lab.
CHM 311. INTERMEDIATE INORGANIC CHEMISTRY (5)
PR: CHM 213 or CHM 216. Fundamental principles of inorganic chemistry. Lec.-lab. Qtr. II, IV.
CHM 321. ELEMENTARY ANALYTICAL CHEMISTRY (5)
CHM 331-332. ORGANIC CHEMISTRY I (3:2)
PR: CHM 213 or CHM 216. Fundamental principles of organic chemistry and lab. Lecture and lab must be taken concurrently. Qtr. I, II, III, IV.
CHM 333-334. ORGANIC CHEMISTRY II (3:2)
PR: CHM 331-332 or equivalent. Continuation of Organic Chemistry and lab. Lecture and lab must be taken concurrently. Qtr. II, III, IV.
CHM 335-336. ORGANIC CHEMISTRY III (3:2)
PR: CHM 333-334 or equivalent. Continuation of Organic Chemistry and lab. Lecture and lab must be taken concurrently. Qtr. I, III, IV.
CHM 341. ELEMENTARY PHYSICAL CHEMISTRY (3)
PR: CHM 213 or CHM 216, CHM 321, MTH 212, PHY
205-206. Introduction to equilibrium properties of macroscopic systems. Properties of solutions.

CHM 342. ELEMENTARY PHYSICAL CHEMISTRY II (3)  
PR: CHM 341. Kinetic behavior of systems, macromolecular solutions, and colloidal dispersions, nuclear chemistry, and spectroscopy.

CHM 343. ELEMENTARY PHYSICAL CHEMISTRY LAB (2)  
PR: Co-requisite with CHM 341 and/or CHM 342. A physical chemistry laboratory with emphasis on modern techniques and instruments. Lab.-lec.

CHM 351. INTRODUCTORY BIOCHEMISTRY (4)  
PR: CHM 333. Introduction to the chemistry and intermediary metabolism of biologically important substances. Lec. Qtr. I, II, III, IV.

CHM 354. BASIC BIOCHEMISTRY LABORATORY (3)  
PR: CHM 351. Practical work in determination and characterization of important biomolecules. Lec.-lab.

CHM 371. MODERN CHEMICAL SICENCE (4)  
An introduction to some of the major problems in chemistry, its relation to other sciences, and its relevance to contemporary culture. Designed for non-science majors. No credit for Chemistry majors. Qtr. I, IV.

CHM 441. PHYSICAL CHEMISTRY I (4)  
PR: CHM 321 and MTH 304. CR: PHY 205 or 305. Thermodynamics, the states of matter, solutions. Lec. Qtr. I, II.

CHM 442. PHYSICAL CHEMISTRY II (4)  
PR: CHM 441. Introduction to quantum mechanics and molecular spectroscopy. Lec. Qtr. II, III.

CHM 443. PHYSICAL CHEMISTRY III (4)  

CHM 445. METHODS OF CHEMICAL INVESTIGATION I. ANALYTICAL-PHYSICAL (4)  
PR: CHM 321, 335-336. CR: CHM 441. Theory and applications of instrumental methods in chemical research with emphasis on electrochemical techniques. Lec.-lab. Qtr. I, II.

CHM 446. METHODS OF CHEMICAL INVESTIGATION II. ANALYTICAL PHYSICAL (4)  

CHM 447. METHODS OF CHEMICAL INVESTIGATION III. CHEMICAL SYSTEMS (3)  
PR: CHM 446. Continuation of CHM 446. Emphasis on studies of chemical systems using a variety of techniques. Lec.-lab. Qtr. III, IV.

CHM 471. HISTORICAL PERSPECTIVES IN CHEMISTRY (4)  
PR: CHM 213; or senior standing, and CI. A study in depth of the historical and philosophical aspects of outstanding chemical discoveries and theories. Lec.-disc. Qtr. II.

CHM 475. THE MICROWORLD OF MOLECULES, ATOMS AND ELECTRONS (4)  
The nature of the material world from the philosophic discussions of antiquity, through some speculations of the Middle Ages and the Renaissance to the quantitative thinking and measurements of modern science. No previous background in science or mathematics is necessary. No credit for Chemistry majors.

CHM 481. UNDERGRADUATE RESEARCH (1-6)  
PR: CI. (S/U only.) Qtr. I-IV.

CHM 483. SELECTED TOPICS IN CHEMISTRY (1-6)  
PR: CI. The course content will depend on the interest of faculty members and student demand.

CHM 485. CLINICAL CHEMISTRY PRACTICE (3-8)  
PR: CI. Laboratory practice in clinical chemistry laboratories in the Tampa Bay area. (S/U only.) Qtr. I-IV.

CHM 491. CHEMISTRY SEMINAR (1)  
PR: Senior standing. Discussions of selected significant chemical topics of recent interest. (S/U only.) Qtr. II, III.

FOR SENIORS AND GRADUATE STUDENTS

CHM 511. ADVANCED INORGANIC CHEMISTRY (4)  
PR: CHM 441 or CI. An advanced theoretical treatment of inorganic compounds. Lec. Qtr. I, III.

CHM 521. INSTRUMENTAL ANALYSIS (4)  
PR: CHM 443 or CI. Theory and practice of instrumental methods. Clinical Chemistry applications may be elected in the laboratory. Lec.-lab. Qtr. II, III.

CHM 523. RADIOCHEMISTRY (4)  
PR: CHM 321. Theory and applications of natural and induced radioactivity. Emphasis on the production, properties, measurement, and uses of radioactive tracers. Lec.-lab. Qtr. I, II.

CHM 525. FUNDAMENTALS OF CLINICAL CHEMISTRY (4)  
PR: CHM 321, 351. Theoretical and practical aspects of the analysis of various body fluids, with emphasis on the medical significance. Clinical chemistry majors must take CHM 526 concurrently. Lec. Qtr. I, III.

CHM 526. CLINICAL LABORATORY (2)  
PR: CHM 321, 351, and CI. Laboratory experience in some of the most important clinical determinations. CHM 525 must be taken concurrently. Lec.-lab. Qtr. I, III.

CHM 532. INTERMEDIATE ORGANIC CHEMISTRY (4)  
PR: CHM 335, 336 or equivalent. A study of stereochemistry, spectroscopy. Theories of bonding, acid-base chemistry, and their application to the understanding of organic reactions. Lec.

CHM 541. CHEMICAL THERMODYNAMICS (4)  
PR: CHM 443 or CI. The applications of thermodynamic theory to the study of chemical systems with emphasis on the energetics of reactions and chemical equilibria. Lec.

CHM 542. APPLICATIONS IN PHYSICAL CHEMISTRY (4)  
PR: CHM 443. Applications of chemical theory to chemical systems with emphasis on chemical kinetics and molecular spectroscopy. Lec. Qtr. I.

CHM 551. BIOCHEMISTRY I (4)  
PR: CHM 335-336. The chemistry and intermediary metabolism of biologically important substances, including carbohydrates, proteins, enzymes, vitamins, and metabolic intermediates. Recommended for chemistry and biology majors. Lec. Qtr. I.

CHM 552. BIOCHEMISTRY II (4)  
PR: CHM 551. Continuation of Biochemistry I. Lec. Qtr. II.

CHM 553. BIOCHEMISTRY III (4)  
PR: CHM 552. Continuation of Biochemistry II. Lec. Qtr. III.

CHM 554. TECHNIQUES IN BIOCHEMISTRY (2)  
PR: CHM 551. Biochemistry laboratory with emphasis on modern techniques for use in biochemical research. Qtr. III.

CHM 583. SELECTED TOPICS IN CHEMISTRY (1-6)  
PR: CI. The following courses are representative of those that are taught under this title: Natural Products, Stereochemistry, Reactive intermediates, Photochemistry, Instrumental Electronics, Advanced Lab Techniques, Heterocyclic Chemistry, etc.

FOR GRADUATE STUDENTS ONLY

CHM 611. STRUCTURAL INORGANIC CHEMISTRY (4)  
PR: CHM 511 or CI. Modern theories of bonding and structure of inorganic compounds, including coordination theory, stereochemistry, solution equilibria, kinetics, mechanisms of reactions, and use of physical and chemical methods. Lec. Qtr. II.

CHM 613. CHEMISTRY OF THE LESS FAMILIAR ELEMENTS (4)  
PR: CI. An integrated treatment of the conceptual and factual aspects of the traditionally less familiar elements, including noble-gas elements, unfamiliar non-metals, alkali and alkaline-earth metals and the transition elements. Lec. Qtr. III.

CHM 621. ADVANCED ANALYTICAL CHEMISTRY (4)  
PR: CI. A study of complete analytical process, including sample handling, separations, the analysis step, and statistical
CLASSICS AND ANCIENT STUDIES (CLS)

Chairman: A. M. Gessman; Professors: A. L. Motto, J. J. Iorio; Associate Professor: E. F. Henley; Assistant Professor: F. J. Zbar.

LOWER LEVEL COURSES

CLS 101-102. ELEMENTARY LATIN (3,3,3) Elements of grammar, practice in translation from and into Latin, reading of selections from simple Latin texts.

CLS 201. INTERMEDIATE LATIN I (3) PR: CLS 103 or equiv.; CR: two-hour per week grammar workshop (no credit). Selections from Cicero's speeches and systematic exercises in intermediate grammar.

CLS 202. INTERMEDIATE LATIN II (3) PR: CLS 201 or equiv. Selections from the letters of Cicero and Pliny the Younger. (Alternate years.)

CLS 203. INTERMEDIATE LATIN III (3) PR: CLS 201 or equiv. Selections from Ovid read in Latin and interpreted. Study of the Metamorphoses in English translation and of Graeco-Roman mythology. (Alternate years.)

UPPER LEVEL COURSES

CLS 301. LATIN HISTORIANS (3) PR: CLS 201 or equiv. Reading and interpretation of selected passages from the works of Sallust, Livy, Tacitus and Suetonius in the original and of portions of their works in English translation. (Alternate years.)

CLS 302. LATIN LYRICS (3) PR: CLS 201 or equiv. Reading and interpretation of selected poems by Roman lyricists, especially Catull and Horace. Introduction to Latin metrics. (Alternate years.)

CLS 303. LATIN EPIC (3) PR: CLS 201 or equiv. Reading and interpretation of selected passages from Vergil's Aeneid in the original and of the entire work in English translation. Comparison with the Greek epic. (Alternate years.)
CLS 321. ANCIENT CIVILIZATIONS (5)
Study of the character, ideas and cultural achievements of the peoples of the Ancient Near East and Mediterranean and their relevance for modern Western civilization, with special emphasis on he Hebrews, Greeks and Romans.

CLS 331-332-333. BASIC GREEK (3,3,3)
PR: Junior or senior standing or a minimum of two years of Latin or another highly inflected language (e.g., German, Russian, Modern Greek) or CI. Accelerated course in the Ancient Greek (Attic) language and introduction to original Greek literature.

CLS 341-342-343. BASIC HEBREW (3,3,3)
Designed to give students a working knowledge of Classical (Biblical) Hebrew and to introduce them to the Biblical literature in the original language.

CLS 351. CLASSICAL MYTHOLOGY (4)
Study of the more important myths of the Greeks and Romans as laid down in classical literature and of the impact that Classical mythology made on modern Western and, in particular, English literature.

CLS 352. MID-EASTERN MYTHOLOGY (3)
Study of the more important myths and religious concepts of Egypt, the Fertile Crescent, Crete, Anatolia, and Persia, and of their impact on Hebrew and Graeco-Roman mythology as well as on later Western art, literature, and religion.

CLS 354. GREEK LITERATURE IN TRANSLATION I: POETRY AND PROSE (4)
An introduction to the masterworks of Greek poetry and prose including the epic, lyric poetry, and history.

CLS 355. GREEK LITERATURE IN TRANSLATION II: DRAMATIC LITERATURE (4)
An introduction to the masterworks of Greek drama in their cultural context. The course concentrates on the Attic comedy and tragedy of the fifth century B.C.

CLS 356. ROMAN LITERATURE IN TRANSLATION (4)
An introduction to the poetry and prose of the Republican Age, the Augustan Age, and the Silver Age.

CLS 359. CLASSICAL WORD ROOTS IN SCIENCE (2)
A course in the Greek and Latin word stock used in all sciences (including medicine), technology, and law. Students’ needs determine specific content of the course.

CLS 371. FOUNDATIONS OF LANGUAGE (4)
Introduction to synchronic linguistics, basic concepts, general feature of language. Dialects, kinship groups, language types, writing systems. Methods of structural analysis with emphasis on the Trubetzky-Jakobson approach. (Alternate years.)

CLS 373. HISTORY OF THE ALPHABET (2)
Study, in reasonable detail, of the evolution of our ‘Roman’ alphabet, as well as of other ancient and modern alphabets, from the writing system of ancient Egypt.

CLS 383. SELECTED TOPICS (2-5)
Course contents depend on student demand and instructor’s interest and may range over the field of Latin language, literature, or civilization.

CLS 401-402-403. ADVANCED GRAMMAR AND COMPOSITION (3,3,3)
PR: CLS 201 plus any two of CLS 202, 203, 301, 302, 303, or 4 years of high school Latin. Difficult parts of the morphological and syntactic structure of Latin. Exercises in advanced translation and composition. Theory of literature: genres, styles, figures of speech, principles of oratory and versification. (Alternate years)

CLS 411, 412, 413. LATIN LITERATURE AND BACKGROUNDS (3,3,3)
PR: Same as for CLS 401. Fast survey of Greek literature, discussion of Roman dependence on Greek literary topics, concepts and forms. Survey of Latin literature from Ennius to Augustine. Study and interpretation of sample texts by authors not read earlier. (Alternate years.)

CLS 431-432-433. ADVANCED GREEK (3,3,3)
PR: CLS 333 or equivalent. Study and analysis of selected passages from Attic prose authors (431), Herodotus (Ionian Greek, 432), and Homer (Epical Greek, 433).

CLS 441-442-443. ADVANCED HEBREW (3,3,3)
PR: CLS 341 or equivalent. Study and analysis of selected passages from pre-Exilic, Exilic, and post-Exilic Biblical and extra-Biblical Hebrew texts to the second century B.C.E. Survey of the Hebrew literature from its beginnings to the end of the Second Commonwealth.

CLS 483. SELECTED TOPICS (2-5)
Course contents depend on student demand and instructor’s interest and may range over the whole field of Ancient languages, literatures, and civilizations, in particular Latin, Greek, and Hebrew.

CLS 485. DIRECTED READINGS (2-5)
Readings in special topics chosen by the student in cooperation with the instructor. Reading of literature also possible in English translation. Arrangement with department chairman before registration necessary.

FOR SENIORS AND GRADUATE STUDENTS

CLS 517. LATIN-ROMANCE LINGUISTICS (4)
PR: Background in Latin or a Romance language. Case study of linguistic development of 4,000 years from Proto-Aryan through Latin to modern Romance languages. (Alternate years.)

CLS 527 GREEK CIVILIZATION (4)
PR: CLS 321 or a course in Greek history or CI. Detailed study of the Aegean and Hellenic civilizations from their beginnings in Crete to the Roman period. Greek discoveries, explorations, and colonization. (Alternate years.)

CLS 529. ROMAN CIVILIZATION (4)
PR: CLS 321 or 527 or a course in Roman history; or Latin major; or CI. Prehistoric Italy and the Etruscan civilization. History of the civilization of Rome and the Empire with emphasis on the Greek, Carthaginian, and Oriental influences. (Alternate years.)

CLS 571. LANGUAGE IN CHANGE (4)
Principles of diachronic (historical) and comparative linguistics. Causes and documentation of change, research methods. History of writing. Genealogy of languages, glottochronologies. Ethnolinguistics. (Alternate years.)

CLS 581. INDIVIDUAL RESEARCH (2-5)
PR: CI. Specialized individual work in particular areas of student’s interests.

CLS 583. SELECTED TOPICS (2-5)
For description see CLS 483. Courses offered under this heading on a semi-regular basis include The Bible as History (Hebrew Civilization) (4), Basic Sanskrit (3,3,3), and Old Church Slavonic (5).

CLS 585. DIRECTED READING (2-5)
For description see CLS 485.

NOTE: In any of the numbers 383, 483, 485, 581, 583, 585 enrollment is repeatable for different subject matters.

COMMUNICOLOGY (CLY)

Speech Pathology-Audiology-Aural (Re)Habilitation

LOWER LEVEL COURSES

CLY 201. SURVEY OF COMMUNICATION DISORDERS (3)
A general survey course concerning the nature and prevention of disorders of communication.

CLY 301. SPEECH PATHOLOGY (6)
PR: CLY 201 or CI. The scope of speech pathology as a profession and field of study. An introduction to the study of hearing impairments: classifications, etiologies, major treatment approaches, and research findings.

CLY 302. AUDIOLOGY (6)
PR: CLY 201 or CI. The scope of audiology as a profession and field of study. An introduction to the study of hearing impairments: classifications, etiologies, major treatment approaches, and research findings.

CLY 311. THE SCIENCE OF COMMUNICATION DISORDERS I (6)
PR: CLY 201 or CI. The neurological and anatomical basis of communication disorders. Comparisons of normal and pathological organic structures and their functional dynamics. Separate sections concentrating on normal and abnormal aural physiology are scheduled for those students with a primary emphasis in audiology.

CLY 312. THE SCIENCE OF COMMUNICATION DISORDERS II (6)
PR: CLY 201 or CI. Perspectives on research in speech pathology and audiology. Introduction to multivariate design considerations as they apply to research speech and hearing laboratory and clinical settings. Analysis of basic hypothesis testing.

CLY 482. NATURE AND NEEDS OF THE HEARING IMPAIRED (6)
PR: CLY 301, 302 or CI. A study of the effects of auditory disorders upon the organization and expression of behavioral patterns as they relate to motivation, adjustment and personality.

CLY 483. SELECTED TOPICS (4)
PR: CI. A reading program of topics in speech pathology and/or audiology conducted under the supervision of a faculty member. May be repeated three times.

CLY 498. INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLOGY PRACTICUM (1-12)
PR: CLY 301 or 302. Observation and participation in speech pathology and audiology practicum in the University clinical laboratory.

FOR SENIORS AND GRADUATE STUDENTS

CLY 511. INSTRUMENTATION I (6)
PR: CLY 301. Calibration, usage and specific applications of specialized instruments available in dealing with speech and language disorders. Includes: recording, sonograph, audio-feedback, video equipment, behavior measuring devices.

CLY 512. INSTRUMENTATION II (6)
PR: CLY 302. Calibration, usage and specific applications of specialized instruments available in dealing with the identification and measurement of hearing disorders. Includes: sound level recorders, audiometers, and the electrophysiological measurement devices.

CLY 513. THE SCIENCE OF COMMUNICATION DISORDERS (6)
PR: CLY 301 or 302 or CI. The application of behavioral and learning principles to the study of the normal development of speech, language and hearing and to the management of disorders.

CLY 571. EVALUATION OF ORAL COMMUNICATION DISORDERS (6)
PR: Admittance to the Program or CI. The administration, evaluation, and reporting of diagnostic tests and procedures used in the assessment of speech and language disorders.

CLY 572. AUDIOLOGY I (6)
PR: Admittance to the Program or CI. Introduction to psycho-acoustical phenomenon as it relates to the measurement of hearing. Overview of principles and methods of identification audiometry with emphasis on neonatal, preschool, and school age populations. Procedures for determining pure tone thresholds including the application of masking techniques. Fundamental concepts related to hearing aids and their benefits. Management of hearing impaired individuals including counseling.

CLY 573. AUDIOLOGY II (6)
PR: CLY 572 or CI. Advanced study of psychoacoustical phenomenon as it relates to the measurement of hearing. Instruction emphasizing principles and methods of determining hearing acuity through the use of speech stimuli. Management of clients from pertinent case histories through post-evaluation recommendations. Thorough consideration of hearing aids with special attention on techniques of selecting and fitting aids in a clinical setting.

CLY 574. METHODS FOR ORAL COMMUNICATION DISORDERS (6)
PR: CLY 571 or CI. An in-depth analysis of classic and contemporary methods employed in the management of communicatively impaired individuals. Experimental approaches are reviewed through current medical, psychological, speech, language and hearing journals.

CLY 575. MANAGEMENT OF COMMUNICATION DISORDERS (4)
PR: CLY 573, CLY 574, or CI. The planning of programs for individuals with speech, language, and hearing impairments. Includes administration of programs in public schools, clinics, and private practice.

CLY 576. COMMUNICATION DISORDERS: VOICE (4)
PR: CLY 574 or CI. A comprehensive study of the medical and physical aspects of voice disorders. Primary emphasis is on therapeutic management.

CLY 577. COMMUNICATION DISORDERS: ARTICULATION (4)
PR: CLY 574 or CI. An examination of normal and deviant articulatory acquisition and behavior. Presentation of major theoretical orientations and the therapeutic principles based upon them.

CLY 578. COMMUNICATION DISORDERS: STUTTERING (4)
PR: CLY 574 or CI. A comprehensive study of the diagnosis and modification of stuttering based on a two-factor model. Other major theories are considered and evaluated.

CLY 579. TECHNIQUES OF AUDITORY TRAINING (4)
PR: CLY 574 or CI. An analysis of theories of auditory reception and amplification. A study of the methods and techniques employed in the development and habilitation of auditory skills for the hearing impaired.

CLY 580. COMMUNICATION DISORDERS: LANGUAGE (4)
PR: CLY 574 or CI. Examination of research and clinical literature presenting major theoretical orientations pertaining to the etiology, evaluations, and treatment of those factors that hinder or interrupt normal language acquisition or function.

CLY 581. SUPERVISED RESEARCH (1-12)
PR: CI. Individualized programs of student research approved and supervised by a faculty member.

CLY 583. SELECTED TOPICS (4)
PR: CI. A reading program of topics in speech pathology and/or audiology conducted under the supervision of a faculty member. May be repeated three times.
Cly 598. Speech Pathology and Audiology Practicum (1-12)
PR: Cl. Participation in speech pathology and audiology practicum in the University clinical laboratory and selected field settings.

For Graduate Students Only

Cly 620. Cleft Palate (4)
PR: Cl. An in-depth study of speech, language and hearing problems associated with cleft lip and cleft palate. Consideration is given to a multidisciplinary approach to therapy and rehabilitation.

Cly 621. Aphasia (4)
PR: Cl. A consideration of the neurological and psychological aspects of aphasia as they relate to communication disorders. Specific language therapy approaches are discussed and evaluated.

Cly 622. Cerebral Palsy (4)
PR: Cl. A study of the medical, physical, occupational, speech, language, and hearing problems of the cerebral palsied. Therapy techniques are reviewed and evaluated.

Cly 623. Dialect as a Communication Disorder (4)
PR: Cl. Research and clinical literature on dialect as a communication disorder.

Cly 673. Child Audiology (4)

Cly 674. Special Auditory Tests (4)
PR: Cl. 573 or Cl. History, development, rationale and techniques for administering hearing tests to determine site of lesion, including those requiring special instrumentation. The detection and clinical management of pseudohypacusis including the use of objective audimetry.

Cly 675. Techniques of Speech Reading (4)
PR: Cl. Speech reading as a language skill for the deaf and hard of hearing child and adult. Analysis of theories, methods, and systems.

Cly 676. Hearing Disorders (4)
PR: Cl. 674 or Cl. The compilation and interpretation of hearing test data for diagnosing hearing impairment. Investigation of medical and surgical techniques for the treatment of hearing loss, coordinating information for planning the treatment and rehabilitation of the hearing impaired, including the involvement of other professionals.

Cly 677. Hearing Conservation (4)
PR: Cl. Participation in speech pathology and audiology practicum in the University clinical laboratory and selected field settings.

For Graduate Students Only

Cly 680. Research Procedures in Speech Pathology and Audiology (4)
PR: Cl. Advanced research and experimental design techniques employed in clinical and laboratory settings in speech pathology and audiology. Introduction to research technologies; review of stylistic considerations in research writing.

Cly 681. Graduate Research (1-12)
PR: Cl. The student plans and conducts an individual research project under the supervision of a speech pathology or audiology faculty member.

Cly 683. Selected Topics (4)
PR: Cl. A reading program of topics in speech pathology and/or audiology conducted under the supervision of a faculty member. May be repeated three times.

Cly 684. Language for the Hearing Impaired (6)
PR: Cl. 301, 302, 482 or Cl. Techniques and materials of teaching language to children with auditory disorders. Evaluation and analysis of contemporary methods.

Cly 685. Communicative Skills for the Hearing Impaired (6)
PR: Cl. 301, 302, 482. Application and evaluation of techniques for teaching symbolic functioning to children with hearing impairments. Consideration of developmental and remedial aspects of reading.

Cly 698. Practicum (1-12)
PR: Cl. Participation in speech pathology and audiology practicum in the University clinical laboratory and selected field settings.

Cly 699. Thesis (1-9)

Cooperative Education (COE)

Coordinating Staff: G. F. Lentz, G. R. Card, A. Minor.

COE 171. Cooperative Education, 1st Training Period (0)
PR: 24 hours of academic credit, acceptance in Cooperative Education Program. (S/U only.)

COE 172. Cooperative Education, 2nd Training Period (0)
PR: COE 171. (S/U only.)

COE 271. Cooperative Education, 3rd Training Period (0)
PR: COE 172. (S/U only.)

COE 272. Cooperative Education, 4th Training Period (0)
PR: COE 271. (S/U only.)

COE 371. Cooperative Education, 5th Training Period (0)
PR: COE 272. (S/U only.)

Criminal Justice (CJP)

LOWER LEVEL COURSES
CJP 200. MAN, CRIME, AND SOCIETY (4)
PR: None. Designed to give the undergraduate non-major a non-technical survey of the American criminal justice system. The nature of crime, law enforcement, the court system, and correctional practices and institutions will be covered. Not for major credit.

CJP 201. SURVEY OF CRIMINAL JUSTICE SYSTEM (5)
PR: PSY 201. SOC 201. or equivalent or CI. An introduction to the major institutions associated with criminal justice, their structure, personnel, objectives, resources, and operation. Careful consideration will be placed upon the practical daily relations between the police, the courts, correctional agencies, and the general public.

CJP 315. CHARACTERISTICS OF THE OFFENDER (4)
PR: CJP 201. POL 201 or CI. Content of this course examines the effects upon the criminal justice system of the freedoms of habeas corpus, bills of attainders and ex post facto. Thereupon, the course follows the accused through the paths of criminal justice from arrest, to pretrial procedures, to the court and ultimately through corrections.

CJP 310. NATURE OF CRIME (4)
PR: CJP 201. This course is designed to provide a basic understanding of the complex factors related to crime in America. Focus will be centered on reviewing the basic issues, scope, and costs stemming from criminal activities.

CJP 301. NATURE OF CRIME (4)
PR: CJP 201. This course is designed to provide a basic understanding of the complex factors related to crime in America. Focus will be centered on reviewing the basic issues, scope, and costs stemming from criminal activities.

CJP 302. LEGAL FOUNDATIONS OF CRIMINAL JUSTICE (4)
PR: CJP 201. POL 201 or CI. Content of this course examines the effects upon the criminal justice system of the freedoms of habeas corpus, bills of attainders and ex post facto. Thereupon, the course follows the accused through the paths of criminal justice from arrest, to pretrial procedures, to the court and ultimately through corrections.

CJP 312. THE LAW ENFORCEMENT OFFICERS AND THE COMMUNITY (4)
PR: Junior standing plus CJP 410, or CI. This course examines the area of human relations especially as it applies to police functions within the community. Topics of prejudice and discrimination are emphasized.

CJP 410. THEORY AND PRACTICE OF LAW ENFORCEMENT (4)
PR: Junior standing plus CJP 302 or CI. Designed to provide an in-depth summary of current philosophies and techniques used in the field of law enforcement with special attention given to the roles of law enforcement officers. Attention will be given to the new experimental programs and techniques.

CJP 412. THE LAW ENFORCEMENT OFFICERS AND THE COMMUNITY (4)
PR: Junior standing plus CJP 410, or CI. This course examines the area of human relations especially as it applies to police functions within the community. Topics of prejudice and discrimination are emphasized.

CJP 420. THEORY AND PRACTICE OF CORRECTIONS (4)
PR: Junior standing plus CJP 301 or CI. The course relates to the analysis of the different treatment philosophies and techniques currently in use in the field. Attention will be given to experimental and demonstration programs as well as to generally accepted and established methods.

CJP 421. JUVENILE CORRECTIONS (4)
PR: Junior standing plus CJP 420, or CI. Provides an in-depth analysis of the different treatment philosophies and techniques used in the field of juvenile corrections today. Special attention will be given to experimental and demonstration programs as well as to traditional and established methods.

CJP 422. THE PROBATION AND PAROLE PROCESS (5)
PR: Junior standing plus CJP 420, or CI. The concepts of probation and parole will be thoroughly explored and related to actual and potential treatment situations.

CJP 480. RESEARCH METHODS IN CRIMINAL JUSTICE (4)
PR: Junior standing plus CJP 201, or CI. Designed to give the criminal justice major an introduction to research methodology and the evaluation of research. This course may not be taken for credit if the student has already successfully completed SSI 301, Social Science Statistics, ECN 231, Business and Economic Statistics I, or MTH 345, Introductory Statistics I.

CJP 481. DIRECTED RESEARCH (1-5)
PR: CI. This course is designed to provide students with a research experience in which they will work closely with faculty on the development and implementation of research projects in the area of criminal justice.

CJP 485. DIRECTED READINGS (1-5)
PR: CI. This course is specifically designed to enable advanced students the opportunity to do indepth independent work in the area of criminal justice. Each student will be under the close supervision of a faculty member of the program.

CJP 491. SEMINAR IN CRIMINAL JUSTICE (3)
PR: Senior standing and CI. The seminar (four-course series — variable topics) will consider the various changes occurring in the field of criminal justice with added emphasis placed on the responsibilities of careers in the field. (May be taken with different subject matter up to 12 hours — three hours required.)

CJP 499. PRACTICUM FOR CRIMINAL JUSTICE MAJORS (3-12)
PR: Senior standing. The practicum will consist of placement with one or more of the agencies comprising the criminal justice system. This course will enable the students to gain meaningful field experience related to their future careers. Each three-hour block of credit will require a minimum of ten hours of work per week within the host agency in addition to any written work or reading assignments. (S/U only.)

Chairman: W. G. Hug; Associate Professor: R. F. Fernandez; Assistant Professors: C. Robinson, C. A. Turoff.

LOWER LEVEL COURSES
DAN 201. MODERN DANCE I (3)
PR: Admission by audition. Study of basic principles of modern dance technique. Practical work in beginning exercises and movement phrases, utilizing changing rhythms and dynamics. May be repeated.

DAN 202. BALLET I (3)
PR: Admission by audition. Basic positions and fundamental ballet exercises. Stress on correct alignment of the body and the application of simple step combinations in centre work. The use of ballet vocabulary (French terms). Material is covered almost totally as practical work in class with a few outside projects. Concert and performance attendance required. May be repeated.

DAN 203. CHOREOGRAPHY I (3)
Study and execution of basic principles of improvising. Preparation of studies in theme and variations, breath phrases and metric phrases. May be repeated.

UPPER LEVEL COURSES
DAN 301. MODERN DANCE II (3)
PR: Admission by audition. Continuation of DAN 201. Further emphasis on style and phrasing. Work in projecting mood and quality by dancing and rehearsing in more advanced student choreography, leading to performance. Rehearsal hours to be arranged. Must be repeated for a minimum of 6 hours by majors. May be repeated.
DAN 302. BALLET II (3)
PR: Admission by audition. Continuation of DAN 202. Intensification of barre exercises for the development of strength and form. Centre exercises, more diversified and intricate use of ballet steps in exercises to develop quickness of mind/body coordination. Most of the ballet steps are introduced. Application of phrasing and quality of movement. Adagio, pirouettes, and allegro are specifically stressed. Material covered as practical work in class with concerts and performances. Rehearsal hours to be arranged. Must be repeated for a minimum of 6 hours by majors. May be repeated.

DAN 303. CHOREOGRAPHY II (3)
PR: DAN 203 or CI. Preparation of studies in rhythm, dynamics, form and motivation, culminating in a solo. May be repeated.

DAN 304. JAZZ DANCE (2)
PR: DAN 301 or DAN 302 or CI. A technique class with an emphasis on highly stylized, percussive movement on a strong rhythmic base. Required is the performance of a short dance sequence encompassing these skills. May be repeated.

DAN 311. REPERTORY (1)
The development and performance of solo and/or group dances. Open to all University students by audition. May be repeated.

DAN 312. POINTE TECHNIQUE (1)
PR: DAN 302. This course introduces fundamental exercises for the development of pointe technique. Material covered as practical work in class with a few outside projects, concerts, and performances. Rehearsal hours to be arranged. Must be repeated for a total of 6 hours by Ballet Majors. May be repeated.

DAN 313. WORLD HISTORY OF DANCE (3)
Study of the development of dance from its inception through the Middle Ages. Reading, lecture.

DAN 370. INTRODUCTION TO DANCE (3)
For non-dance majors, a study of the art of dance. Lecture and activities including Modern, Ballet, Jazz, Ethnic and Tap. DAN 370 may be used for University General Distribution Requirement by the non-major, and may be used to satisfy part of the 9 hour in-College Requirement for Fine Arts Majors in Art, Music and Theatre.

DAN 371. HATHA YOGA (2)
A course to experience and practice the basic asanas (bodily postures), pranayama (breath control), and deep relaxation of body and mind, Hatha Yoga prepares the student for dance movement. May be used for University General Distribution Requirement by the non-major, and may be used to satisfy part of the 9-hour in-College Requirement for Fine Arts Majors in Art, Music and Theatre.

DAN 401. MODERN DANCE III (3)
PR: Admission by audition. Continuation of DAN 301 on an advanced level. Work in improvisation and individual invention creating an awareness of many possibilities of movement. Dancing in student choreography leading to performance. Rehearsal hours to be arranged. Must be repeated for a minimum of 9 hours by the Modern Major. May be repeated.

DAN 402. BALLET III (3)
PR: Admission by audition. Continuation of DAN 302. Perfecting the execution of barre work including body alignment, quality of movement, strength, form, quickness of mind and alertness. Intensification of centre work. More stress on aesthetic quality of movement and phrasing. Concern for performing style and awareness of audience/dance projection and communication. Material covered as practical work in class with a few outside projects, concerts, and performances. Students expected to be proficient in pointe work. Rehearsal hours to be arranged. Must be repeated for a minimum of 9 hours by the Ballet Major. May be repeated.

DAN 403. CHOREOGRAPHY III (3)
PR: DAN 303 or CI. Work directed toward duets and group dances. The students will submit choreographic ideas for instructor's approval, then proceed with rehearsals. The best dances will be performed and fully produced under supervision of student choreographers. Reading, lecture, laboratory. May be repeated.

DAN 413. HISTORY OF 20TH CENTURY BALLET (3)

DAN 453. DANCE SENIOR SEMINAR (3)
PR: Senior of CC. To aid majors to understand, appraise and perfect their own art and technique through critical and aesthetic judgements of their colleagues.

DAN 481. DIRECTED STUDY (1-6)
PR: CC. May be repeated. Independent studies in the various areas of Dance. Course of study and credits must be assigned prior to registration.

FOR SENIORS AND GRADUATE STUDENTS
DAN 501. MODERN DANCE IV (3)
PR: Admission by audition. Continuation of DAN 401. Intensive work on the growth of personal performance style as a means to communication. Equal emphasis will be given to training the body in the development of technical excellence. Dancing in a student choreography leading to performance. Rehearsal hours to be arranged. Must be repeated for a minimum of 9 hours by the Modern Major. May be repeated.

DAN 502. BALLET IV (3)
PR: Admission by audition. Continuation of DAN 402. Increasing emphasis on aesthetic quality of movement. Perfecting the execution of classical ballet technique and a continuing awareness of performing projection and audience communication for those with professional performing career in mind. Complete background and knowledge of the classical ballet techniques required. Students expected to be proficient in pointe work. Material covered as practical work in class with a few outside projects, concerts, and performances. Rehearsal hours to be arranged. Must be repeated for a minimum of 9 hours by the Ballet Major. May be repeated.

DAN 503. CHOREOGRAPHY IV (3)
PR: DAN 403. The student will prepare studies based on free form, minimal art, and chance methods. Reading, lecture, laboratory. May be repeated.

DAN 513. HISTORY OF MODERN DANCE (3)
Study of the development of modern dance in the 20th Century in America; the different techniques, concepts in choreography and leading artists of our time. Reading, film, and lecture.
point of view for the convenience of persons without adequate knowledge of simple algebraic manipulations and for persons without adequate preparation for MTH 101.

DMA 002. ANALYTICAL TRIGONOMETRY (0)
A programmed learning course in the study of the trigonometric functions as functions of real numbers and their application to triangles.

DRE 001. DEVELOPMENTAL READING (0)
Designed to help students develop maximum reading efficiency. Includes extensive instruction and laboratory practice in the improvement of adequate rates of reading, vocabulary, and comprehensive skills. An independent study approach is also available for students who prefer to assume responsibility for their own progress.

DRS 001. DEVELOPMENTAL STUDY SKILLS (0)
Designed to help students develop efficient learning methods needed for college success. Includes instruction and practice in effective study techniques, ranging from developing proper attitude toward studying, listening, and taking notes to preparation for and taking exams.

ECONOMICS (ECN)


LOWER LEVEL COURSES

ECN 100. CONTEMPORARY ECONOMIC PROBLEMS (5)
Problem of scarcity, role of ethical values, economic processes, specific economic problems, alternative solutions, and evaluating economic performance.

ECN 201. ECONOMIC PRINCIPLES I: MICROECONOMICS (4)
The fundamental economic concept of scarcity, alternative courses of action and the problem of choice. How an economist decides what to produce, how to produce and how to reward participants in the economy. Attention is focused on factors affecting consumer wants and on the behavior of price in different types of markets.

ECN 202. ECONOMIC PRINCIPLES II: MACROECONOMICS (4)
An introduction to the modern theory of income determination with emphasis upon the application of monetary and fiscal policy oriented toward the accomplishment of the macroeconomic objectives of full employment, economic growth, and balance of payments stability.

ECN 231. BUSINESS AND ECONOMIC STATISTICS I (3)
PR: MTH 211. College Algebra or equivalent. Description of sample data; calculation of probabilities; frequency functions of random variables; the binomial and normal distributions; sampling theory and estimation; tests of hypotheses; elements of Bayesian decision theory.

UPPER LEVEL COURSES

ECN 301. INTERMEDIATE PRICE THEORY (5)
PR: ECN 201-202. Advanced analysis of supply and demand as related to competition and monopoly; application of economic theory to product pricing and resource pricing.

ECN 311. LABOR ECONOMICS (4)
PR: CI. History of the trade union movement; economic analysis of trade union philosophies and practices; examination of basic influences affecting labor force, real wages and employment; collective bargaining and labor law.

ECN 313. COLLECTIVE BARGAINING (5)
PR: ECN 311. The administration of labor-management arguments, mediation and arbitration of industrial disputes and governmental role in collective bargaining.

ECN 323. INTERMEDIATE INCOME AND MONETARY ANALYSIS (5)
PR: ECN 201-202. An advanced exposition of the neo-Keynesian analysis explaining the determination of income, employment, prices, and the interest rate. Emphasis is placed upon the interaction of aggregate demand, as determined by consumption, investment, money, and the government budget, and aggregate supply.

ECN 331. BUSINESS AND ECONOMIC STATISTICS II (5)
PR: MTH 211, College Algebra or equivalent and ECN 231. Theory and use of statistical inference for decision and prediction. Point and interval estimation; criteria for choosing estimators and decision rules; hypotheses tests and prob values; analysis of variance; correlation and regression.

ECN 341. ECONOMICS OF TRANSPORTATION (4)
Functions of transportation agencies, rate structure of transportation companies, problems of state and federal regulations and coordination of transportation facilities.

ECN 343. ECONOMICS OF PUBLIC UTILITIES (4)

ECN 351. INTERNATIONAL ECONOMICS (4)

ECN 361. INTRODUCTION TO MATHEMATICAL ECONOMICS (4)
PR: MTH 212, ECN 201-202 and ECN 331 or CI. Economic processes expressed as equations and economic systems as mathematical models. Investigation of their static and dynamic properties by mathematical analysis and computer simulation.

ECN 371. AMERICAN ECONOMIC HISTORY (4)
The growth and evolution of American economic institutions from Colonial times to the present.

ECN 373. ECONOMICS OF THE URBAN ENVIRONMENT (5)

ECN 401. HISTORY OF ECONOMIC THOUGHT (5)
PR: ECN 201-202. The development of the economic schools (Scholasticism, Mercantilism, Physiocracy, Classicism, Utopian Socialism, Anarchism, Marxism, Historicism, Marginalism, Neo-Classicism, Institutionalism, and Keynesianism) in connection with their philosophical and political convictions in relation to their times.

ECN 405. COMPARATIVE ECONOMIC SYSTEMS (4)
Analysis of the major types of economies in industrially developed countries: competitive capitalism (e.g.: West Germany), regulated capitalism (e.g.: France), "command" communism (e.g.: the Soviet Union) and "worker-controlled" communism (e.g.: Yugoslavia). Each is subject to economic evaluation with particular reference to their ability to meet changing consumer demands and technological innovations.

ECN 411. LABOR RELATIONS AND PUBLIC POLICY (4)
PR: ECN 311. Problems resulting from legislative and judicial interpretation of the rights, duties and responsibilities of labor unions and employers; public policy in labor-management negotiations; survey of legislation designed to protect workers.
ECN 423. PUBLIC FINANCE (5)
PR: ECN 301, 323. An examination of the public sector and its contribution to economic welfare. Government expenditures and revenues are examined in relation to their impact on resource allocation, income distribution, stabilization, and economic growth.

ECN 425. MONETARY THEORY (5)
PR: ECN 301, 323. An examination of the impact of the financial sector upon real economic magnitudes. The course approaches its subject matter through the theory of portfolio and capital adjustments with emphasis upon the contributions of Pigou, Fisher, Keynes, Patinkin, Friedman, and Tobin.

ECN 431. SELECTED TOPICS IN QUANTITATIVE ECONOMICS (4)
PR: MTH 212, ECN 331 or CI. Analysis of relevant problems of social policy by application of economic criteria and econometric method. Survey of contemporary research.

ECN 437. BUSINESS-GOVERNMENT RELATIONSHIPS (4)
Analysis of the three public policy approaches: competitive, regulatory, and ownership; evaluation of each in terms of ability to bring about economically desirable price-cost relationships, reductions in cost, invention and innovation and an optimal allocation of resources.

ECN 451. INTERNATIONAL COMMERCIAL POLICIES (4)
PR: ECN 351. An advanced analysis of balance of payments equilibrating mechanisms and of international commercial policy.

ECN 461. THEORY OF ECONOMIC DEVELOPMENT (4)
PR: ECN 323 or CI. Problems, policies, and dynamics of economic growth in emerging nations. The benefits and relevance of the theory of economic development is examined within the context of the social and political milieu of today's underdeveloped areas.

ECN 471. THEORY OF ECONOMIC DYNAMICS (4)
PR: ECN 323. An examination of macroeconomic processes as they occur through time. The determination and characteristics of long run growth paths based upon both Keynesian and Neoclassical models are discussed and business cycles are then treated as short run deviations from these growth paths. Empirical studies, forecasting, and policy issues are also considered.

ECN 489. SEMINAR IN SELECTED ECONOMIC TOPICS (3-5)
PR: Senior standing and CI. Topics to be selected by the instructor or instructors on pertinent economic issues.

FOR SENIORS AND GRADUATE STUDENTS

ECN 501. MICROECONOMICS (3)
An accelerated introduction to the price system as a mechanism for allocating scarce resources. Models are developed to explain the workings of both product and resource markets. This course is intended for students with no previous courses in economics and no credit towards degrees will be received in the graduate programs of the College of Business.

ECN 502. MACROECONOMICS (3)
PR: 501. An accelerated introduction to the understanding of the post-Keynesian system through the development of a theoretical supply and demand model and the application of this model to the fiscal and monetary possibilities inherent within it. This course is intended for students with no previous study in economics and no credit towards degrees will be received in the graduate programs of the College of Business.

ECN 503. STATISTICS FOR BUSINESS (3)
PR: ECN 231 and College Algebra. Statistical inference and decision theory applied to problems of business management.

ECN 507. ECONOMIC EDUCATION I (3)
Basic economic processes affecting price determination, income distribution, national income and employment, growth, price levels, and balance of payments. This course is essentially designed for inservice teaching personnel.

ECN 508. ECONOMIC EDUCATION II (3)
Basic economic processes affecting price determination, income distribution, national income and employment, growth, price levels, and balance of payments. This course is essentially designed for inservice teaching personnel.

ECN 509. ECONOMICS EDUCATION III (3)
This course will be concerned with current economic problems. Emphasis will be placed on an analysis of those topical problems which secondary social science teachers would find particularly important to include in their courses. This course is essentially designed for inservice teaching personnel.

ECN 519. INDUSTRIAL ORGANIZATION I — STRUCTURE (4)
ECN 201 and 202, or equivalent. Extent, level, trends and dimensions of economic concentration; competitive conduct of large enterprises; casual factors underlying changes in industrial structure: technology, managerial economies and diseconomies, invention and innovation, and mergers.

ECN 520. INDUSTRIAL ORGANIZATION II — CONDUCT AND BEHAVIOR (4)
PR: ECN 301 and ECN 519. Non-price competition, predatory practices, government intervention; oligopolistic pricing; differences from competitive pricing, standards of, constraints upon, effects on income distribution, production and governmental policy.

ECN 531. ECONOMIC PROGRAMMING AND CONTROL (5)

ECN 561. ECONOMETRICS (5)
PR: ECN 301, 323, 331, or CI. Theory and use of multiple regression to explain, forecast and influence economic behavior. Applications to demand, cost and production functions. Model specification. Ordinary least squares and instrumental variables methods. Analysis of errors. BMD and TSP computer programs. Design and conduct of individual empirical research projects.

FOR GRADUATE STUDENTS ONLY

ECN 601. RESEARCH METHODOLOGY (3)

ECN 602. HISTORY OF ECONOMIC THOUGHT (5)
PR: ECN 605 and ECN 607. An intense analysis of the main currents of modern economic thought during the last one hundred years.

ECN 603. MANAGERIAL STATISTICS (3)

ECN 604. APPLIED FORECASTING (3)

ECN 605. MICROECONOMICS (3)
PR: ECN 201-202 or ECN 501-502. An intensive study of microeconomics examining the behavior of consumers, and producers. Topics covered include the general concept of
scarcity and conceptual models in the areas of demand, production, cost, and the firm and market organization. Advanced readings in theoretical and applied microeconomics will be emphasized.

ECN 607. AGGREGATE ECONOMICS (3)
PR: ECN 201-202 or ECN 501-502. An analysis of the macroeconomic interrelationships determining the level of income, employment, prices, and interest rates over time and the impact of governmental policy activities upon these variables. The course emphasizes forecasting the movement of these variables in the interest of improving the planning process as carried out by the individual business firm.

ECN 608. APPLIED ECONOMIC ANALYSIS (3)
PR: ECN 605, 607. Application of micro and macro economic analysis to problems of policy and procedure in business and government.

ECN 610. MANPOWER ECONOMICS SEMINAR (5)
PR: ECN 201-202, 501-502, or C. This course is designed to provide the student with a background in labor force statistics, labor institutions, and problems of employment and unemployment. This background then allows for further study of the causes and remedies for unemployment and underemployment.

ECN 623. PUBLIC FINANCE (5)
PR: ECN 201-202, or 501-502 or equivalent. An examination of the role of the public sector and its contribution to economic welfare. Tax and expenditure policies are examined in relation to their effects on resource allocation, income distribution, stability and economic growth.

ECN 625. MONETARY THEORY (5)
PR: ECN 605, 607. An advanced discussion of the impact of the financial sector upon real economic magnitudes. The course emphasizes theoretical and empirical contributions found in the current literature as an extension of earlier work done in the field of monetary theory.

ECN 683. SELECTED TOPICS IN ECONOMICS (1-6)
PR: Graduate standing and CC. The course content will depend on student demand and instructor’s interest.

ECN 699. THESIS (6-0)
PR: CC.
study of processes and media involved in the expression of individual ideas through crafts. Emphasis placed on crafts in a contemporary society with skills in metals, weaving, fibers, and ceramics and their application in a public school curriculum.

FOR SENIORS AND GRADUATE STUDENTS
EDA 521. ART MEDIA FOR CHILDREN (5)
PR: EDE 421 or EDA 308. An in-depth study of arts and craft media for children. Emphasis will be placed on innovative use of new materials.

EDA 531. EXPERIMENTAL FILMMAKING FOR CHILDREN (5)
PR: EDA 308 or EDE 421 or EDE 431 (suggested: COM 550). A study of basic experimental film techniques and laboratory experiences with children in the public schools, community centers and non-school arts programs.

FOR GRADUATE STUDENTS ONLY
EDA 660. HISTORICAL AND PHILOSOPHICAL FOUNDATIONS OF ART EDUCATION (4)
Past and contemporary philosophies and practices in art education.

EDA 661. ADMINISTRATION AND SUPERVISION OF ART EDUCATION (4)
Principles of administration and supervision of art programs in the school.

EDA 682. RESEARCH SEMINAR IN ART PROGRAM (4)
PR: EDA 660 or CI. Literature and research in art education. Various approaches to problem solving and evaluation with emphasis on individual research.

EDA 698. FIELD WORK IN ART EDUCATION (2-6)
For students with degree-seeking status. Supervised participation in activities related to art education in community centers, non-school arts programs, planned workshop and research.

Curriculum (EDC)

LOWER LEVEL COURSES
EDC 101. INTRODUCTION TO TEACHING (4)
PR: Freshman only or CI. The people with whom teachers work, the types of tasks they perform and the challenges they can anticipate. Observation of teaching at several grade levels. (S/U only.)

UPPER LEVEL COURSES
EDC 401. CURRICULUM AND INSTRUCTION (5)
PR: EDF 305 and 307, and admission to a teacher education program. Structure and purposes of curriculum organization with special emphasis on the quality of curriculum. Students enrolled in EDC 401 are required to spend six hours a week in public schools as pre-interns in addition to regular class hours.

EDC 480. DIRECTED STUDY (1-4)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

EDC 481. INDIVIDUAL RESEARCH (1-4)
PR: Senior standing and consent of program coordinator.

EDC 485. DIRECTED READINGS (1-4)
May be repeated for a total of 4 quarter hours.

EDC 498. SENIOR SEMINAR IN EDUCATION (3)
PR: Senior standing. Synthesis of teacher candidate's courses in his complete college program. Required concurrently with student teaching.

EDC 499. SUPERVISED TEACHING (1-12)
One full quarter of student teaching in a public or private school. Student teacher takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more quarters, students will be registered for credit which accumulates to 12 quarter hours. (S/U only.)

FOR SENIORS AND GRADUATE STUDENTS
EDC 501. CURRICULUM AND INSTRUCTION: ELEMENTARY OR SECONDARY (5)
Curriculum scope, sequence and interrelationships, with a critical evaluation of current trends.

EDC 510. HEALTH PROBLEMS IN CHILDREN (4)
Health problems prevalent in the culturally disadvantaged child and the teacher's role in referral or educational adaptation in classroom activities.

EDC 552. CREATIVE PROBLEM SOLVING FOR THE CHILD (4)
Exploration of the concept of creativity, its factors, measurement, and application to education. Opportunities are given to work with children in a laboratory setting and to prepare materials to be used with small groups of children.

EDC 585. EDUCATION WORKSHOP (1-5)
Professional in-service workshop in various areas of education. May be repeated when subjects differ. Not normally used in degree programs. (S/U only.)

FOR GRADUATE STUDENTS ONLY
EDC 601. THEORETICAL ISSUES IN CURRICULUM AND INSTRUCTION (4)
PR: 8 quarter hours at the graduate level in the Foundations areas. Open only to degree-seeking graduate students. Advanced study of basic concepts and their practical application. Persistent issues and problems and development of rationale for their examination.

EDC 661. PRINCIPLES OF EDUCATIONAL SUPERVISION (5)
PR: Courses in general curriculum. Instructional leadership with emphasis on organization for curriculum improvement and in-service growth for professional school personnel.

EDC 671. PRINCIPLES OF EDUCATIONAL ADMINISTRATION (5)
Educational administration as a profession. Consideration is given to organization control, and support of the educational system.

EDC 673. SCHOOL LAW (4)
Basic essentials of school law, a review of court decisions affecting American education, with emphasis upon the study of Florida State Statutes as they pertain to the question of Florida public schools.

EDC 675. SCHOOL FINANCE (4)
PR: Principles of Educational Administration or CI. A study of the support of public education programs through local, state, and federal sources; principles guiding the distribution of funds for equal educational opportunity; methods of budget preparation and administration; and projecting future funding requirements.

EDC 677. PLANNING EDUCATIONAL FACILITIES (4)
PR: CI. Study of problems in the planning, construction, and utilization of educational facilities. Visitations and/or evaluation of selected school plants.

EDC 681. DIRECTED STUDY; SUBJECT (1-4)
Extensions of competency in teaching field.

EDC 685. SCHOOL CURRICULUM IMPROVEMENT (4)
Workshop for the improvement of the curriculum of an elementary or secondary school. Open only to teachers in service. Complete faculty participation required.

EDC 689. SUBJECT SPECIALIZATION PLANNING SECONDARY (4)
Individually planned course in a secondary school subject area for in-service teachers.

EDC 691. INTERNSHIP (4-9)
Open to graduate degree candidates only. PR: CI. Supervised teaching at the secondary or junior college level as appropriate. (S/U only.)

EDC 695. ADMINISTRATION PRACTICUM (4-10)
PR: Completion of a significant amount of the student's program. Field experiences in school systems for the purpose of identifying and analyzing educational problems. Applica-
tion of concepts developed in the student's program to the solution of these problems.

EDE 499. THESIS (1-9)
EDE 781. GRADUATE RESEARCH (1-5)
PR: CC. Directed study related to educational research, including participation in regular seminars. May be repeated for credit to a maximum of 15 hours.

EDE 783. SELECTED
EDC 781. GRADUATE RESEARCH (1-5)
PR: CC. Selected topics in advanced Education. May be repeated for credit to a maximum of 15 hours.

EDE 791. GRADUATE SEMINAR (1-5)
PR: CC. Seminar in advanced Education. May be repeated for credit to a maximum of 15 hours.

EDE 799. DISSERTATION (1-5)
PR: CC. May be repeated for credit to a maximum of 15 hours.

Elementary Education (EDE)

LOWER LEVEL COURSES
EDE 201. INTRODUCTION TO EARLY CHILDHOOD EDUCATION (4)
An overview of early childhood education with emphasis on its historical development, current theories, and practices.

UPPER LEVEL COURSES
EDE 409. READING FOR THE CHILD (5)
PR: Admission to College of Education and EDF 305. Readiness, word recognition (phonics, structural, and contextual analysis) word meanings, basic study skills, comprehension abilities and reading interests; in-school work required.

EDE 411. LANGUAGE ARTS FOR THE CHILD (4)
PR: Admission to College of Education. Speaking, writing, reading and listening experiences of children and ways these skills are developed for individual creative expression.

EDE 413. LITERATURE FOR THE CHILD (4)
PR: Admission to College of Education. History and development of children's literature. Study of bibliographic sources, criteria and techniques for selection and use.

EDE 415. ARITHMETIC FOR THE CHILD (5)
PR: Admission to College of Education and MTH 331, 332, 333, or equivalent. Methods of teaching elementary school mathematics.

EDE 417. SCIENCE FOR THE CHILD (5)
PR: Admission to College of Education and completion of General Distribution Requirement biological or physical science in sequence. Techniques and materials for teaching science in the elementary school.

EDE 419. SOCIAL STUDIES FOR THE CHILD (5)
PR: Admission to College of Education and completion of General Distribution Requirement American Idea sequence. Significant concepts in the subjects concerned with human relationships. Emphasis upon teaching pupils to solve rather than be engulfed by social problems.

EDE 421. ART FOR THE CHILD (4)
PR: Admission to College of Education. Art and the intellectual, creative, emotional, and esthetic growth of children.

EDE 423. MUSIC FOR THE CHILD: SKILLS (2)
PR: Admission to College of Education. Voice production, music reading, creative composition and some instrumental experience. School song materials used to support this work.

EDE 424. MUSIC FOR THE CHILD: METHODS (3)
PR: Admission to College of Education & EDE 423. Music Literature and teaching aids for children including singing, rhythmic, creative, instrumental and listening experiences and their presentation.

EDE 425. HEALTH, PHYSICAL EDUCATION FOR THE CHILD (4)
PR: Admission to College of Education. Motivating factors of play; knowledge and skill in basic rhythmic activities; games and stunts; health instruction for the child.

EDE 426. CREATIVE EXPERIENCES IN EARLY CHILDHOOD EDUCATION (4)
PR: Admission to College of Education. The development of the child's creative expression through art, music, dance, play, and drama; included are the materials content, and teaching techniques.

EDE 440. TEACHING METHODS IN THE ELEMENTARY SCHOOL (4)
PR: Admission to the College of Education. Suggested corequisite: EDC 401. Process of teaching elementary school subjects. To be taken quarter prior to internship. Six hours per week as pre-intern in public schools required. (S/U only.)

FOR SENIORS AND GRADUATE STUDENTS
EDE 515. DIAGNOSIS AND TREATMENT OF LEARNING DISABILITIES IN SCHOOL MATHEMATICS (4)
PR: EDE 415 or equivalent. Study of the symptoms, etiologies and consequences of children's learning disabilities in mathematics; study and guided application of theoretical models used in diagnosis and treatment — group and individual.

EDE 516. PRACTICUM IN DIAGNOSIS AND TREATMENT OF CHILDREN'S LEARNING DISABILITIES IN MATHEMATICS (1-8)
PR: EDE 515. Supervised conduct of a case study with a child experiencing learning difficulties in mathematics. Procedures used and reporting practice employed developed in EDE 515 reviewed and extended.

EDE 519. SOCIAL GROWTH IN CHILDHOOD (4)
PR: Admission to College of Education. A study of the principal factors which influence the social development of young children with particular emphasis upon those cultural influences which affect both child development and the educational programs for the young child.

EDE 527. DEVELOPMENTAL PROCESSES IN EARLY CHILDHOOD (4)
PR: Admission to College of Education. The normal processes of development among children ages 3-8, the relation between these characteristics and the curriculum: child study through observation required.

EDE 529. PROGRAMS IN EARLY CHILDHOOD EDUCATION (5)
PR: Admission to College of Education. A study of school programs for nursery, kindergarten, and primary education. Analysis and evaluation of these programs in the light of the most effective current classroom practices. Observation and participation included.

EDE 531. LANGUAGE AND LEARNING IN EARLY CHILDHOOD (4)
PR: Admission to College of Education. The study of the acquisition of language in young children and the development of basic communications skills in the Language Arts Curriculum, infancy through age 8 years.

EDE 539. WORKSHOP IN EARLY CHILDHOOD EDUCATION (4)
PR: Admission to College of Education. Individual problems and innovations related to methods and materials of instruction in the early childhood grades.

EDE 551. TEACHING METHODS IN THE MIDDLE SCHOOL — ENGLISH LANGUAGE ARTS (4)
PR: CI. Study of nature and communication needs of students in grades 5-8 with emphasis on laboratory methods of teaching language.

FOR GRADUATE STUDENTS ONLY
EDE 603. SEMINAR IN CURRICULUM RESEARCH (1-5)
PR: EDF 607. Critical evaluation of current research and
curriculum literature, design and analysis of individual research topics leading to satisfaction of research requirements.

EDE 609. TRENDS IN READING IN THE ELEMENTARY SCHOOL (4)
PR: EDE 409 or equivalent. Extensive study of recent trends in materials, approaches, and procedures in teaching reading in the elementary school.

EDE 611. TRENDS IN LANGUAGE ARTS INSTRUCTION (4)
PR: EDE 411 and 413. Advanced materials and processes of instruction in elementary school language arts programs.

EDE 613. CREATIVE ARTS INSTRUCTION (4)
Creative processes in the teaching of visual arts, music, dance, and drama to elementary school pupils.

EDE 615. TRENDS IN MATHEMATICS INSTRUCTION (4)
PR: EDE 415 or equivalent. Philosophy, content and process of qualitative instruction in modern mathematics in elementary school programs.

EDE 617. TRENDS IN SCIENCE INSTRUCTION (4)
PR: EDE 417. Topics in the biological and physical sciences appropriate for teaching in excellent elementary school programs. Analysis of modern curriculum materials used in presenting science as a process of inquiry.

EDE 619. TRENDS IN SOCIAL STUDIES INSTRUCTION (4)
PR: EDE 419. Crucial concepts drawn from the social sciences. Analysis of the problems approach. Students will select an area of independent study on an advanced level.

EDE 621. ART FOR THE ELEMENTARY SCHOOL TEACHER (4)
Exploration of various materials and techniques in relationship to current theories about art and the intellectual, creative, emotional and esthetic growth of children.

EDE 629. ADVANCED PROGRAMS IN EARLY CHILDHOOD EDUCATION (4)
PR: EDE 529, EDF 605 or Cl. A study of innovative curriculum designs in Early Childhood Education, with emphasis given to related research.

EDE 631. CHILDREN'S LITERATURE IN THE ELEMENTARY CLASSROOM (4)
PR: EDE 413. Cl. A study of significant concepts, emerging trends and classroom techniques for implementation and utilization of children's literature in all areas of the curriculum.

EDE 639. HOME-SCHOOL-COMMUNITY INTERACTION IN EARLY CHILDHOOD EDUCATION (4)
PR: EDE 529, EDF 605 or Cl. An intensive study of the roles of parents, teacher aides, and community agencies involved in the education of the young child.

EDE 641. PROBLEMS IN SUPERVISION (4)
PR: EDF 607 or equivalent and EDC 661. Problems in supervising for curriculum improvement within the elementary school.

EDE 651. THEORIES AND PATTERNS OF ADVANCED LANGUAGE ARTS INSTRUCTION (4)
PR: EDE 611 or equivalent. This course is organized to present new research findings and theories relating to language patterns and contemporary programs designed for teaching the language arts.

EDE 652. APPLICATIONS OF THEORIES TO THE DEVELOPMENT OF LANGUAGE ARTS PROGRAMS (4)
PR: EDE 611 or equivalent. EDE 651. This course is designed to apply research findings and theories for developing and organizing instructional improvement of the language arts.

EDE 687. SUBJECT SPECIALIZATION PLANNING: ELEMENTARY (4)
Individually planned course in an elementary school subject area for in-service teachers.

English Education (EDT)

UPPER LEVEL COURSES

EDT 447. TEACHING METHODS IN THE SECONDARY SCHOOL — ENGLISH (4)
PR: EDC 401 or concurrent registration in EDC 401. Techniques and materials of instruction in English Education.

EDT 463. TEACHING METHODS IN THE SECONDARY SCHOOL — JOURNALISM (4)
PR: EDC 401 or concurrent registration in EDC 401. Techniques and materials of instruction in journalism.

FOR SENIORS AND GRADUATE STUDENTS

EDT 531. CURRENT TEACHING OF THE ENGLISH LANGUAGE (4)
Application of recent techniques of language study, including structural and transformational grammar, to classroom teaching of English, especially in relation to current textbooks. (For graduate credit: PR: ENG 517 or ENG 535 and certification in English.)

FOR GRADUATE STUDENTS ONLY

EDT 631. CURRENT TRENDS IN SECONDARY ENGLISH EDUCATION (4)
Curricular patterns and instructional practices in secondary English.

Exceptional Child Education (EDS)

UPPER LEVEL COURSES

EDS 311. EXCEPTIONAL CHILDREN IN THE SCHOOLS (4)
PR: EDF 305 or Cl. Characteristics and needs of the Culturally Disadvantaged, Emotionally Disturbed & Socially Maladjusted, Gifted, Hearing Impaired, Mentally Retarded, Physically Handicapped, Speech Impaired, & Visually Limited.

EDS 322. INTRODUCTION TO MENTAL RETARDATION (4)
PR: EDF 305, EDS 311, or Cl. Classification, diagnosis, characteristics, and treatment of the mentally retarded.

EDS 329. UNDERGRADUATE SUPERVISED PRACTICUM IN MENTAL RETARDATION (6)
Supervised Practicum experiences in the educational, social and vocational planning of mentally retarded individuals.

EDS 350. INTRODUCTION TO GIFTED CHILDREN (4)
PR: Junior class standing. Diagnosis, characteristics, and educational provision of the gifted and talented.

EDS 359. FIELD WORK WITH GIFTED CHILDREN (1-6)
Organized, supervised experiences with gifted children. Specific experiences may be either a combination of observation and assistance with gifted children or individualized projects.

EDS 389. UNDERGRADUATE SUPERVISED PRACTICUM IN SPECIFIC LEARNING DISABILITIES (6)
PR: EDS 311, EDS 581, and Cl. Supervised practicum experiences in classes for children with specific learning disabilities.

EDS 411. EDUCATIONAL ASSESSMENT OF EXCEPTIONAL CHILDREN (4)
PR: EDF 305, EDS 311, and Special Education Major. Introduction to and familiarization with formal and informal techniques used to measure and evaluate all exceptional children. The interpretation of information so derived for utilization in educational programming and individualization of instruction.

EDS 423. PROCEDURES AND MATERIALS FOR ELEMENTARY AGE EDUCABLE MENTALLY RETARDED CHILDREN (4)
PR: EDS 329 and Cl. Special class organization, curriculum development, procedures and materials for elementary age educable mentally retarded children. (Formerly EDS 423)
EDS 559. SUPERVISED PRACTICUM FOR THE GIFTED (1-14)
Planned supervised participation in activities related to specific areas of the gifted.

EDS 560. THE VISUALLY HANDICAPPED IN THE CLASSROOM (4)
PR: EDS 311 and Cl. The visually handicapped in the classroom, structure, hygiene and educational implications. (Formerly EDS 660)

EDS 561. EDUCATIONAL PROBLEMS OF THE PHYSICALLY HANDICAPPED (4)
PR: EDS 311 or Cl. Introduction to the educational, psychological and social problems of the physically disabled child in the public schools.

EDS 562. TEACHING THE CEREBRAL PALSYED CHILD (4)
PR: EDS 311 and Cl. The psychological and sociological aspects of cerebral palsy and its implications for classroom teachers. (Formerly EDS 662)

EDS 581. THEORIES IN SPECIFIC LEARNING DISABILITIES (4)
PR: Senior standing and Cl. Characteristics, needs and abilities of children with specific learning disabilities. Emphasis is on theories, issues, trends, and philosophy of problems for such children.

EDS 582. SKILLS IN DIAGNOSIS AND INSTRUCTION FOR CHILDREN WITH SPECIFIC LEARNING DISABILITIES (4)
PR: EDS 581 and Cl. Instructional diagnosis and individualizing instruction for children with specific learning disabilities.

FOR GRADUATE STUDENTS ONLY

EDS 610. SEMINAR IN SPECIAL EDUCATION (4)
A critical survey of the literature related to the psychological, sociological, and education problems of exceptional children.

EDS 611. PSYCHO-EDUCATIONAL APPRAISAL OF EXCEPTIONAL CHILDREN (4)
PR: EDS 311 Or EDS 610, EDS 411, EDF 607 or Cl. Educational planning for exceptional children based on diagnostic information. Includes both lecture and practicum experiences in evaluative and instructional techniques for exceptional children.

EDS 612. SUPERVISION OF EXCEPTIONAL CHILD PROGRAMS (4)
PR: Cl. Principles of supervision and their application to exceptional child education.

EDS 613. ADMINISTRATION OF EXCEPTIONAL CHILD PROGRAMS (4)
PR: Cl. Procedure which local, state, and national administrators may use to implement services for exceptional children.

EDS 620. BIOLOGICAL ASPECTS OF MENTAL RETARDATION (4)
PR: EDS 322 or Cl. The contribution of biological factors towards the causation of mental deficiency; implications for casefinding, care, and education.

EDS 621. SOCIOLOGICAL AND EDUCATIONAL ASPECTS OF MENTAL RETARDATION (4)
PR: EDS 311, Cl. Evaluation of relevant literature.

EDS 622. ADVANCED EDUCATIONAL PROCEDURES FOR THE MENTALLY RETARDED (4-8)
PR: EDS 423, experience in teaching the retarded, identification of a problem prior to registration, or Cl. Specific curriculum and methodological problems in teaching the retarded.

EDS 623. CURRENT TRENDS AND ISSUES IN THE EDUCATION OF THE MENTALLY RETARDED (4)
PR: EDS 610 and Cl. Survey of current trends and issues related to the education of the mentally retarded.

EDS 631. EDUCATIONAL IMPLICATIONS OF THE PSYCHOPATHOLOGIES OF EXCEPTIONAL CHILDREN (4)
PR: EDS 531 and Cl. In-depth survey of childhood...
psychopathology covering autism, schizophrenia and psychotic behavior. Guided exploration of exemplary services, treatment and methodology.

EDS 632. EDUCATIONAL PROGRAMMING FOR EMOTIONALLY DISTURBED CHILDREN I (4)
PR: EDS 531 and CI. Personality dynamics and research findings as related to the interpretation of disturbed behavior; techniques for the management of individual, small group, and classroom behavior.

EDS 633. EDUCATIONAL PROGRAMMING FOR EMOTIONALLY DISTURBED CHILDREN II (4)
PR: EDS 531, 632, or CI. Personality dynamics and learning theory as related to the facilitation of learning and communication; techniques for teaching both individuals and groups with emphasis on improved interpersonal relations, academic learning, and communication skills.

EDS 639. FIELD WORK IN EMOTIONALLY DISTURBED
(1-14)
PR: EDS 531 (may be taken concurrently) and CI. Supervised graduate practicum experiences with emotionally disturbed children.

EDS 643. GUIDANCE AND COUNSELING OF EXCEPTIONAL CHILDREN AND THEIR PARENTS (5)
PR: EDS 610 and CI. Investigation of the guidance needs of exceptional children and parents. Through child study techniques, opportunities will be provided for the development of skills in guiding parents of exceptional children in providing assistance/support in their total development and use of potential.

EDS 649. FIELD WORK WITH POTENTIALLY HANDICAPPED (CULTURALLY DISADVANTAGED) (1-9)
Teaching and participation in activities related to teaching disadvantaged young children (N-3).

EDS 653. SEMINAR IN EDUCATION OF THE GIFTED: RECENT RESEARCH (4)
A critical survey of the literature related to the psychological and educational problems of gifted children.

EDS 654. SEMINAR IN EDUCATION OF THE GIFTED: PROGRAMS (4)
A survey of existing programs for the gifted and evaluation of relevant literature. Individual students will plan and present a model program for the gifted.

EDS 700. PHILOSOPHY AND PROCESS IN THE PREPARATION OF SPECIALISTS IN SPECIAL EDUCATION (4)
PR: Admission in the Program for Ed.S. and Ph.D. in Education. In depth exploration of the philosophy and theory in special education. A theoretical basis for the preparation of specialists in the field of exceptional child education.

EDS 710. SEMINARS IN SPECIAL EDUCATION (1-10)
PR: Preliminary Admission to The Graduate Program and CI. Seminar Topics will vary to include neurophysiological mechanisms, current trends, issues, and curriculum development in Special Education. May be repeated for a maximum of 10 hours.

EDS 712. RESEARCH STUDIES AND THEIR IMPLICATIONS IN THE EDUCATION OF EXCEPTIONAL CHILDREN (5)
PR: EDF 605, 607 or equivalent- CI. This course will involve a study of current research in exceptional child education. The transition from theory into practice will be made through the examination and discussion of implications to the field of special education that can be drawn from the research.

EDS 714. EDUCATIONAL IMPLICATIONS OF PSYCHO-SOCIAL ASPECTS OF EXCEPTIONAL CHILDREN (1-8)
PR: CI. This course will be concerned with the identification of the psycho-social needs and characteristics of exceptional children. Opportunity will also be given to the analysis of the educational implications of these needs and characteristics. May be repeated for a maximum of 8 hours.

EDS 719. FIELDWORK WITH EXCEPTIONAL CHILDREN (1-8)
PR: CI. Practical field experience in curriculum development, classroom teaching, supervision and/or administrative areas in special education. May be repeated for a maximum of 8 hours.

EDS 783. SELECTED TOPICS AND GRADUATE RESEARCH STUDIES IN SPECIAL EDUCATION (1-12)
PR: EDS 712 or CI. Identification and specification of a research problem in special education. Opportunity will be provided for the student to gather and process data, culminating in a written report and/or oral presentation to fellow student researchers. May be repeated for a maximum of 12 hours.

EDS 785. SPECIALIZED STUDY IN: MENTAL RETARDATION, EMOTIONALLY DISTURBED, SPECIFIC LEARNING DISABILITIES, AND GIFTED EDUCATION (1-12)
PR: CI. Exploration and demonstration of knowledge in an area of interest to the student in special education. The specialized study may also include areas for which the student needs to demonstrate a higher level of competency. May be repeated for a maximum of 12 hours.

EDS 799. DISSERTATION. (1-16)
PR: CI. The supervised writing of a doctoral dissertation. May be repeated for a maximum of 16 hours.

Foreign Language Education (EDX)

UPPER LEVEL COURSES

EDX 449. TEACHING METHODS IN THE SECONDARY SCHOOL—FOREIGN LANGUAGE (4)
PR: EDC 401 or concurrent registration in EDC 401. Techniques and materials of instruction in foreign languages. To be taken in the quarter prior to internship.

EDX 465. TEACHING METHODS IN THE SECONDARY SCHOOL—LATIN (4)
PR: EDC 401 or concurrent registration in EDC 401. Techniques and materials of instruction in Latin.

FOR GRADUATE STUDENTS ONLY

EDX 649. CURRENT TRENDS IN SECONDARY FOREIGN LANGUAGE EDUCATION (4)
PR: Consultation with instructor, plus foreign language fluency. Curricular patterns and instructional practices in the teaching of secondary foreign languages.

Foundations (EDF)

UPPER LEVEL COURSES

EDF 303. INTRODUCTION TO MEASUREMENT AND EVALUATION (4)
PR: Upper level standing. Elementary concepts basic to a general understanding of measurement and evaluation procedures.

EDF 305. HUMAN DEVELOPMENT AND LEARNING (4)
PR: SSI 201, 203 or General Psychology; and admission to College of Education or CC. Application of respondent and operant learning principles to classroom learning, teaching models for different instructional goals, analysis of teacher behavior, micro-teaching. Credit cannot be earned for both EDF 305 and EDF 377.

EDF 307. SOCIAL FOUNDATIONS OF EDUCATION (4)
PR: Admission to College of Education. Social, economic and political context within which schools function and the values which provide direction for our schools; the culture as a motivating influence in instruction. Should not be taken concurrently with EDF 305.

EDF 309. PHILOSOPHY OF EDUCATION (4)
PR: Upper level standing. A critical analysis of selected philosophies of education in terms of their beliefs about the nature of man and society and their related assumptions about the nature of reality, knowledge and value.

EDF 311. COMPARATIVE EDUCATION (4)
PR: Upper level standing. A comparison of contemporary
EDF 627. EDUCATIONAL PSYCHOLOGY (4)
PR: Upper Level standing. The application of behavioral principles to human behavior in educational institutions, home and community settings. Credit cannot be earned for both EDF 305 and EDF 377. (For non-education majors only.)
EDF 379. BEHAVIOR MODIFICATION TECHNIQUES (4)
PR: EDF 305. Special techniques in behavior modification for children with learning difficulties.

FOR SENIORS AND GRADUATE STUDENTS
EDF 502. ADOLESCENCE (4)
A study of the educational, intellectual, personality, physical, social and vocational factors in adolescence.
EDF 575. AMERICAN DEMOCRACY AND PUBLIC EDUCATION (4)
Interdependence of the public school and democracy in the United States and the responsibility of the school in fostering and strengthening basic democratic principles.
EDF 585. PROGRAMMED INSTRUCTION AND TEACHING MACHINES (4)
Principles for programming in the several academic subjects.

FOR GRADUATE STUDENTS ONLY
EDF 605. FOUNDATIONS OF MEASUREMENT (4)
Fundamental descriptive statistics, basic measurement concepts, role of measurement in education, construction of teacher-made tests and interpretation of standardized tests.
EDF 607. FOUNDATIONS OF EDUCATIONAL RESEARCH (4)
PR: EDF 605. Major types of educational research, with emphasis upon understanding the experimental method.
EDF 611. PSYCHOLOGICAL FOUNDATIONS OF EDUCATION (4)
Selected topics in psychology of human development and learning.
EDF 612. CHILD DEVELOPMENT (4)
PR: EDF 611 or CI. Educational, emotional, hereditary, intellectual, social and physical factors influencing child growth and development.
EDF 613. PRINCIPLES OF LEARNING (5)
A consideration of several theories of learning and related research studies in regard to classroom application.
EDF 615. BIOLOGICAL BASES FOR LEARNING AND BEHAVIOR (5)
PR: One course in Educational Psychology. A study of human biological development and its influence upon learning and behavior.
EDF 617. MEASUREMENT OF INDIVIDUAL INTELLIGENCE (5)
PR: EDF 305 or 605 or equivalent and a course in educational measurement or statistics. Administration and interpretation of individual measures of intelligence. Students may not receive credit for both EDF 617 and PSY 617. Individual Intelligence Testing.
EDF 621. SOCIO-ECONOMIC FOUNDATIONS OF AMERICAN EDUCATION (4)
Significant socio-economic factors as they relate to major problems facing American education.
EDF 623. HISTORICAL FOUNDATIONS OF AMERICAN EDUCATION (4)
Historical and comparative problems in American education which are relevant to contemporary issues.
EDF 625. PHILOSOPHICAL FOUNDATIONS OF AMERICAN EDUCATION (4)
Major philosophies of education which are relevant to an understanding of contemporary educational issues.
EDF 627. PROSEMINAR IN COMPARATIVE EDUCATION (4)
Contemporary policies and practices in education in selected countries of the world. Methodology in Comparative Education. Consideration will be given to needs and interests of individual students.
EDF 631. THEORIES OF PERSONALITY FOR SCHOOL PERSONNEL (4)
A comparative and integrated study of personality development according to major psychological theories. Application of the theoretical constructs to education and guidance.
EDF 635. BEHAVIOR THEORY AND CLASSROOM LEARNING (4)
PR: EDF 613 or CI. Theoretical and practical application of behavior modification. Will cover: Introduction into experimental methods, e.g., independent, dependent variables; and internal validity; principles of positive reinforcement; shaping and successive approximations; application of reinforcement (parameters); operant behavior under extinction; operant methods in behavior and development; readings in behavior modification — critical analysis; field work.
EDF 671. SELECTED TOPICS (2-4)
PR: CI. Exploration and demonstration of knowledge in an area of special interest to the student and/or an area for which the student needs to demonstrate a higher level of competence. Defined to fit the needs of each student.
EDF 675. FIELD EXPERIENCE (1-5)
PR: CI. Demonstrate skills in the practice of the student’s specialty. Specific objectives will be defined according to the needs of the individual student.

Guidance (EDG)

UPPER LEVEL COURSES
EDG 401. INTRODUCTION TO GUIDANCE (5)
PR: Upper level standing. An introduction to the role and function of guidance, school psychology, social work and other pupil personnel services from kindergarten through junior college.
EDG 402. INTRODUCTION TO STUDENT PERSONNEL WORK IN HIGHER EDUCATION (5)
PR: CI. Study of student personnel services in institutions of higher education. Identification of the needs of students and of the ways to respond to meet these needs. Survey of service units on a campus, in terms of structure, organization, funding, and evaluation of each unit.
EDG 404. PROBLEMS IN RESIDENCE HALL MANAGEMENT (2)
PR: CI. In-depth study of problems related to residence hall living.

FOR SENIORS AND GRADUATE STUDENTS
EDG 503. GUIDANCE IN VOCATIONAL EDUCATION (4)
PR: CI. Application of guidance theories and skills to the work of vocational educators. The guidance role of teachers and their relationships with counselors in providing guidance services.
EDG 529. COMPARATIVE GUIDANCE (4)
PR: CI. Study of guidance theories and practices in selected foreign countries as compared with the American guidance model. Evaluation of foreign guidance through critical analysis of primary sources. For example: guidance philosophy and practice in countries of the Soviet Bloc. (Formerly EDG 629)

FOR GRADUATE STUDENTS ONLY
EDG 601. PRINCIPLES OF GUIDANCE (5)
PR: CI. Required first course in specialization sequence for all guidance majors. Guidance as a profession; philosophic framework of the guidance program, its scope and place in the total educational context.
EDG 603. THE INFORMATIONAL SERVICE IN GUIDANCE (4)
PR: EDG 601. Occupational structure in the United States; sources and uses of educational, occupational, social and
personal information; collecting, classifying and communicating such information.

EDG 609. THE APPRAISAL PROCEDURES IN GUIDANCE (5)
PR: EDF 605, EDG 601. A study of test and non-test techniques of appraisal with emphasis on the use of standardized test data in guidance programs and the use of the individual case study approach.

EDG 613. ORGANIZATION AND ADMINISTRATION OF GUIDANCE SERVICES IN ELEMENTARY SCHOOLS (3)
PR: EDG 601. Organization of a guidance program in the elementary school, its relation to instruction and administration. Guidance roles and relationships of members of the school staff.

EDG 615. ORGANIZATION AND ADMINISTRATION OF GUIDANCE SERVICES IN SECONDARY SCHOOLS (3)
PR: EDG 601. Organization of a guidance program and its place in the total educational program; responsibilities of various staff members and their relationships to each other.

EDG 617. GROUP PROCEDURES IN GUIDANCE IN ELEMENTARY SCHOOLS (3)
PR: EDG 601 and EDG 621. Counterpart of EDG 619 for prospective secondary school counselors. Use of groups in the counseling and guidance of children and in working with parents and teachers.

EDG 619. GROUP PROCEDURES IN GUIDANCE IN SECONDARY SCHOOLS (3)
PR: EDG 601 and EDG 623. Group interaction and values of group activity for guidance purposes. Methods and techniques for working with groups.

EDG 621. THE COUNSELING SERVICE IN GUIDANCE IN ELEMENTARY SCHOOLS (5)

EDG 622. COUNSELING THEORIES AND PRACTICES (5)
PR: EDG 601, CI. Nature of the counseling process with emphasis on some theoretical approaches and practical techniques.

EDG 625. PRACTICUM IN ELEMENTARY GUIDANCE COUNSELING AND CONSULTING (6)
This course is the counterpart of EDG 627 for prospective secondary school counselors; enrollment by permission of program chairman only. Counseling with children in groups as well as individually: consultations with parents, teachers, administrators, and fellow professionals regarding the children being counseled. (S/U only.)

EDG 627. PRACTICUM IN SECONDARY SCHOOL GUIDANCE COUNSELING (6)
Final course in guidance program; enrollment by permission of program chairperson only. Supervised practice in working with individuals in counseling relationship. (S/U only.)

EDG 633. SEMINAR IN GUIDANCE (1-3)
PR or CR: EDG 601, CI. Significant issues in the field of guidance; topics for discussion will vary according to needs and interests of students. (S/U only) May be repeated for credit for a maximum of 6 hours.

EDG 681. INDIVIDUAL STUDY (1-5)
PR: CI. Independent study, research and experiences relating to guidance and pupil personnel services under the supervision of a member of the Guidance Program faculty. (May be repeated for maximum total of 5 hours).

Health Education (HEN)

LOWER LEVEL COURSES
HEN 201. CONTEMPORARY HEALTH SCIENCE (4)
PR: None. A comprehensive approach to health concerns and problems in contemporary society, including methods of assessing individual health needs. (S/U only.)

UPPER LEVEL COURSES
HEN 310. PROCESSES AND PROGRAMS IN HEALTH EDUCATION (5)
PR: Admission to Health Education Program, or CI. Survey of programs in Health Education in the schools and community. Processes in programs and curriculum development will also be emphasized. (S/U only.)

HEN 311. STRUCTURE AND FUNCTION OF THE HUMAN BODY (4)
PR: Admission to Health Education Program, or CI. A study of the normal structure and function of the human body. Focus is on the relationship of structure, function, and health status. (S/U only.)

HEN 321. HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: CHILDREN (4)
PR: Admission to the program or CI. Programs, curriculum, health services, and health education related to health needs and interests of children. (S/U only.)

HEN 322. SEMINAR AND INTERNSHIP — CHILD HEALTH EDUCATION AND PROGRAMS (5)
PR: Admission to program. Supervised field experiences in school (k-3), pre-school, and community health agencies. Scheduled seminars will be conducted on campus and in the field. (S/U only.)

HEN 331. HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: PUBESCENCE (4)
PR: Admission to the program or CI. Programs, curriculum, health services and health education related to health needs and interest of pubescence. (S/U only.)

HEN 332. SEMINAR AND INTERNSHIP IN HEALTH EDUCATION PROGRAMS — PUBESCENCE (5)
PR: Admission to the program or CI. Supervised teaching in health education (middle school or junior high school). Selected field experiences in community health programs. (S/U only.)

HEN 333. SOCIETY: CHILD AND PUBESCENT HEALTH (2)
PR: Admission to the program or CI. Seminar for students, supervisors and professionals from health related disciplines. (S/U only.)

HEN 411. HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: ADOLESCENTS AND YOUNG ADULTS (4)
PR: Admission to the program or CI. A study of health needs, programs, services and health content areas of adolescents and young adults. (S/U only.)

HEN 412. SEMINAR AND INTERNSHIP: HEALTH EDUCATION AND PROGRAMS — ADOLESCENTS AND YOUNG ADULTS (5)
PR: Admission to the program or CI. Supervised teaching in senior high schools and selected field experiences in community health programs. (S/U only.)

HEN 421. HEALTH EDUCATION AND RELATED HEALTH SCIENCE CONTENT: ADULTS (4)
PR: Admission to the program or CI. A study of health needs, services and health education programs focusing on adults, including the aging. (S/U only.)

HEN 422. SEMINAR AND FIELD EXPERIENCE: ADULT HEALTH (5)
PR: Admission to the program. Supervised field experiences in adult health programs in schools and the community. (S/U only.)

HEN 423. SOCIETY AND HEALTH: ADULT (2)
PR: Admission to the program or CI. A seminar for students, physicians, social workers, health educators from public and private agencies, nutritionists, health care personnel, etc., for the exchange of program information and new developments in health information and research. (S/U only.)

HEN 431. CURRENT PROBLEMS IN HEALTH (4)
PR: Admission to the program or CI. An investigation of current health problems, programs and research methods. (S/U only.)
HEN 432. SEMINAR AND FIELD EXPERIENCE: CURRENT HEALTH PROBLEMS (5)
PR: Admission to the program. Supervised field experience in selected health programs. (S/U only.)

Humanities Education (EDY)
FOR SENIORS AND GRADUATE STUDENTS
EDY 533. CURRENT TRENDS IN THE TEACHING OF HUMANITIES (4)
Curricular patterns, materials, and instructional practices in the teaching of humanities.

Junior College (EDH)
FOR GRADUATE STUDENTS ONLY
EDH 651. THE JUNIOR COLLEGE IN AMERICAN HIGHER EDUCATION (4)
History of higher education, philosophical and cultural bases for definition of its role, and contemporary issues, such as control, financing, and curricular patterns. The place and problems of the community junior college will be central concerns of this course.

EDH 653. SEMINAR IN COLLEGE TEACHING (5)
Implications of learning theory and student characteristics for teaching at the college level. Types of teaching procedures, innovation, evaluation, student freedom and responsibility for learning.

Library-Audiovisual Education (EDL)
UPPER LEVEL COURSES
EDL 400. THE LIBRARY, EDUCATIONAL TECHNOLOGY AND SOCIETY (3)
PR: CI, or entrance into program. The place of the library in comparison with other educational institutions in society. Impact of educational technology on change in educational practices and the building of an instructional materials center (or school media center) concept.

EDL 410. INTRODUCTION TO EDUCATIONAL TECHNOLOGY (3)
PR: EDL 412 or CI. The importance of educational technology for the media specialist. History, concepts, and relevance for the implementation of behavioral objectives.

EDL 411. SCHOOL LIBRARY ADMINISTRATION AND SERVICE (5)
PR: Admission to College of Education. Development, philosophy, objectives, standards and current trends in school libraries. Introduction to library operations, programs and services in the school and the community.

EDL 412. SCHOOL MEDIA CENTER ADMINISTRATION (5)
PR: EDL 400 or CI. Media quarters (materials center), facilities and equipment. Identification of staff services and examination of practices and methods for providing such services.

EDL 415. CATALOGING OF NON-BOOK MATERIALS FOR THE SCHOOL MEDIA CENTER (2)
PR: CI. Practice in the cataloging of all non-book materials used in media centers. Survey of systems for pre-cataloging and their acquisition procedures.

EDL 418. INTRODUCTION TO AV EQUIPMENT AND PRODUCTION (5)
PR: Upper level standing in the College of Education or CI. Knowledge of essential hardware for classroom teaching; including running and maintenance. Simple production of teaching materials. Organization and use of materials and equipment in teaching situations. No credit given to Library Science/Audiovisual majors.

EDL 419. AUDIOVISUAL MATERIALS OF INSTRUCTION (4)
PR: Admission to College of Education. Selection, utilization and care of audio-visual materials and equipment.

EDL 440. METHODS OF TEACHING IN THE SCHOOL MEDIA CENTER (4)
PR: Must be taken concomitantly with EDL 480 or CI. Methods unique to working with pupils within the school media suite. Facilitating cooperation with teachers.

EDL 480. PRE-INTERNSHIP IN A SCHOOL LIBRARY (4)
Practice in school libraries.

FOR SENIORS AND GRADUATE STUDENTS
EDL 508. TV UTILIZATION IN AND FOR THE SCHOOL (4)
Utilization of open and closed circuit broadcasting in the instructional process.

EDL 513. GENERAL REFERENCE SOURCES (4)
Basic reference tools: dictionaries, encyclopedias, handbooks, indexes, serials, bibliographies, biographical sources, atlases and gazetteers.

EDL 514. SELECTION AND ACQUISITION OF LIBRARY MATERIALS FOR CHILDREN (4)
Selection and ordering of books and audiovisual materials for children.

EDL 515. TECHNICAL SERVICES IN LIBRARIES (5)
Principles and practice in the classification, cataloging and processing of books.

EDL 519. BOOKS AND RELATED MATERIALS FOR YOUNG PEOPLE (5)
Examination and evaluation of books and related materials for young people in terms of basic principles of selection and utilization. Identification and use of bibliographic sources essential in the selection process.

EDL 520. MEDIA AND EDUCATIONAL FACILITIES (3)
Designing teaching stations and media centers for effective media utilization. Practice in helping classroom teachers modify existing classrooms in the use of newer media.

EDL 523. PREPARATION AND PRODUCTION OF INSTRUCTIONAL MATERIALS (4)
Basic techniques for the preparation of a variety of audiovisual instructional materials.

EDL 524. STORYTELLING (4)
Review of the literature of storytelling; criteria in selection of storytelling materials; practice in using the arts and skills of oral communication in transmitting the literary heritage.

EDL 525. INSTRUCTIONAL GRAPHICS (4)
PR: EDL 523 or CI. Theoretical aspects, planning and production of instructional graphic material. The theory of graphic communications. Interpreting needs for instructional materials appropriate for given behavioral objectives.

EDL 526. PREPARING SINGLE CONCEPT FILMS (4)
PR: EDL 523 and CI. Techniques and procedures in the preparation of educational films. Ascertainment concepts, script writing, graphics, lighting, filming, editing.

FOR GRADUATE STUDENTS ONLY
EDL 600. FOUNDATIONS OF LIBRARIANSHIP (5)
Overview of and introduction to the study of library service; history; organization; specialized literature; outstanding leaders; current trends, issues and problems. Place of the library in society with its contributions to that society.

EDL 601. BIBLIOGRAPHY AND BOOK SELECTION (5)
Bibliographical sources, evaluative criteria for books and principles of book selection for libraries.

EDL 602. HISTORY OF LIBRARIES (4)
Development of libraries as found from the earliest records to the great libraries of modern times and the library as a social institution.

EDL 604. CONTEMPORARY PUBLISHING AND PRINTING (4)
PR: EDL 601. A survey of book publishing as it is carried on today, primarily in the United States. Emphasis on structure of the industry, economic conditions, technological developments, social functions of book publishing and distribution. Complementary relations between libraries and publishing.
EDL 605. HISTORY OF CHILDREN'S LITERATURE (5)
Historical bibliographical survey of imaginative and information literature for children.

EDL 607. THE CURRICULUM AND INSTRUCTIONAL TECHNOLOGY (5)
Effective utilization of instructional materials as they relate to specific areas of the curriculum in elementary and high school programs.

EDL 609. SUPERVISED FIELD WORK (4)
PR: Completion of General Program Requirements and CI.

EDL 610. BOOKS AND RELATED MATERIALS OF LATIN AMERICAN COUNTRIES SUITABLE FOR CHILDREN AND YOUNG PEOPLE (4)
Bibliographic sources, aids and tools for the selection and utilization of Latin American books and related materials suitable for children and young people. Examination of representative materials in terms of the basic principles and criteria of selection for libraries.

EDL 611. ADVANCED SUBJECT REFERENCE AND BIBLIOGRAPHY (4)
PR: EDL 513. Reference materials in the humanities, social sciences, scientific technology.

EDL 612. THE ORGANIZATION AND ADMINISTRATION OF THE SCHOOL MEDIA CENTER (5)
PR: General Program Requirements or CI. Media quarters, facilities and equipment. Basic principles of organization and administration of media programs in elementary and secondary schools.

EDL 615. CLASSIFICATION AND CATALOGING OF NON-BOOK MATERIALS (3)

EDL 616. ADVANCED CATALOGING (4)
PR: EDL 515 or consent of the instructor. An examination of changing policies and procedures in the administration of acquisitions, cataloging, binding, photographic reproduction and related area. Analysis of research in the field.

EDL 619. DOCUMENTS AND SERIALS (4)
The nature of documents and serials, their reference and research value; techniques of acquisition, cataloging, organization, conservation and reference use.

EDL 621. AUDIOVISUAL ADMINISTRATION (5)
PR: EDL 523 and 607 or CI. Audiovisual administrative practices in school systems and junior colleges.

EDL 622. PROBLEMS IN AUDIOVISUAL UTILIZATION (4)
Examination (and utilization) of non-print media. Characteristics of media equipment and paradigms of use.

EDL 623. ADVANCED PREPARATION AND PRODUCTION OF INSTRUCTIONAL MATERIALS (4)
By permission of instructor. Designed for the media specialist. Advanced techniques for the preparation of audiovisual materials of instruction.

EDL 625. READING GUIDANCE PROGRAMS IN LIBRARIES AND CLASSROOMS (4)
Working with factors and forces influencing reading habits of children and youth; programs for teaching investigative and library skills; materials and methods for guidance of reading, listening, and viewing.

EDL 629. RADIO AND TELEVISION TECHNIQUES FOR EDUCATORS (4)
Utilization and broadcasting techniques for educators. Stress will be placed on local school production, micro-teaching, and studio broadcasting.

EDL 630. BIBLIOGRAPHY OF THE HUMANITIES (4)
PR: EDL 513 and EDL 611 or consent of the instructor. Detailed consideration of the bibliographical and reference materials in the humanities with training and practice in their use for solving problems arising in the reference service.

EDL 631. BIBLIOGRAPHY OF THE SOCIAL SCIENCES (4)
PR: EDL 513 and EDL 611 or consent of the instructor. Characteristics of the social science disciplines and structure, concepts, methods of investigation. Understanding of social science reference tools as means of bibliographic control and as vehicles of research.

EDL 632. BIBLIOGRAPHY OF THE SCIENCES AND TECHNOLOGIES (4)
PR: EDL 513 and EDL 611 or consent of the instructor. Study of representative reference sources in pure and applied sciences with equal attention given to typical problems encountered in scientific and technological reference service.

EDL 640. PUBLIC LIBRARY ADMINISTRATION (5)
PR: General Program Requirements or CI. Identification of problems and critical examination of methods in administrative areas of technical, student, and teaching staff services, fiscal and legal responsibilities, staff organization and supervision in public libraries.

EDL 650. ACADEMIC LIBRARY ADMINISTRATION (5)
PR: General Program Requirements or CI. Identification of problems and critical examination of methods in administrative areas of technical, student, and teaching staff services, fiscal and legal responsibilities, staff organization and supervision in academic libraries.

EDL 660. SPECIAL LIBRARY ADMINISTRATION (5)
PR: General Program Requirements or CI. Identification of problems and critical examination of methods in administrative areas of technical and special service clientele; fiscal and legal responsibilities, staff organization and services in special libraries.

EDL 681. INDIVIDUAL RESEARCH AND INDEPENDENT STUDY (1-5)
PR: 20 hours earned in program and consent of adviser.

Music Education (EDM)

UPPER LEVEL COURSES

EDM 370. BAND MATERIALS PRACTICUM (1)
PR: CI. A study of band materials, in a laboratory setting, appropriate to elementary and secondary school music programs. Course content will change each quarter. May be repeated for a total of 6 hours credit.

EDM 380. CHORAL MATERIALS PRACTICUM (1)
PR: CI. A study of choral materials, in a laboratory setting, appropriate to elementary and secondary school music programs. Course content will change each quarter. May be repeated for a total of 6 hours credit.

EDM 390. ORCHESTRAL MATERIALS PRACTICUM (1)
PR: CI. A study of orchestra materials, in a laboratory setting, appropriate to elementary and secondary school music programs. Course content will change each quarter. May be repeated for a total of 3 hours credit.

†EDM 431. INSTRUMENTAL MUSIC IN THE ELEMENTARY SCHOOL (5)
†EDM 432. INSTRUMENTAL MUSIC IN THE JUNIOR HIGH SCHOOL (5)
†EDM 433. INSTRUMENTAL MUSIC IN THE SENIOR HIGH SCHOOL (5)
†EDM 435. VOCAL MUSIC IN THE ELEMENTARY SCHOOL (5)
†EDM 437. VOCAL MUSIC IN THE JUNIOR HIGH SCHOOL (5)
†EDM 439. VOCAL MUSIC IN THE SENIOR HIGH SCHOOL (5)

FOR GRADUATE STUDENTS ONLY

EDM 601. TECHNIQUES OF RESEARCH IN MUSIC EDUCATION (4)
Professional bibliography and individual research projects.

†Each class meets as a performing group. Score reading, conducting, organizational procedures, historical relationships, and methods at the appropriate grade levels. Teaching techniques concerning the presentation of elements of theory, general music, and literature.
EDM 603. MUSIC SUPERVISION AND ADMINISTRATION (3)
The music curriculum in relation to the total school program; staff and budgetary needs.

EDM 614. VOCAL MATERIALS AND CONDUCTING (4)
A study of materials appropriate for use in vocal groups. Emphasis is given to vocal materials appropriate for use in secondary schools.

EDM 617. INSTRUMENTAL MATERIALS AND CONDUCTING (4)
A study of materials appropriate for use in instrumental groups. Emphasis is given to instrumental materials appropriate for use in secondary schools.

EDM 633. CURRENT TRENDS IN SCHOOL INSTRUMENTAL MUSIC (3)
New materials, equipment, techniques of teaching and recent historical trends in instrumental music.

EDM 635. CURRENT TRENDS IN SCHOOL VOCAL MUSIC (3)
New materials, equipment, techniques of teaching and recent historical trends in vocal music.

Natural Science — Mathematics Education (EDN)

UPPER LEVEL COURSES

EDN 425. NEW TRENDS IN TEACHING THE PHYSICAL SCIENCES (4)
Physical Science Study Committee Physics, Chemical Education Materials Study and other new approaches to the teaching of the physical sciences. Recommended for teachers of Physics, Chemistry and Earth Sciences.

EDN 427. NEW TRENDS IN TEACHING BIOLOGY (4)
Recent developments in curriculum materials and in strategies for teaching biological sciences, grades 7-12. Recommended for pre-service teachers of secondary school biology.

EDN 441. TEACHING MATHEMATICS IN MIDDLE GRADES (4)
PR: 24 quarter hours of mathematics or CC. Instructional procedures and materials for teaching mathematics in the middle grades.

EDN 443. TEACHING SCIENCE IN THE MIDDLE GRADES (4)
PR: EDN 459 or EDE 417 plus 20 hours of Science or Cl. Techniques and materials of instruction for teaching science in the middle grades.

EDN 451. TEACHING METHODS IN THE SECONDARY SCHOOL — MATHEMATICS (4)
PR: EDC 401 or concurrent registration in EDC 401 and admission to teacher education program in mathematics. Techniques and materials of instruction in mathematics.

EDN 459. TEACHING METHODS IN THE SECONDARY SCHOOL — SCIENCES (4)
PR: EDC 401 or concurrent registration in EDC 401. Techniques and materials of instruction in secondary schools sciences.

FOR SENIORS AND GRADUATE STUDENTS

EDN 515. THE UTILIZATION OF LABORATORY TECHNIQUES IN THE TEACHING OF MATHEMATICS (4)
PR: 18 quarter hours of mathematics or CI. In this course students will make an examination of a variety of sample laboratory lessons along with methods for creating and evaluating such lessons.

EDN 583. SELECTED TOPICS IN SCIENCE EDUCATION (1-5)
May be repeated when topics are not duplicated.

FOR GRADUATE STUDENTS ONLY

EDN 616. TEACHING OF PRE-SECONDARY SCHOOL MATHEMATICS I (5)
PR: 18 quarter hours of mathematics or Cl. Development of strategies and materials for teaching mathematical concepts and skills appropriate to presecondary school years.

EDN 617. TEACHING OF PRE-SECONDARY SCHOOL MATHEMATICS II (5)
PR: EDN 616. Continuation of EDN 616.

EDN 618. TEACHING OF PRE-SECONDARY SCHOOL MATHEMATICS III (5)
PR: EDN 617. Continuation of EDN 616-617.

EDN 621. TEACHING OF HIGH SCHOOL ALGEBRA (4)
PR: B.A. in mathematics or certification in secondary mathematics. Philosophy, content, new trends, and methods of teaching beginning, intermediate, and advanced high school algebra.

EDN 622. TEACHING OF HIGH SCHOOL GEOMETRY (4)
PR: B.A. in mathematics or certification in secondary mathematics. Philosophy, content, new trends, and methods of teaching high school geometry.

EDN 637 CURRENT TRENDS IN SECONDARY MATHEMATICS EDUCATION (4)
Curricular patterns and instructional practices in secondary mathematics.

EDN 639. CURRENT TRENDS IN SECONDARY SCIENCE EDUCATION (4)
PR: EDN 425 or 427. Curricular patterns and instructional practices in secondary science.

EDN 641. CASE STUDIES IN SCIENCE (4)
Case studies from the Natural Sciences with implications for science teaching.

EDN 651. TEACHING SECONDARY SCHOOL BIOLOGY (4)
PR: CI. Effective use and production of instructional materials in the biological sciences. Interrelation of philosophy, materials and classroom practices.

EDN 653. TEACHING SECONDARY SCHOOL PHYSICAL & EARTH SCIENCES (4)
PR: CI. Effective use and production of instructional materials in the physical and earth sciences. Interrelation of philosophy, materials, and classroom practices.

Physical Education for Teachers (EDP)

LOWER LEVEL COURSES

+EDP 255. FIRST AID (3)
Meets the American Red Cross certification requirements in standard and advanced first aid.

UPPER LEVEL COURSES

+EDP 311. SEMINAR AND FIELD EXPERIENCE IN PHYSICAL EDUCATION (5)
Approximately two hours per day are spent teaching in an elementary school which provides a variety of experiences designed to lead students to an understanding of children and how they learn in the elementary school.

+EDP 312. HUMAN KINETICS I (4)
The development and integration of the neuromuscular and the associated sensory systems as they affect motor and perceptual-motor performance. The physiology of muscular contraction, the accompanying immediate changes in the cardiorespiratory systems, and the permanent physiological changes resulting from exercise.

+EDP 314. INDIVIDUAL ASSESSMENT (2)
A personal evaluation of various factors related to the effective teaching of physical education. An individual profile that can be used for counseling purposes will be the final product of this course.

+Enrollment in these courses requires admission to the Physical Education Program.
EDP 321. SEMINAR AND FIELD EXPERIENCE IN PHYSICAL EDUCATION (5)
Elementary school physical education teaching experiences are provided for students. Seminars emphasize planning and teaching methodology. Health and recreation as they relate to elementary school children are studied.

EDP 322. HUMAN KINETICS II (6)
The structure and function of the nervous, skeletal, and muscular systems of the human body as they contribute to efficient movement; deviations in either structure or function in these systems and the role of exercise in rehabilitation.

EDP 331. SEMINAR AND INTERNSHIP IN PHYSICAL EDUCATION (5)
Physical education teaching experience is provided at various grade levels. Seminars are concerned with organization, evaluation, and extra-class activities. Individual teaching is analyzed and programmed. (S/U only.)

EDP 365. AQUATICS (3)
Includes analysis and methodology of teaching swimming skills, conducting class activities, and the organization and conducting of aquatic programs in the school and the community.

EDP 411. SEMINAR AND FIELD EXPERIENCE IN PHYSICAL EDUCATION (5)
Students spend approximately two hours a day at either the junior or senior high school level working in team teaching situations. Emphasis is placed on understanding the secondary level student and how teaching behavior can affect the learner.

EDP 412, 422, 432. APPLIED HUMAN KINETICS (4 each)
A three course sequence which stresses the biomechanical analysis, motoric learning, the teaching techniques of dance, and the skills and strategies common to a number of individual and team sports.

EDP 421. SEMINAR AND INTERNSHIP IN PHYSICAL EDUCATION (5)
Student reverse teaching levels from EDP 411 so that they will have experience at both junior and senior high school levels. Team teaching prevails, however, a transition is made to teaching larger numbers of students. Seminars emphasize individualized techniques. (S/U only.)

EDP 431. SEMINAR AND INTERNSHIP IN PHYSICAL EDUCATION (5)
Students have an option of teaching at the elementary, junior or senior high school level as well as teaching mentally retarded students. Students will teach for a full day for a period of from one to three weeks. (S/U only.)

EDP 459. ATHLETIC TRAINING (3)
PR: CI. Principles and techniques of conditioning athletes for competition; prevention and care of injuries in physical education and athletic activities.

EDP 460. HEALTH EDUCATION PROJECT (5)
PR: CI. A practicum in health education through field experiences with official and voluntary health agencies.

EDP 468. COACHING OF SWIMMING (3)
Methods of organizing and coaching a competitive swimming team.

EDP 469. COACHING OF FOOTBALL (5)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching football.

EDP 478. COACHING OF WRESTLING (4)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching wrestling.

EDP 479. COACHING OF SOCCER (3)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching soccer.

EDP 486. COMMUNITY RECREATION (4)
Introduction to recreational outlets in the community and the administrative problems confronting recreational playground leaders and directors of community recreational programs.

EDP 488. COACHING OF TRACK AND FIELD (4)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching track.

EDP 489. COACHING OF BASKETBALL (3)
Theory and practice of the fundamental techniques, organizational problems and strategy in coaching basketball.

EDP 499. COACHING OF BASEBALL (3)
Theory and practice of the fundamental techniques, organizational problems and strategy involved in coaching baseball.

FOR SENIORS AND GRADUATE STUDENTS

EDP 556. SPECIAL PROBLEMS IN PHYSICAL EDUCATION (3-6)

EDP 558. SCIENTIFIC BASIS OF COACHING (5)
The application of principles from exercise physiology, kinesiology, and psychology to competitive athletics.

FOR GRADUATE STUDENTS ONLY

EDP 600. PROFESSIONAL ASSESSMENT (4)
Selected readings of current trends in physical education; discussion of philosophies of teaching; and individual appraisal of knowledge, values, attitudes, and professional competencies.

EDP 610. BIO-KINETICS OF HUMAN MOVEMENT (4)
Integration of basic kinesiological foundations applied to teaching physical education. Specific topics include: physical growth and neuro-muscular development, role of neuromuscular mechanisms in motor performance, physical principles of human movement and the effects of exercise on the muscular and cardio-respiratory systems.

EDP 611. SPECIALIZED STUDY IN BIO-KINETICS OF HUMAN MOVEMENT: (SUBJECT) (1-4)
Will provide in-depth study in specific areas related to neurological, physiological, and mechanical principles of human movement.

EDP 620. SOCIO-PSYCHOLOGICAL ASPECTS OF HUMAN MOVEMENT. (4)
Involves the psychological and sociological implications of movement to historical and contemporary man. Emphasis on psycho-motor learning, movement behavior, physical self-concept, role of movement in society and values and attitudes held toward movement.

EDP 621. SPECIALIZED STUDY IN SOCIO-PSYCHOLOGICAL ASPECTS OF HUMAN MOVEMENT: (SUBJECT) (1-4)
Will provide in-depth study in specific areas related to sociological and psychological principles of human move-ment.

EDP 630. CURRICULUM AND INSTRUCTIONAL PROCESS IN PHYSICAL EDUCATION (4)
Application of learning theory and education innovations, study of structure of subject matter and styles of teaching and investigation of the nature of the learner as these relate to teaching physical education. Fieldwork may be a requirement of this course.

EDP 631. SPECIALIZED STUDY IN CURRICULUM AND INSTRUCTIONAL PROCESS IN PHYSICAL EDUCATION: (SUBJECT) (1-5)
Will provide in-depth study in specific areas related to the teaching-learning process of physical education.

EDP 640-641. PHYSICAL EDUCATION FOR THE HANDICAPPED I & II (5.5)
This sequential course is concerned with the motor performance and physical fitness of neurologically handicapped individuals and the unique problems of motor skill learning found in children and youth with visual, auditory, speech, or

*Enrollment in these courses requires admission to the Physical Education Program*
Measurement — Research — Evaluation (EDQ)

EDQ 601. ADVANCED MEASUREMENT — COGNITIVE AREA (4)
PR: EDF 605. Measurement, assessment theory and procedures appropriate to the "Cognitive Domain," i.e., intellectual abilities, aptitudes, achievements, skills.

EDQ 603. ADVANCED MEASUREMENT — AFFECTIVE AREA (4)
Measurement, assessment theory and procedures appropriate to the affective domain, i.e., feelings, attitudes, interests, personal characteristics.

EDQ 605. STATISTICAL ANALYSIS FOR EDUCATIONAL RESEARCH I (4)
Application of statistical techniques to the study of educational problems: Tests of significance and confidence intervals, analysis of variance (one-way factorial), correlation and linear regression.

EDQ 607. STATISTICAL ANALYSIS FOR EDUCATIONAL RESEARCH II (4)
PR: EDQ 605. Application of statistical techniques to the study of educational problems: Multiple correlation and regression, Introductory Factor Analysis and selected non-parametric techniques.

EDQ 608. STATISTICAL ANALYSIS FOR EDUCATIONAL RESEARCH III (4)
PR: EDQ 607. Application of statistical techniques to the study of educational problems: Trend analysis, analysis of variance models and expectation of mean squares; analysis of covariance; method of least squares; Bayesian statistics (introduction).

EDQ 610. DESIGN OF EXPERIMENT-PRODUCT RESEARCH IN EDUCATION (4)
PR: EDQ 608. Basic Experimental research design theory and models appropriate for education.

EDQ 611. DESIGN OF DESCRIPTIVE-PROCESS RESEARCH (4)
PR: EDQ 608. Theory and procedures for conducting descriptive research in education.

EDQ 613. APPLICATION OF COMPUTER LANGUAGE AND PROCEDURES IN EDUCATION (2)
Development of understanding and technical skill in relation to computer and data processing approaches to solution of educational research, and administrative problems. Training in use of Fortran as a programming language.

EDQ 620. RESEARCH-BASED PLANNING EVALUATION AND DEVELOPMENT IN EDUCATION (4)
Introduction to systematic planning and development procedures including needs assessment, proposal development, evaluation design and process engineering. Emphasis placed on analysis of evaluation models and theory.

EDQ 621. A BASIS FOR PLANNING AND DEVELOPMENT IN EDUCATION (4)

EDQ 701. CRITICAL ISSUES IN EDUCATIONAL MEASUREMENT AND EVALUATION (4)
A consideration of major issues relevant to the theory and application of measurement and evaluation. Topics include: culture-faire testing, accountability, normative vs. criterion measures and socio-political issues.

Reading Education (EDR)

FOR SENIORS AND GRADUATE STUDENTS

EDR 508. READING IN MIDDLE SCHOOLS (4)
This course is for new teachers planning to, or currently teaching in a middle school. Students will study reading as it relates to their particular subject matter area.

EDR 509. CURRENT TRENDS IN READING IN THE SECONDARY SCHOOL (4)
Survey of secondary, college, and adult reading practices, problems, and research. Work with students at commensurate level required.

EDR 530. CORRECTIVE READING FOR CLASSROOM TEACHERS (4)
PR: EDR 409 or EDR 509 or equivalent. Procedures and materials for individual and group corrective reading in the classroom.

FOR GRADUATE STUDENTS ONLY

EDR 631. DIAGNOSIS OF READING DISABILITIES (4)
PR: EDE 609, EDF 605. Causes of reading disability; techniques and materials in diagnosis of reading problems, including telebinocular and audiometer screening. Diagnoses of reading disabilities are required.

EDR 632. TECHNIQUES OF CORRECTIVE AND REMEDIAL READING (4)
PR: EDE 609, EDF 605, EDR 509, and EDR 631. Materials and methods in remediation of moderate to severe reading disability cases. Supervised individual tutoring and in-depth evaluation and use of materials.

EDR 633. PRACTICUM IN READING (3-6)
PR: EDE 609, EDF 605, EDR 509, EDR 631, EDR 632 and CI. Remediation of severe reading disability cases, tutoring of individuals and small groups, interview techniques, preparation of case reports.

EDR 634. CURRICULUM AND SUPERVISION PROBLEMS IN READING (4)
PR: EDE 609, EDF 605, EDR 509, EDR 631, and EDR 632. Planning and administering programs and preparation as consultants in reading. Intensive work on individual project required.

EDR 635. SURVEY OF READING RESEARCH (4)
PR: EDF 605 and EDF 607, most of EDR courses and CI. Course deals with research in reading — a review of research is conducted by student and presented in written form.

EDR 709. READING AS A SYMBOLIC PROCESS (4)
PR: EDR 509 or EDE 609. Advanced Graduate standing in Reading/Language Arts or CI. Examination and understanding of the relationship of the various perceptual, learning, affective and cognitive processes to the acquisition of reading competencies.

EDR 733. ADVANCED CLINICAL PRACTICUM IN READING (4-8)
PR: EDR 631, 632, 633, and EDF 617 or PSY 617 and Advanced Graduate standing in Reading/Language Arts. Clinical diagnosis and remediation of severe reading disability cases with emphasis on multi-disciplinary approach. Supervi-
sion of master students in the 631, 632, 633 sequence. May be repeated for a maximum of 8 hours.

Social Science Education (EDW)

UPPER LEVEL COURSES
EDW 461. TEACHING METHODS IN SECONDARY SCHOOL — SOCIAL STUDIES (4)
PR: EDC 401 or concurrent registration in EDC 401. Techniques and materials of instruction in social studies.

FOR SENIORS AND GRADUATE STUDENTS
EDW 508. TEACHING METHODS IN THE MIDDLE SCHOOL — SOCIAL STUDIES (4)
PR: Admission to Middle School Program or CL. Techniques of Instruction in Middle School Social Studies.

EDW 547. CRITIQUE OF SELECTED SOCIAL SCIENCE EDUCATION LITERATURE (4)
PR: Major in Middle School or Secondary Social Science or CL. An investigation into various selected readings in Social Science Education literature.

EDW 649 EVALUATION AND IMPLEMENTATION OF MEDIA IN SOCIAL STUDIES (4)
PR: EDL 419, admission to the Middle School Program or CL. Techniques of evaluating and using various media in the Social Studies.

EDW 553. INSTRUCTIONAL PROBLEMS AND STRATEGIES IN SOCIAL STUDIES: ELEMENTARY, MIDDLE OR SECONDARY SCHOOL (4)
PR: Admission to Middle School Program, Secondary Social Science, or CL. Investigation of problems confronted when teaching Social Studies in the elementary, middle or secondary school.

FOR GRADUATE STUDENTS ONLY
EDW 643. CURRENT TRENDS IN SECONDARY SOCIAL STUDIES (4)
PR: EDW 461 or equivalent or CL. Curricular patterns and instructional practices in secondary social studies.

EDW 645. REVIEW OF RESEARCH IN SOCIAL SCIENCE EDUCATION (4)
PR: EDF 303 or EDF 605, EDF 607, Graduate Students in Education, or CL. Evaluation of the research in Social Science Education.

EDW 655. ELEMENTARY SOCIAL STUDIES CURRICULUM (4)
PR: Admission to College of Education or CL. Evaluation of past and present curriculum in Elementary Social Studies.

EDW 657. SECONDARY SOCIAL SCIENCE CURRICULUM (4)
PR: Admission to College of Education or CL. Evaluation of past and present curriculum in Secondary Social Science.

EDW 659. SEMINAR IN SOCIAL SCIENCE EDUCATION (4)
PR: EDF 303 or EDF 605, EDF 607 or CL. To increase general technological knowledge of graduate students in Social Science Education.

Speech Communication-English Education (EDT)

FOR SENIORS AND GRADUATE STUDENTS
EDT 523. DIRECTING SPEECH ACTIVITIES IN THE SECONDARY SCHOOL (5)
PR: 15 hours of speech or CL. Coaching and directing co-curricular activities in discussion, debate, oratory, oral interpretation, and extemporaneous speaking. Planning and supervision of forensic tournaments and speech contests.

FOR GRADUATE STUDENTS ONLY
EDT 621. CURRENT TRENDS IN TEACHING SPEECH COMMUNICATION (5)
PR: CI. Curricular patterns; instructional materials, facilities and practices used in teaching speech communications.

EDT 622. SEMINAR IN THE HISTORY OF SPEECH COMMUNICATION IN EDUCATION (5)
PR: CI. Studies in selected sources, critical writings, and research which have contributed to the development of speech communication as an academic discipline.

Vocational and Adult Education (EDV)

LOWER LEVEL COURSES
EDV 207. THE TEACHER IN A WORLD OF WORK (4)
A study of educational efforts in preparing people for work, the relationship of a job to man's life style, and the concept of education as a lifelong process.

UPPER LEVEL COURSES
EDV 353. ADMINISTRATIVE OFFICE MANAGEMENT (5)
PR: Basic Typing. Instruction and practice on selected business and office machines to acquaint students with capabilities and limitations of the machines. Instruction and reading on teaching methodology for business and office.

EDV 361. BUSINESS AND OFFICE MACHINES (5)
PR: Basic Typing. Instruction and practice on selected business and office machines to acquaint students with capabilities and limitations of the machines. Instruction and reading on teaching methodology for business and office.

EDV 431. SUPERVISED FIELD EXPERIENCE: (Specialization) (4-8)
PR: CL. Planned supervised functions in the area of specialization and co-ordinated with selected schools, government, offices, social agencies, businesses and industries.

EDV 443. SPECIAL TEACHING METHODS: (Specialization) (5)
Methods, techniques, and materials for skill development.

EDV 445. METHODS OF TEACHING: (Specialization) (4)
Methods, techniques, and materials for instruction.

EDV 461. OFFICE OCCUPATIONS PROCEDURES (5)
PR: EDV 361, and Senior standing. This course is designed to integrate learnings from preceding business and office education courses. Applications involve actual and simulated office situations, problems, and evaluation. Emphasis is placed on the qualifications needed for efficient business office operations.

EDV 480. FACILITY DESIGN AND MANAGEMENT (4)
Design and develop instructional facility floor plans consistent with modern and efficient methods of instruction as well as evaluate existing classrooms, laboratories, and shops. Selection and location of equipment. Review and prepare operational plans for the management of equipment, furniture, tools, and supplies as they relate to effective student learning.

FOR SENIORS AND GRADUATE STUDENTS
†EDV 503. CURRICULUM CONSTRUCTION: (Specialization) (4)
Planning and organizing an instructional program for the purpose of developing an occupational competency.

EDV 504. PREPARATION AND DEVELOPMENT FOR TEACHING (4)
The development of selected instructional materials, use of

†Areas of specialization in these courses are: Adult Education, Business Education, Distributive Education, and Industrial-Technical Education.
new educational media, performance evaluation instruments, and counseling techniques.

EDV 505. THE ADULT LEARNER (4)
PR: EDF 305 or equivalent. Physiological and psychological changes in individuals throughout the adult life span and the implications which these changes have in learning capabilities of adults. A review of recent research on adult learning is also emphasized.

EDV 506. PROGRAM MANAGEMENT: (Specialization) (4)
Organization, co-ordination, and budgeting of adult, cooperative, and special programs.

EDV 507. PRINCIPLES OF ADULT AND VOCATIONAL EDUCATION (4)
An overview of current policies and principles to include their historical, sociological and philosophical bases out of which principles of adult and vocational education have been accepted and implemented.

EDV 511. SCHOOL-COMMUNITY DEVELOPMENT (4)
An approach to identifying, assessing, and analyzing individual, institutional, and community needs, for the purpose of cooperative program planning, community involvement and public support.

FOR GRADUATE STUDENTS ONLY

EDV 605. ADULT BASIC EDUCATION (4)
An overview of adult basic education with emphasis on current issues and problems of curriculum and instruction in program development for culturally different adults.

EDV 621. INDIVIDUALIZED INSTRUCTION (4)
Attention is given to individualized instruction to include the special needs student, the slow learner, and the more capable student.

EDV 631. CURRENT TRENDS (4)
Historical information, issues, current trends, new dimensions and problems in the area of specialization.

EDV 641. STAFF DEVELOPMENT (4)
Implementation of new procedures addressed to discreet developmental needs of the staff as identified by an educational agency.

EDV 651. PRACTICUM: (Specialization) (4-8)
A problem-centered field study in the local community, school, government, office, social agency, business or industry.

EDV 651. SUPERVISION OF LOCAL PROGRAMS: ADULT OR VOCATIONAL (4)
PR: CI. A study of the factors involved in the supervision of instruction including plans for teacher education, improvement of instruction, coordination of activities, and personnel relations.

EDV 671. ADMINISTRATION OF LOCAL PROGRAMS: ADULT OR VOCATIONAL (4)
A study of the organization, selection of personnel, assignment of duties and responsibilities, and establishment of policies and procedures to accomplish the objectives of the local program within the federal, state, and local requirements.

EDV 687. SEMINAR: (4)
PR: EDF 605 & 607. Applied research techniques and investigation of important current issues or theses in the area of specialization.

Areas of specialization in these courses are: Adult Education, Business Education, Distributive Education, and Industrial-Technical Education.

ENGINEERING


Basic and Interdisciplinary Engineering Course Work (EGB)

LOWER LEVEL COURSES

EGB 101. GRAPHIC ANALYSIS I (4)
The theory and application of projective systems and related topics. Basic concepts in engineering drawing. Lec.-lab.

EGB 102. GRAPHIC ANALYSIS II (3)

EGB 103. GRAPHIC ANALYSIS III (3)
CR: EGB 101. An elective course designed for students with limited background in pre-calculus mathematics necessary for graphical processes. Emphasis on graphical concepts of algebraic and trigonometric relationships.

EGB 104. GRAPHIC ANALYSIS IV (3)
Continuation of EGB 103.

EGB 201. ENGINEERING PROBLEMS I (2)

EGB 203. ENGINEERING MEASUREMENTS (3)
PR: EGB 101. An introduction to the concepts of a systems approach and various techniques of measurement in engineering systems, both discrete and continuous. Lec.-lab.

EGB 208. INTRODUCTION TO ENGINEERING I (3)
PR: None. To present an overview of Engineering, its role and its concepts. Experimental program; see adviser.

EGB 209. INTRODUCTION TO ENGINEERING II (3)
PR: EGB 208. Continuation of EGB 208. (Experimental program.)

EGB 231. PROGRAMMING I — INTRODUCTION (1)
Basic computer operation, programming a computer using machine language, assembly languages and FORTRAN.

EGB 232. PROGRAMMING II — FORTRAN (2)
PR: EGB 231. Continuation of EGB 231.

UPPER LEVEL COURSES

EGB 301. ENGINEERING PROBLEMS II (2)
CR: MTH 352. Continuation of EGB 201.

EGB 302. ENGINEERING PROBLEMS III (2)
CR: MTH 353. Continuation of EGB 301.

EGB 303. ENGINEERING PROBLEMS IV (2)

EGB 311. INTRODUCTION TO ELECTRICAL SYSTEMS (3)

EGB 312. INTRODUCTION TO ELECTRICAL SYSTEMS II (3)
PR: EGB 311. Continuation of EGB 311.
EGB 313. INTRODUCTION TO ELECTRICAL SYSTEMS III (3)
PR: EGB 311. Continuation of EGB 311 or EGB 312.

EGB 321. THERMODYNAMICS I (3)

EGB 322. THERMODYNAMICS II (3)

EGB 325. DYNAMIC RESPONSE OF ENGINEERING SYSTEMS I (4)
PR: PHY 303, 305. Linear dynamic analysis of electrical mechanical, pneumatic, hydraulic and thermal systems. Introduction to analog computers; LaPlace transformation. Block diagram representation, transient and frequency response. Lec.-lab.

EGB 337. ENGINEERING VALUATION I (3)
PR: EGB 231, MTH 352. A study in analyzing the economic limitations imposed on engineering activities using basic models which consider the time value of money.

EGB 340. SOLID MECHANICS I (5)

EGB 341. SOLID MECHANICS II (4)

EGB 342. MATERIALS ENGINEERING I (6)
PR: CHM 213, EGB 340. An introduction to structure and property relationships in engineering materials, i.e., metal, ceramic and polymer systems. Environmental effects on materials are also treated. (Lec.-lab)

EGB 343. FLUIDS I (6)
PR: EGB 341. Fundamental and experimental concepts in ideal and viscous fluid theory; momentum and energy consideration; compressible flow; boundary layer, Navier-Stokes equation. Lec.-lab.

EGB 401. ENGINEERING ANALYSIS I (4)

EGB 481. PROFESSIONAL ENGINEERING SEMINAR I (1-5)
PR: CI. A lecture-discussion seminar on modern trends in the engineering profession.

EGB 483. PROFESSIONAL ENGINEERING SEMINAR II (1-5)
PR: CI. Guest lecturers from on and off campus for discussion of current engineering topics to graduating engineering students.

EGB 501, 502, 503, 504, 505. ENGINEERING ANALYSIS II, III, IV, V, VI (3 hrs. each).
PR: CC or MTH 401. A five course sequence. (1) Ordinary differential equations with emphasis on series solutions and numerical methods. (2) Vector analysis, partial differential equations, boundary value problems and orthogonal functions. (3) & (4) Functions of a complex variable with applications. (5) Selected Topics.

EGB 523. DIGITAL SIGNAL PROCESSING TECHNIQUES (3)

EGB 601. ENGINEERING ANALYSIS VII (3)
PR: CC. Application of applied mathematics to the study of linearized dynamic systems and networks; state space; stability theory; extensions to discrete and non-linear systems.

EGB 610. SCIENTIST IN THE SEA I (4; Lec.-lab.)
PR: CI and diver certification (NAVI or equiv.) Hyperbaric Operations; the basic principles, physiology and psychology involved in submarine hyperbaric operations, inside and outside habitats. Communication and life support is also treated extensively. (Also listed as OGY 610.)

EGB 611. SCIENTIST IN THE SEA II (4; Lec.-lab)
PR: CI and diver certification (NAVI or equiv). Marine Sciences; an extensive discussion of research equipment and techniques for underwater operations in the Marine Sciences presented by practicing research workers in the field. (Also listed as OGY 612.)

EGB 631. PATTERN RECOGNITION THEORY (3)

EGB 632. COMPUTER APPROACHES TO PATTERN RECOGNITION (3)

EGB 699. RESEARCH OR DESIGN (1-9)
PR: CC. Supervised independent research or design. May be repeated. (S/U only.)

EGB 798. RESEARCH AND DISSERTATION (1-12)
PR: Admission as candidate for Ph.D. program. Supervised independent research. May be repeated for credit. (S/U only.)

Electrical and Electronic Systems (EGE)

EGB 301. LABORATORY I (1)
PR: EGB 311.

EGB 302. LABORATORY 2 (1)
PR: EGB 312.

EGB 303. LABORATORY 3 (1)
PR: EGB 301.

EGB 404. LABORATORY 4 (1)
PR: EGB 302; CR: EGE 420.

EGB 405. LABORATORY 5 (1)
PR: EGB 302; CR: EGE 421.

EGB 406. LABORATORY 6 (1)
PR: EGB 302; CR: EBE 430.

EGB 310, 410. NETWORK ANALYSIS AND DESIGN I, II (3 each)

EGB 320, 420. ELECTRONICS I, II (3 each)
PR: EGB 312. A second course in the physical principles of electronic devices with emphasis on semi-conductor electronics. Includes the analysis and design of amplifiers and switching circuits.

EGB 330, 430. FIELDS AND WAVES I, II (3 each)
PR: PHY 305, 306, EGB 401. A basic introduction to electromagnetic field theory, including static and dynamic electromagnetic fields.

EGB 410. SEE EGE 310.

EGB 411. LINEAR SYSTEMS ANALYSIS (3)
PR: EGB 410. Provides further study in the analysis of linear networks and systems. Includes time and frequency domain points of view. LaPlace, Fourier and superposition integrals.

EGB 420. SEE EGE 320.
EGE 421. COMMUNICATION CIRCUITS (3)
PR: EGE 420. Provides further study in electronic circuits. Includes oscillator, modulator, and detector analysis and design.

EGE 425. COMMUNICATION ENGINEERING (3)
PR: EGE 421. System considerations of electronic circuits; radio propagation; antennas; transmitters and receivers.

EGE 426. COMMUNICATIONS LABORATORY (1)
CR: EGE 425. Experiments in amplitude modulation, frequency modulation, pulse communications and data transmission.

EGE 430. SEE EGE 330.

EGE 432. DISTRIBUTED NETWORKS (3)
PR: EGE 330, EGE 410. Transmission lines standing waves, impedance, waveguides.

EGE 440. LINEAR CONTROL SYSTEMS (3)
PR: EGB 325, EGE 420. Introduction to analysis and design of linear feedback control systems. Covers block diagram, flow charts, Bode, Nyquist and root locus techniques.

EGE 441. CONTROL LABORATORY (1)
CR: EGE 440.

EGE 444. LOGIC DESIGN (3)
PR: EGB 312. Non-majors may enroll with the consent of the chairman. Binary number system; truth functions; Boolean algebra; canonical forms; minimization of combinational logic circuits; logic circuits in computers.

EGE 445. LOGIC LABORATORY (1)
CR: EGE 444.

EGE 450. MICROELECTRONICS ENGINEERING (3)

EGE 451. MICROELECTRONICS LABORATORY (1)
CR: EGE 450.

EGE 460, 462, 464. ELECTROMECHANICS I, II, III (3,3,3)

EGE 461, 463, 465. ELECTROMECHANICS LAB 1,2,3 (1,1,1)
CR: EGE 460, 462, 464 respectively.

EGE 474, 476, 478. SYSTEMS ANALYSIS I, II, III (5,5,5)
CR: CC. A course series to permit non-electrical majors to take advanced course work in the electrical area.

EGE 475, 477, 479. SYSTEMS LABORATORIES 1,2,3 (1,1,1)
CR: EGE 474, 476, 478 respectively.

EGE 480, 481, 482. SPECIAL ELECTRICAL TOPICS I, II, III (1-4 each)
PR: CC.

EGE 499. DESIGN PROJECT (3)
PR: Senior standing. An individual or team project involving the design of an electrical component or system. Required of all electrical seniors.

EGE 520. PULSE CIRCUIT PRINCIPLES (3)
PR: EGE 411, 421. An introduction to the analysis and design of pulse and timing circuits with applications.

EGE 530. UHF PRINCIPLES (3)
PR: EGE 411, 421, 430. A study of tubes, devices and circuits peculiar to systems which operate at ultra high and super high frequencies.

EGE 531. UHF LABORATORY (1)
CR: EGE 530.

EGE 540. NONLINEAR CONTROL SYSTEMS (3)

EGE 541. CONTROL LABORATORY (1)
CR: EGE 540.

EGE 542. SEQUENTIAL CIRCUITS (3)
PR: EGE 444. The design of switching circuits with inputs that are functions of time is carried from a word description through a minimum state realization using flip-flops, logic gates and delay elements.

EGE 544. DIGITAL COMPUTERS (3)
PR: EGE 444. Digital arithmetic; computer subsystems, arithmetic units; control units; memory units; general purpose computers.

EGE 545. DIGITAL LABORATORY (1)
CR: EGE 544.

EGE 547. DISCRETE STRUCTURES FOR DIGITAL SYSTEMS (3)
PR: EGE 444. Set algebra, basic algebraic structures in computers, Boolean algebra, propositional logic, and graphs. Applications to computers.

EGE 548. ELECTRICAL MEASUREMENTS (2)
PR: EGE 411. Techniques and principles of electronic measurement.

EGE 549. MEASUREMENTS LABORATORY (1)
CR: EGE 548.

EGE 560. POWER SYSTEMS ANALYSIS (3)
PR:CC. Analysis techniques for AC power systems.

EGE 562. COMPUTER ANALYSIS OF POWER SYSTEMS (3)
PR: CC. Review of Fortran programming, matrix algebra, network formulation, short circuit studies, simulation of algebraic equations, load flow studies, numerical solution of differential equations, transient stability studies. Strong emphasis on techniques adaptable to digital computer studies, programs will be written and run on the IBM 360/65.

EGE 580, 481, 482. SPECIAL ELECTRICAL TOPICS I, II, III (1-3 each)
PR: CC.

EGE 585. ENGINEERING SEMINAR (1)
PR: CC.

EGE 599. RESEARCH OR DESIGN (1-9)
PR: CC. (S/U only.)

EGE 610, 611. ADVANCED CIRCUIT THEORY I, II (3,3)
PR: CC. Network fundamentals; network characterization; frequency analysis; superposition integrals; signal-flow techniques; stability problems; real-and-imaginary relations.

EGE 612. NONLINEAR CIRCuits (3)
PR: CC. Analytical and topological approaches to nonlinear circuits; nonlinear resonance; relaxation oscillations.

EGE 614, 615, 616. NETWORK SYNTHESIS I, II, III (3,3,3)
PR: CC. Network functions; physical realizability; two-terminal network synthesis methods; frequency transformation; potential analogy; approximation problems; insertion-loss and transfer function synthesis.

EGE 620. INFORMATION THEORY (3)
PR: CC. Concepts of information, information channels, channel capacity, information sources and Shannon's fundamental theorem.

EGE 622. NOISE THEORY (3)
PR: CC. Electrical noise and signals through linear filters and electronic systems.

EGE 623. CODING THEORY I (3)
PR: CC. Error-correcting codes, algebraic block codes, linear codes and feedback shift registers. BCH codes and decoding methods.

EGE 624. CODING THEORY II (3)

EGE 626, 627, 628. THEORY OF COMMUNICATION I, II, III (3,3,3)
PR: CC. Physical basis and statistical representation of electrical noise; filtering, modulation, and de-modulation of signals corrupted by noise; correlation techniques and linear prediction; statistical estimation of signal parameter; optimum filters and receivers; ambiguity functions and inverse probability. Quantitative measure of information sources, noise channels and channel capacity; an introduction to error-correcting codes.

EGE 630, 631, 632. ELECTROMAGNETIC FIELDS AND WAVES I, II, III (3,3,3)
PR: CC. Electromagnetic theory from the engineering point
of view, propagation and reflection of waves, guided waves, resonant cavities, antennas and radiation.

**EGE 635. MICROWAVE GENERATION AND AMPLIFICATION (3)**

**EGE 636. ELECTRICAL LABORATORY (1)**
CR: EGE 635.

**EGE 637. MICROWAVE COMPONENTS (3)**
PR: CC. A study of directional couplers, junctions, cavities and other passive microwave components including microwave integrated circuits.

**EGE 638. MICROWAVE NETWORKS (3)**
PR: CC. Scattering and transfer representations of n-ports. Odd and even mode theory. Wave filters.

**EGE 640. DIGITAL CONTROL SYSTEMS (3)**
PR: EGE 440 or CC. Sample-data and digital control processes.

**EGE 641. RANDOM PROCESSES IN CONTROL SYSTEMS (3)**
PR: EGE 440 or CC. Analysis and design of control systems subject to random inputs and disturbances.

**EGE 642. MODERN CONTROL THEORY (3)**
PR: EGE 440, 540, 640, 641 or CC. A study of modern control techniques including optimum and adaptive control.

**EGE 644. AUTOMATA THEORY I (3)**

**EGE 645. AUTOMATA THEORY II (3)**

**EGE 646. AUTOMATA THEORY III (3)**
PR: EGE 645. Artificial languages, phase-structure grammars, operations on languages, decision problems, discrete value random processes, Markov processes, probabilistic sequential machines, non-deterministic sequential machines.

**EGE 647. SIMULATION TECHNIQUES FOR ELECTRICALS (3)**
PR: CC. Theory of simulation of systems characterized by lumped and distributed parameters.

**EGE 648. ELECTRICAL MEASUREMENTS (2)**
PR: CC. Advanced techniques and principles of electronic measurement.

**EGE 649. MEASUREMENTS LABORATORY (1)**
CR: EGE 648.

**EGE 650, 651, 652. SOLID STATE ELECTRONICS I, II, III (3,3,3)**
PR: CC. Theory of operation and application of circuits and devices.

**EGE 653, 654. PRINCIPLES OF SEMICONDUCTOR DEVICE MODELING I, II (3,3)**
PR: EGE 411, 430. A course sequence which emphasizes systematic methods for obtaining models which relate device physics to terminal behavior and which provide appropriate compromises between accuracy and simplicity.

**EGE 655. COMPUTER DESIGN LANGUAGES (3)**
PR: CC or EGE 544. Simulation languages for digital computer systems; APL, CDL and others. Simulation of elements, operations, sequences and of a complete digital computer.

**EGE 656. DIGITAL ARITHMETIC METHODS (3)**
PR: CC or EGE 544. Study of the number systems and the algorithms used for digital arithmetic computation with emphasis in their implementation, speed and reliability considerations.

**EGE 657. COMPUTER ARCHITECTURE (3)**
PR: CC or EGE 655 or EGE 656. The macro-structure of computers is considered in this course, ranging from the orthodox von Neumann designs to multiprocessors, stack processors, pipe-line systems and associative computers.

**EGE 660, 661, 662. ELECTRIC POWER SYSTEMS I, II, III (3,3,3)**
PR: CC. Steady-state and transient analysis of interconnected power systems; power circuit protection; transient characteristic of apparatus.

**EGE 663. LIGHTNING AND SURGE PROTECTION (3)**
PR: CC. Methods of protection against overvoltages due to lightning. Ground wire shielding, systems and tower grounding, lightning arresters. Dynamic overvoltages, switching phenomena and system recovery voltages.

**EGE 664. PROTECTIVE RELAYING OF POWER SYSTEMS (3)**
PR: CC. Sampling theory, pulse waveform generation and modulation, PAM, PWM, PPM, related multiplex systems, telemetry applications.

**EGE 670. PULSE COMMUNICATIONS SYSTEM (3)**
PR: CC. Sampling theory, pulse waveform generation and modulation, PAM, PWM, PPM, related multiplex systems, telemetry applications.

**EGE 671. DATA TRANSMISSION (3)**
PR: EGE 670. Quantization theory, binary coding systems, ideal binary transmission, on-off keying, FSK, PSK, PCM, applications.

**EGE 672. DATA TRANSMISSION II (3)**
PR: EGE 671. M-ary systems-MASK, MFSK, MPSK, orthogonal systems, multilevel and multistate coding, simplex codes, orthogonal and biorthogonal codes, polysignal systems, synchronization methods.

**EGE 680. SPECIAL ELECTRICAL PROBLEMS I (1-3 each)**
PR: CC.

**EGE 681. SELECTED ELECTRICAL TOPICS (1-3)**
PR: CC.

**EGE 698. ADVANCED ENGINEERING SEMINAR (1-3)**
PR: CC.

**EGE 699. RESEARCH OR DESIGN (1-18)**
PR: CC. (S/U only.)

**EGE 799. DOCTORAL DISSERTATION (1-15)**
PR: CC. (S/U only.)

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**Energy Conversion and Mechanical Design (EGR)**

**UPPER LEVEL COURSES**

**EGR 311. THERMODYNAMICS III (3)**
PR: EGB 322. The study of energy conversion processes and cycles as modified for optimization of capacity and efficiency. Applications include pumps, compressors, turbines, internal combustion engines, power and refrigeration cycles.

**EGR 315. HEAT TRANSFER I (4)**
PR: EGB 322. The basic laws of conduction, convection and radiation; analysis of the effect on heat transfer of thermal conductivity, emissivity, fluid transport properties and Reynolds's number. Lec.-lab.

**EGR 326. DYNAMICS OF MECHANICAL SYSTEMS (3)**
PR: PHY 301, MTH 303. Plane and angular motion; velocity and acceleration curves, velocities and accelerations in mechanisms, static and dynamic force analysis. Rolling and sliding contact pairs, cams, gear tooth action. Lec.-lab.

**EGR 348. PHYSICAL MEASUREMENTS I (3)**

**EGR 350. ENERGY CONVERSION LABORATORY I (2)**
CR: EGB 322. Introduction to engineering laboratory measurements with emphasis on the writing of technical reports.
EGR 411. THERMODYNAMICS IV (3)
PR: EGR 311 or CI. Introduction to mathematical thermodynamics, the Maxwell relations, real gas behavior, ideal mixtures and solutions, introduction to phase and chemical equilibrium.

EGR 413. FLUID MACHINERY I (4)
PR: EGB 343. Performance characteristics of pumps and fans; energy conversion in fluid machines; design of piping and duct systems; proper selection of pumps and fans for given fluid systems; analysis of system efficiency parameters; correlation of design predictions with experimental data.

EGR 416. ELECTRONIC EQUIPMENT COOLING (3)

EGR 417. FUELS AND COMBUSTION (3)
PR: EGR 322. A study of the combustion characteristics of gaseous, solid and liquid fuels and equipment needed to safely and economically control combustion processes. Lec.-lab.

EGR 419. POWER PLANT ANALYSIS AND DESIGN (3)
CR: EGR 311. EGR 315. Parameters affecting utility power production; daily load curves; estimation of future loads; economics of power generation; system efficiency as affected by the thermodynamic cycle, multunit scheduling, and load variation; heat transfer regions in the steam generator; water treatment methods.

EGR 421. INTRODUCTION TO NUCLEAR ENGINEERING I (3)
Neutron density and thermalization parameters; criticality calculations; transient flux parameters; reactor operation; control instrumentation.

EGR 424. REFRIGERATION AND AIR CONDITIONING (3)
CR: EGR 311, EGR 315. Application of thermodynamics, heat transfer and fluid flow to the design of systems for controlling our environment; heating and cooling load calculations; psychrometrics of air conditioning processes.

EGR 428. MACHINE ANALYSIS AND DESIGN (3)

EGR 429. MECHANICAL DESIGN I (3)
PR: EGR 326. EGR 428. Application of the principles of engineering mechanics, materials and manufacturing to the analysis and design of mechanical elements. Lec.-lab.

EGR 441. ANALOG COMPUTERS I (3)
PR: EGB 325, EGR 348 or CI. The study of linear and nonlinear engineering systems using analog computers. Magnitude and time scaling Lec.-lab.

EGR 445. DYNAMIC RESPONSE OF ENGINEERING SYSTEMS II (3)

EGR 450. ENERGY CONVERSION LABORATORY II (2)
PR: EGR 350. Continuation of EGR 350 with emphasis on measurement techniques, energy balances of operating systems and technical report writing. Lec.-lab.

EGR 453. MECHANICAL CONTROL (3)
PR: EGB 311, 325. Analysis of devices for measurement and control. Transducers, error detectors, controllers and final control elements. Block diagram representation.

EGR 454. CONTROLS LABORATORY (1)
PR: EGB 325. CR: EGB 453. Familiarization with and performance testing of automatic control systems.

EGR 471. SEPARATION PROCESSES I (3)
PR: MTH 303, CR: EGB 321. Introduction to the use of mass and energy balances and to chemical engineering thermodynamics through the description and analysis of separation processes (e.g., crystallization, distillation, osmosis, etc.)

EGR 472. TRANSPORT PHENOMENA (4)
PR: EGB 321. An introduction to momentum transfer, energy transfer, and mass transfer emphasizing the similarities among these phenomena.

EGR 473. MASS TRANSFER (3)
PR: EGR 472. Study of molecular and turbulent diffusion in fluids, diffusion in solids, mass transfer coefficients and interphase mass transfer.

EGR 474. SEPARATION PROCESSES II (3)
PR: EGR 471 or CI. Emphasis on selection and design of separation processes. Familiarization with graphical techniques, group methods and other computational approaches used in design. Use of empirical correlations for size of equipment, efficiency of the process and quality of the separation.

EGR 475. INDUSTRIAL CHEMISTRY (3)
PR: CHM 332, EGR 474. A critical study of selected chemical process industries in order to give the student a better understanding of the direct application of basic chemical process principles.

EGR 476. REACTING SYSTEMS I (3)
PR: EGR 411. Study of the effect of pressure, temperature and composition upon equilibrium in chemical reactors. Description of batch, plug flow, and continuous stirred tank homogeneous reactors.

EGR 481. SPECIAL TOPICS ENERGY CONVERSION I (1-4)
PR: CC.

EGR 482. SPECIAL TOPICS ENERGY CONVERSION II (1-4)
PR: CC.

EGR 501. INDUSTRIAL AIR POLLUTION CONTROL (4)
PR: EGB 321, EGB 322. A basic course in the elements of large source air pollution and control as presented from the engineering viewpoint. Major units to be studied: Sources, Atmospheric Meteorology, Diffusion, Local Influences. Control Measures, Emergencies, Protection. Lec.-lab.

EGR 513 FLUID MACHINERY II (3)
PR: EGR 413. Performance characteristics of compressors and exhausters, vacuum pumps, and gas turbines; internal energy exchange and fluid flow paths; piping and ducting considerations; economic selection of proper equipment to match fluid and power system requirements; evaluation of off-design conditions.

EGR 522. ACOUSTICS AND NOISE CONTROL (3)
PR: CC. Fundamentals of sound propagation; sound power and intensity; psychoacoustics, industrial noise sources, methods of noise attenuation; community noise ordinances; instrumentation for noise measurement. Lec.-lab.

EGR 523 MECHANICAL UTILITIES SYSTEMS (3)
PR: EGR 413. Analysis and design of a building's mechanical systems for fire and lightning protection, air conditioning, water supply, waste and storm drains.

EGR 526. ANALYSIS METHODS FOR MECHANICAL DESIGN (3)

EGR 527. ADVANCED DYNAMICS OF MACHINERY (3)
PR: EGR 326. A continuation of undergraduate course and devoted to a more detailed study of velocities, accelerations and forces in machine parts having reciprocating, rotating and combined motions. A complete force analysis will be made of an internal combustion engine.

EGR 528. MECHANICAL DESIGN II (3)
EGR 529. PROJECT DESIGN (3)
PR: EGR 429. Correlation of previously acquired mechanical design experiences with a creative design project. Lec.-lab.

EGR 533. MECHANICAL VIBRATION AND BALANCING (3)
PR: EGB 341, 401. Transient and steady state vibration analysis of mechanical systems with lumped parameters. Dynamic balancing, vibration isolation and simulation of systems.

EGR 533. LUBRICATION I (3)
PR: EGR 343, 401. The theoretical basis of lubrication and hydrodynamic bearing theory. The study of lubrication requirements of different types of machines.

EGR 541. ANALOG AND DIGITAL SIMULATION II (3)
PR: EGR 441 or CI. Introduction to mathematical modeling techniques applied to Mechanical and Chemical Engineering systems. The use of analog and digital computers in the solution of these models. Lec.-lab.

EGR 551. INSTRUMENTAL ANALYSIS. (4)
PR: PHY 305, CHM 213. Instrumental Analysis. This course will deal with the engineering bases of a variety of sophisticated instrumental techniques for chemical analysis. Emphasis will be placed on the physical basis of the instrument and its design rather than on the interpretation of the analysis. Systems to be examined will include light and r.f. spectroscopy, mass spectrometry and methods which depend on various transport properties.

EGR 553. PROCESS CONTROL SYSTEMS (3)
PR: EGR 453 or CI. Analysis and design of process control systems. Consideration of typical control sensors and controllers as well as advanced process control techniques such as feedforward and ratio control.

EGR 554. HYDRAULIC CONTROL (3)
PR: EGR 453 or CI. Hydraulic control system components and their effects on closed loop system performance. Lec.-lab.

EGR 560. POWER UTILIZATION SYSTEMS (3)

EGR 576. REACTING SYSTEMS II (3)
PR: EGR 476. Design and control of homogeneous chemical reactors, effect of mixing, temperature and flow characteristics. Laboratory (3 contact hours). The student in this laboratory will be responsible for the safe and efficient manufacture of a "chemical" on pilot plant equipment. Lec.-lab.

EGR 577. DESIGN AND CASE PROBLEMS (3)
PR: EGR 474. This part of the course exposes the chemical engineering student to the design of a chemical plant or a major part of a process. The annual A.I.Ch.E. student contest design problems and typical design problems supplied by local industries will be used. CASE PROBLEMS: This part of the course stresses engineering "art." The word "case" connotates a specific engineering problem situation actually experienced by someone in the past or present. The student must generate his own individual approach to problem solving, benefiting from those of others in the class.

EGR 581. SPECIAL TOPICS ENERGY CONVERSION III (1-4)
PR: CC.

EGR 582. SPECIAL TOPICS ENERGY CONVERSION IV (1-4)
PR: CC.

EGR 611. THERMODYNAMICS OF FLUID FLOW (3)
PR: CC. Interrelationship of the equations of fluid motion and of thermodynamics for ideal gases; subsonic and supersonic gas flows, flows with friction and with heat transfer; supersonic nozzle design; parameters of fluid thrust.

EGR 612. ADVANCED THERMODYNAMICS (3)
PR: CC. Advanced treatment of the general equations of thermodynamics, principal equations of chemical reaction; the chemical potential and equilibrium; analysis of metastable states. Irreversibility and steady flow.

EGR 613. PROCESS HEAT TRANSFER I (3)

EGR 614. PROCESS HEAT TRANSFER II (3)
PR: EGR 315, EGR 613. Extended surface, longitudinal and radial fins, crossflow, finned passages, longitudinal high fin exchangers, radial low fin exchangers, transverse low fin exchangers and compact heat exchangers.

EGR 615. HEAT TRANSFER II (3)
PR: EGR 315, EGB 401. Steady and unsteady heat transfer by conduction; one, two and three dimensional systems, numerical, graphical and analog methods, finite difference methods and periodic conduction heat flow. (Formerly EGR 515).

EGR 616. HEAT TRANSFER III (3)
PR: EGR 315 and EGB 401 or CC. Radiative heat transfer. Radiation from black and "grey" bodies. Pure radiative heat transfer and in the presence of other modes of energy transfer. (Formerly EGR 615.)

EGR 617. ENERGY TRANSFORMATION AND STORAGE (3)
PR: CC. Analysis of direct energy conversion systems; photoelectric cells, thermocouples, fuel cells, thermionic converters, magnetohydrodynamic devices, solar energy cells, rectifiers, inverters, energy storage devices.

EGR 622. ACOUSTICS AND NOISE CONTROL II (3)
PR: EGR 522. Continuation of EGR 522, acoustics and Noise Control I.

EGR 623. NOISE CONTROL DESIGN (1-3)
PR: EGR 522, EGR 622. Practical solutions to real noise problems occurring in local industries; students will be required to analyze a problem, design a "solution," and prepare and present a report to plant engineering personnel giving their analysis and recommendations; variable credit depending on complexity of problem.

EGR 624. AIR CONDITIONING SYSTEMS (3)
PR: EGR 413, EGR 424. Analysis and design of air conditioning systems; criteria for selection of central systems, unit air conditioners, or self-contained units; performance characteristics of single zone systems, with and without reheat, multizone systems, double duct and variable volume systems.

EGR 625. AIR CONDITIONING SYSTEMS DESIGN (3)
PR: EGR 424, EGR 624 or CI. Design of an air conditioning system from the concept stage to final plans and specifications, stressing the practical application of basic theory and knowledge of types of systems available.

EGR 629. ADVANCED MECHANICAL DESIGN (3)
PR: CC. A technical application course involving the problem of developing machines to perform specified functions. The machine to be designed will be designated by the instructor. The analysis will include evaluating all parts for stress, vibration, wear and proper consideration of manufacturing processes involved. Lec.-lab.

EGR 630. APPLIED ENGINEERING ASPECTS OF FATIGUE (3)

EGR 633. VIBRATION ANALYSIS (3)
PR: EGR 533. Application of generalized coordinates, Lagrange's equation, matrix iteration, and other specialized methods to discrete multismas systems.

EGR 635. LUBRICATION II (3)
PR: EGR 535. A continuation of EGR 535 with emphasis on hydrodynamic squeeze film theory and gas lubricated bearings.
EGR 640. DIGITAL TECHNIQUES IN ENERGY TRANSFER SYSTEMS (3)
PR: EGB 333, EGR 441 or Cl. Application of both general purpose and specialized programs to the solution of problems in the design of control systems, kinematic mechanisms and energy transfer systems. Some languages and programs to be used are FORTRAN, the Continuous System Modeling Program and the Mechanism Design Program.

EGR 642. DIMENSIONAL ANALYSIS AND MODEL THEORY I (3)
PR: CC. Theory of dimensional analysis, similitude, and design of models.

EGR 648. DIRECT DIGITAL CONTROL (3)
PR: EGB 503, EGB 553, 656 or Cl. Application of digital computers to control of engineering processes. Includes study of digital filtering, Z-transforms, supervisory control. A/D and D/A onconversion.

EGR 651. PHYSICAL MEASUREMENTS II (3)
PR: EGR 348, 441, 450 or Cl. The techniques and theory for measuring temperature, pressure, displacement, speed, acceleration, force, power, and psychrometric properties with particular attention to dynamic measurement. Lec.-lab.

EGR 656. NUMERICAL MEASUREMENT AND CONTROL (3)
PR: CC. Incremental and absolute control systems. Number systems used in numerical control. Digital to analog and analog to digital conversion. Applications.

EGR 657. FLUID AMPLIFIERS AND CIRCUITS (3)
PR: CC. Analysis and design of fluid devices for use as amplifiers, logic devices and memory elements in instrumentation and control systems.

EGR 659 ADVANCED MECHANICAL CONTROL (3)
PR: EGR 445, EGB 502. EGE 540 or Cl. Application of state space techniques to analysis and design of energy transfer control systems. Includes study of optimal control and adaptive control.

EGR 672. ADVANCED TRANSPORT PHENOMENA (4)
PR: EGR 472 or Cl. Transport processes (mass, momentum and energy) are the underlying phenomena in energy conversion systems. This course expands and unifies the fundamental concepts introduced in undergraduate fluids and heat and mass transfer courses.

EGR 676. REACTING SYSTEMS III (4)
PR: EGR 576 or Cl. Dynamics of heterogeneous reaction. Economic factors in the design of chemical reactors. Simulation of complex reacting systems.

EGR 681. SPECIAL PROBLEMS I (1-4)
PR: CC.

EGR 682. SPECIAL PROBLEMS II (1-4)
PR: CC.

EGR 698. ADVANCED SEMINAR (1-3)
PR: CC.

EGR 699. RESEARCH OR DESIGN (1-9)
PR: CC. (S/U only.)

Industrial Systems (EGS)

EGS 401. INDUSTRIAL SYSTEMS (3)
Introduction to organizational planning and control functions in industrial systems.

EGS 402. INDUSTRIAL PROCESSES (3)
PR: EGB 337. An introduction to basic industrial processes emphasizing interdependency and similarities among industries. Students research specific industries and visit local industrial plants. Lec.-lab.

EGS 403, 404. PRODUCTION DESIGN I, II (3 each)
PR: EGS 402, 461. Methods study, predetermined time systems, wage administration, work measurement techniques including stop-watch time study, work sampling, standard data and production studies. Lec.-lab.

EGS 405. PRODUCTION CONTROL SYSTEMS I (3)
PR: EGS 404. Principles and techniques of industrial planning and control systems design. Cost analysis, forecasting and controlling production activities.

EGS 406. PRODUCTION CONTROL SYSTEMS II (3)
PR: EGS 405, 441. Advanced topics in industrial planning and control systems design including the use of CPM, PERT and LOB.

EGS 407. ENGINEERING VALUATION II (3)
PR: EGB 337 or equivalent. Analysis of economic limitations on engineering projects. Income tax considerations, replacement models, MACRS and obsolescence.

EGS 409. PLANT FACILITIES DESIGN I (4)
PR: EGS 405. Design and modification of plant facilities, including design of a complete manufacturing operation. Problems in plant locations, layout, material handling, and equipment selection.

EGS 423. COMPUTER SYSTEMS I (3)
PR: MTH 305, EGB 232 or equivalent. Introduction to computer hardware. Peripheral subsystems. Transfer of information and control within a complete operating system. Executive systems and control monitors.

EGS 425. COMPUTER SYSTEMS III (3)
PR: EGS 424. A continuation of EGS 424 stressing detailed applications of assembly language to computer operating systems.

EGS 427. FORTRAN APPLICATIONS I (3)

EGS 429. COMPUTER PROJECTS (3)
PR: CC. Special projects involving the use of and operation of digital/analog computers.

EGS 431. HYBRID COMPUTERS (3)
PR: EGB 232, EGS 425. The use of hybrid computers for the solution of problems in systems analysis. Lec.-lab. (Formerly EGS 431.)

EGS 432. SYSTEMS APPROACH TO BIOMEDICAL ENGINEERING (3)
PR: EGS 431 or Cl. Characterization of physiological systems, principles of modeling, system properties. Transfer function description, physiological feedback, effects of nonlinearities.

EGS 433. SYSTEMS APPROACH TO BIOMEDICAL ENGINEERING II (3)

EGS 441, 442. OPERATIONS RESEARCH I, II (3, 3)
PR: EGS 461. An introduction to the basic operations research techniques — linear programming, dynamic programming, simulation and queuing.

EGS 461, 462. ENGINEERING AND STATISTICS I, II (3, 3)
PR: MTH 303. An introduction to the basic concepts of statistical analysis. Probability, distribution functions, estimating and testing procedures, regression and correlation analysis.

EGS 472. SYSTEMS ANALYSIS AND DESIGN (3)
PR: EGB 232, EGS 405, 442. The definition and analysis of systems. The solution of industrial systems problems using dynamic programming, simulation, queuing, linear and nonlinear programming.

EGS 503. HUMAN FACTORS (3)
PR: CC. Problems in the design, analysis and evaluation of man-machine systems from the viewpoint of physical, mental and psychological characteristics and limitations encountered.
EGS 505. INVENTORY CONTROL (3)
PR: EGS 406 or equivalent. Properties of inventory systems and the fundamentals of deterministic and probabilistic inventory models.

EGS 507. ENGINEERING VALUATIONS STUDIES (3)
PR: CC. The analysis of economic considerations affecting engineering decision making. Not open to students who have had EGS 407.

EGS 509. TECHNOLOGICAL FORECASTING (3)
PR: Senior or graduate status. Open to non-majors. Recent developments in forecasting technical progress; morphological analysis, heuristic forecasts, intuitive methods, empirical and phenomenological models. Technology assessment.

EGS 510. COMPUTER OPERATION (4)
PR: Graduate engineering or science status. EGB 232 or equivalent, and CC. A comprehensive study of computer operating systems for mature students who have limited prior computer experience. Course covers material necessary to prepare the student for entry into the EGS 620, 621, 622 sequence.

EGS 521, 522. COMPUTER SIMULATION I, II (3, 3)
PR: CC. Use of computers in physical and industrial systems. Simulation languages and their applications.

EGS 525. IMAGE PROCESSING BY COMPUTERS (3)
PR: EGB 523 or CC. Two dimensional convolution and system functions, Fourier transform in two dimensions. Digitization of two dimensional signals, sampling theorems, band-limited signals. Image processing by computers. Applications of image processing.

EGS 533. FORTRAN APPLICATIONS II (3)
PR: EGS 427 or equivalent. Advanced numerical methods using FORTRAN, applied to higher level problems in the individual student's field of engineering, mathematics or applied science.

EGS 540. OPERATIONS RESEARCH (3)
PR: CC. Linear programming, game theoretic models, economic optimization. Not open to students who have had EGS 442.

EGS 541, 542. NUMERICAL METHODS OF SYSTEMS ENGINEERING I, II (3.3)
PR: MTH 401. The study and application of matrix algebra, differential equations, calculus of finite differences, operation and transform methods, and stochastic processes.

EGS 550. HAZARD CONTROL ENGINEERING (3)
PR: Senior or graduate status. Open to non-majors. Nature of industrial accidents. Practices, standards, OSHA and other governmental requirements for reducing accident frequency and severity in the industrial environment. Design measures for the prevention of health impairment due to non-accidental causes.

EGS 560. INDUSTRIAL STATISTICS (3)
PR: CC. Industrial applications of probability, testing of hypotheses, regression techniques and analysis of variance. Not open to students who have had EGS 462.

EGS 561, 562. DESIGN OF EXPERIMENTS I, II, (3, 3)
PR: EGS 462 or equivalent. Development of the basic experimental designs. Randomized block, latin squares and factorial designs.

EGS 563. ENGINEERING STATISTICS III (3)
PR: EGS 462 or equivalent. Application of non-parametric statistics, sequential analysis, orthogonal polynomials and other optimization techniques to industrial problems.

EGS 565. STATISTICAL QUALITY CONTROL (3)
PR: EGS 461 or equivalent. Application of statistical techniques to the control of industrial processes. Control charts and acceptance procedures. Sequential sampling.

EGS 566. RELIABILITY ENGINEERING (3)

EGS 580, 581, 582. SPECIAL INDUSTRIAL PROJECTS I, II, III (1-3 each)
PR: CC.

EGS 603. MAN/MACHINE SYSTEMS (3)
PR: EGS 503. Principles of work measurement, process analysis, value analysis, and human factors and their application to industrial situations.

EGS 605. PRODUCTION CONTROL SYSTEMS III (3)
PR: EGS 406 or equivalent. Forecasting procedures, development of production plans, scheduling techniques and inventory models. Application of EDP to production control systems.

EGS 607. ADVANCED ENGINEERING VALUATION (3)
PR: EGS 407 or equivalent. Statistical models for analyzing engineering alternatives from an economic viewpoint. The use of advanced engineering economy concepts in solving industrial problems.

EGS 609. PLANT FACILITIES DESIGN II (3)
PR: EGS 409 or CC. Advanced techniques for evaluation of alternative plans for plant arrangement, including equipment location and material handling systems.

EGS 620. COMPUTER THEORY I (3)

EGS 621. COMPUTER THEORY II (3)
PR: EGS 620. Advanced concepts in programming languages. The interrelation between machine, assembly and procedure oriented languages. Introduction to the design of monitors, assemblers, compilers.

EGS 622. COMPUTER THEORY III (3)
PR: EGS 621. Continuation and extension of EGS 621 emphasizing detailed design principles used in the construction of monitors, assemblers and compilers.

EGS 628. CASE STUDIES IN INDUSTRIAL COMPUTER SYSTEMS (3)
PR: CI. (Graduate standing or industrial experience) A case study approach to the definition and implementation of industrial computer systems. The role of automation within the industrial concern. Design of systems in inventory, production control, and related areas. Directing the computer function and systems development.

EGS 635. SPECTRAL ANALYSIS BY COMPUTERS (3)
PR: EGB 523 or CC. Introduction to time series analysis by computers. Discrete Fourier methods applied to time series, sample spectrum, cross spectrum, smoothing of spectral estimators, distribution properties. Application to physical, biological and environmental problems.

EGS 641. LINEAR PROGRAMMING (3)
PR: EGS 442 or equivalent. The simplex method, degeneracy, duality theory; applications of linear programming to industrial problems.

EGS 642. NONLINEAR AND DYNAMIC PROGRAMMING (3)

EGS 644 QUEUEING THEORY (3)
PR: EGS 442, 462. Deterministic and probabilistic queueing models. Poisson queues and special non-Poisson queues with exponential and non-exponential services. Single and multiple channel queues.

EGS 646. MULTIVARIABLE OPTIMIZATION (3)

EGS 647, 648. STOCHASTIC PROCESSES I, II (3, 3)
PR: EGS 562. Theory and application of stochastic processes as models for empirical phenomena, with emphasis on the following processes: Poisson, stationary, normal, counting, renewal, Markov, birth and death. Spectral representations, time series, smoothing and filtering.
EGX 661, 662. THEORY OF INDUSTRIAL STATISTICS I, II (3,3)
PR: EGS 462 or equivalent. Theoretical distributions, continuous and discrete expectation and estimation, properties sampling and sampling distributions.

EGS 663, 664. STATISTICAL DESIGN MODELS I, II (each 3)
PR: EGS 662 or equivalent. Design of experiment mathematical models, application of advanced analytical of variable techniques as applied to industrial problems.

EGS 665. STATISTICAL ASSURANCE PLANS (3)
PR: EGS 565 or equivalent. Advanced techniques in sequential quality control systems and acceptance sampling plans.

EGS 666. THEORY OF RELIABILITY (3)
PR: EGS 462 or equivalent. Topics in statistical methodology which have applications in the field of reliability. Discrete and continuous distribution models, reliability estimation, reliability structural and growth models, and statistical design for reliability.

EGS 668. SPECIAL TOPICS IN STATISTICS (3)
PR: CC. Special topics in statistics related to research in engineering.

EGS 680, 681, 682. SPECIAL INDUSTRIAL TOPICS I, II, III (1-3 each)
PR: CC.

EGS 687, 688. INDUSTRIAL SYSTEMS DESIGN I, II, (3,3)
PR: EGS 521. Design of integrated systems using statistical and operations research models. Simulation of integrated systems using digital, analog and hybrid computers.

EGS 698. ADVANCED ENGINEERING SEMINAR (1-3)
PR: CC.

EGS 699. RESEARCH OR DESIGN (1-12)
(S/U only.)

Structures, Materials and Fluids (EGX)

EGX 330. ELEMENTS OF ENVIRONMENTAL ENGINEERING (4)
PR: CI. An introduction to the scientific and engineering principles needed for the enhancement of the quality of man's environment. Discussions of air and water pollution, solid waste disposal, ionizing radiation, noise. The economic, aesthetic, legal and political aspects of environmental quality are considered.

EGX 401. STRUCTURES I (4)

EGX 402. MATERIALS ENGINEERING II (4)
PR: EGB 342, EGB 321. Principles of chemical thermodynamics as applied to the interaction of materials with various gaseous, aqueous, and solid phase environments. Lecture.

EGX 404. STRESS ANALYSIS (4)
PR: EGB 340. Analytical and experimental analysis of the mechanical behavior of deformable solids. Elastic and inelastic methods, plastic limit analysis, flexure and torsion of beams, photoelasticity, electric strain gages, introduction to finite element computer methods. Lec.-lab.

EGX 406. ENGINEERING ANALYSIS SMF (4)
PR: EGB 231, EGX 401. Computational methods for engineering problems found in Structures, Materials and Fluids. Lec.-lab.

EGX 409. SENIOR RESEARCH/DESIGN PROJECT I (1)
PR: Completion of 150 hours. Presentation of current and future problem-oriented research/design topics for engineers. Organization of student-faculty investigative teams for senior projects in EGX 509 or EGX 599.

EGX 410. STRUCTURES II (4)
PR: EGX 401. Introduction to the behavior of composite structural members: laminates, sandwich panels, reinforced concrete, timber and structures. Lec.-lab.

EGX 411. CONCEPTS OF STRUCTURAL DESIGN (4)
PR: EGX 401. Applications of solid mechanics, materials science and structural analysis to the design of building, bridge, aircraft and ship structures. Critical review of current codes and specifications. Lec.-lab.

EGX 420. CONCEPTS OF ENGINEERING MATERIALS (3)

EGX 421. PROCESSES IN MATERIALS ENGINEERING (3)
PR: EGX 402 or CI. Introduction to the basic theories of solidification and ultrapurification of materials, discussion of the various techniques of welding and joining materials, and discussion of the primary methods of shaping and forming materials. Lecture.

EGX 422. SELECTION AND APPLICATION OF ENGINEERING MATERIALS (3)
PR: EGB 434. Estimation and/or determination of the property requirements for the utilization of materials in specific applications; comparison of properties of metals, plastics, and ceramics; the effects of heat treatment, working, etc., on materials; property limitations exhibited by various materials. Lecture.

EGX 481. TRANSPORTATION I (4)
PR: EGB 401, CI. Introduction to Transportation Engineering. Lecture.

EGX 485. SOIL MECHANICS I (4)
PR: EGB 343. Fundamental and experimental concepts in soil mechanics with emphasis on soil properties, soil moisture, soil structure and shearing strength. Lecture.

EGX 503. FLUID MECHANICS II (4)

EGX 504. EXPERIMENTAL SMF I (4)
PR: EGX 343. An introduction to the experimental methods used in the study of structures, materials, fluids. Lec.-lab.

EGX 505. SOLID MECHANICS III (4)
PR: EGB 341. Dynamics of discrete and distributed mass, spatial kinematics, and kinetics, inertia tensor, Euler equations, vibrations. Lecture.

EGX 509. SENIOR RESEARCH/DESIGN PROJECT II (3)
PR: EGX 409. Problem-solving experience and training for seniors in research/design projects. Oral and written final reports are required.

EGX 511. STRUCTURES III (5)

EGX 513. PRESTRESSED STRUCTURES (5)

EGX 514. STRUCTURAL CONNECTIONS (3)
PR: EGX 411. Use of theoretical and experimental data in the analysis and design of structural connections in metal, wood, concrete and plastic. Lec.-lab.

EGX 515. STRUCTURES IV (5)
PR: EGX 511. Analysis of suspension structures, towers and tall buildings by both approximate and exact methods. Lec.-lab.

EGX 516. STRUCTURAL DESIGN IN METALS (4)
PR: EGX 411, 511. Design of ductile metallic structural elements and systems. Lec.-lab.

EGX 517. REINFORCED CONCRETE STRUCTURES (4)
EGX 520. EXPERIMENTAL METHODS IN MATERIALS
ENGINEERING (3)
PR: EGX 402 or CI. Introduction to the experimental methods of metallurgy, X-ray diffraction, phase diagram determination, heat-treating techniques, and electron microscopy. Lec.-lab.

EGX 521. ENGINEERING POLYMERS (3)
PR: CI. Structure and bulk properties of polymers. High elasticity, topics in viscoelasticity, the glass transition, irreversible deformation. Technology of plastics, fibers and elastomers. Lecture.

EGX 522. CORROSION OF ENGINEERING MATERIALS I (3)

EGX 523. DIFFUSION (3)
PR: EGX 402. Theoretical and practical analysis of diffusion in solids including the physical meaning and implications of the concepts which influence and apply to diffusion in crystalline solids. Lecture.

EGX 524. ENGINEERING CERAMICS (3)
PR: EGB 342. Detailed examination of the materials of ceramic engineering and engineering properties of advanced ceramic products. Lecture.

EGX 530. FLUID MECHANICS III (4)

EGX 535. WATER RESOURCES ENGINEERING I (4)
PR: EGB 343. A study of the engineering principles involved in the sustaining and managing of the quality and quantity of water available for human activities with particular emphasis on hydrology and hydraulics. Lecture.

EGX 536. WATER RESOURCES ENGINEERING II (4)
PR: EGB 343. A study of the engineering principles involved in the sustaining and managing of the quality and quantity of water available for human activities with particular emphasis on water uses, engineering economy, and regional water resource development. Lecture.

EGX 538. AERODYNAMICS (3)

EGX 540. EXPERIMENTAL SMF II (4)
PR: CC. Review of elasticity, boundary value problems, finite element solutions; static and dynamic applications, circuitry; grid, brittle coating methods. Lec.-lab.

EGX 550. SOLID MECHANICS IV (3)

EGX 551. VIBRATIONS (3)

EGX 570. INTRODUCTION TO CONTINUUM (3)
PR: CI. Development of techniques of applied mathematics to SMF problems; partial differential equations, complex variable, vector and tensor analysis. Lecture.

EGX 571. CONTINUUM I (3)
PR: CI. Development of fundamental problems in solids and fluids from a unified viewpoint; application to ideal media; elastic, plastic, viscoelastic, and fluids. Lecture.

EGX 572. CONTINUUM II (3)
PR: EGX 571. Mathematical Theory of elasticity. Two dimensional problems in plane stress and plane strain using cartesian and curvilinear coordinates; three dimensional applications to torsion, bending and semi-infinite solids. Lecture.

EGX 573. MECHANICS OF COMPOSITE MATERIALS (3)

EGX 575, 576 FINITE ELEMENT METHODS. (3-3)
PR: EGX 571 or CI. Finite element methods in continuum mechanics. Application to solid and fluid mechanics problems. Computer solutions. (lec)

EGX 580. SPECIAL TOPICS IN SMF (1-4)
PR: CC.

EGX 581. TRANSPORTATION II (4)
PR: EGX 481. Transportation system planning. (lec)

EGX 585. SOIL MECHANICS II (4)
PR: EGX 485. A study of the application of the principles of soil mechanics to problems in soils engineering. (lec)

EGX 598. RESEARCH IN SMF (1-4)
PR: CC.

EGX 599. RESEARCH IN SMF (1-4)
PR: CC.

EGX 610. STRESSES SURFACE STRUCTURES (5)

EGX 611. STRUCTURAL STABILITY (5)
PR: EGX 511 Elastic and inelastic stability of trusses and frames, local buckling of structural members and plated. Lec.

EGX 612. STRUCTURAL DYNAMICS (4)
PR: EGX 511. Behavior of structural components and systems when subjected to periodic dynamic loads. Introduction to random dynamic loads. Lec.

EGX 613. STRUCTURAL OPTIMIZATION (5)
PR: EGX 411, 511. Use of optimization techniques in the design of structures including use of the digital computer as a design aid. Lec.-lab.

EGX 616. ADVANCED STRUCTURAL DESIGN (5)
PR: EGX 511, 514. A study of design of more complicated structural systems such as curved bridges, orthotropic bridges, tall buildings, towers, suspension structures. Lec.

EGX 620. DISLOCATION STRUCTURES AND PROPERTIES OF ENGINEERING MATERIALS (3)
PR: EGX 402 and EGX 520. Introduction to the separate and combined effects of the primary strengthening mechanisms in materials. Dislocation structures, nucleation and growth phenomena, phase transformations and principles of composite materials. Lecture. (Formerly EGX 525.)

EGX 621. HIGH TEMPERATURE REACTIONS OF ENGINEERING MATERIALS (3)

EGX 622. CORROSION OF ENGINEERING MATERIALS II (3)

EGX 623. ADVANCED X-RAY METHODS (4)
PR: CI. X-Ray diffraction analytical and experimental studies of defects, texture, residual stress, crystal and polycrystalline aggregates. Lec.-lab.

EGX 630. FLUID MECHANICS IV (4)

EGX 631. GAS DYNAMICS (3)

EGX 635. FREE SURFACE FLOW (4)
PR: EGX 503 or CI. Fundamental and applied aspects of free surface flow, including river hydraulics, canal flow and open channel design. Lee.
EGX 640. EXPERIMENTAL SMF III (4)  
PR: EGX 504. Moire and photoelastic experimental techniques. Lec.-lab.

EGX 641. EXPERIMENTAL SMF IV (4)  

EGX 642. EXPERIMENTAL SMF V (4)  
PR: EGX 504. Three dimensional stress analysis methods. Lec.-lab.

EGX 643. EXPERIMENTAL SMF VI (4)  
PR: EGX 504. Theory and application of holography and optical imagery. Lec.-lab.

EGX 650. SOLID MECHANICS V (3)  

EGX 651. NONLINEAR DYNAMICS (3)  

EGX 660, 661, 662. HYDROSPACE ENGINEERING I, II, III (3 each)  
PR: CI. Advanced analysis of structural, material and fluid systems for marine environment, including underwater acoustics. Lec.

EGX 670. CONTINUUM MECHANICS III (3)  
PR: CI. Theory of Plasticity. Initial and subsequent yield surfaces, incremental and deformation theories flow theories; problems in ideal plasticity, strain hardening and slip line fields. Lec.

EGX 671. CONTINUUM MECHANICS IV (3)  

EGX 672. NUMERICAL METHODS IN ENGINEERING ANALYSIS (3)  
PR: CI. Application of computational and mathematical techniques and principles to advanced engineering problems concerning structures, materials, and fluids. Lec.

EGX 673. ADVANCED ELASTIC ANALYSIS (3)  
PR: CI. Contemporary elasticity theory and applications. Lec.-l.

EGX 674. APPLIED TENSOR ANALYSIS (3)  
PR: CI. Tensor analysis applied to structures, materials, fluids. Lec.

EGX 675. WATER RESOURCE SYSTEMS I (3)  
PR: EGX 536. The planning, design, and operation of water resource systems by the use of systems analysis and operations research techniques. Lec.

EGX 676. WATER RESOURCE SYSTEMS II (3)  
PR: EGX 675. The planning, design and operation of water resource systems by the use of systems analysis and operations research techniques. Lec.

EGX 677. WATER TREATMENT THEORY AND DESIGN (5)  
PR: EGX 535 or CI. A study of the theory of water treatment and the relation of theory to analysis and design practice. Emphasis is given to unit processes. The seminar is devoted to the design and analysis of specific water treatment facilities.

EGX 678. WASTEWATER TREATMENT THEORY AND DESIGN (5)  
PR: CI. A study of the theory of wastewater treatment and the relation of theory to analysis and design practice. Emphasis is given to unit processes. The seminar is devoted to the design and analysis of specific wastewater treatment works.

EGX 679. ENVIRONMENTAL PLANNING (4)  
PR: EGX 536 or CI. Study of the comprehensive application of environmental control and protection techniques to the problems of environmental quality. Important aspects include air and water quality, amenities, waste management, land use practice, control of noise, and natural ecological factors. A design or analysis problem is an integral part of the course.

EGX 680. SPECIAL TOPICS IN SMF (1-4)  
PR: CC.

EGX 698. ADVANCED ENGINEERING SEMINAR (1-3)  
PR: CC.

EGX 699. RESEARCH IN SMF (1-9)  
PR: CC.

EGX 798. RESEARCH AND DISSERTATION (1-9)  
PR: CC. Supervised independent research.

EGX 799. RESEARCH AND DISSERTATION (1-12)  
PR: CC. Supervised independent research.

Computer Courses (ESC)

UPPER LEVEL COURSES

ESC 301. INTRODUCTION TO COMPUTERS I (3)  
Basic principles of computer operation, program structure, machine and assembly language.

ESC 302. COMPUTER PROGRAMMING-FORTRAN (3)  
PR: ESC 301. Programming of scientifically oriented problems using FORTRAN. Introduction to the use of the systems library.

ESC 303. COMPUTER PROGRAMMING-COBOL I (3)  

ESC 304. COMPUTER PROGRAMMING — COBOL II (3)  
PR: ESC 303. Advanced applications of COBOL. Development of matrix structures, subscribing and data manipulating techniques as used in comprehensive data processing problems.

ESC 307. COMPUTER PROGRAMMING — RPG (3)  
PR: ESC 301. Analysis, design and implementation of data processing systems using RPG.

ESC 308. COMPUTER PROGRAMMING — PL/1 (3)  
PR: ESC 301. Programming of both business and scientifically oriented problems. Manipulation of data records. Control sequencing and transmission of data.

ESC 309. COMPUTER PROGRAMMING — GPSS-SIMSCRIPT (3)  
PR: ESC 302 or equivalent. SIMSCRIPT and GPSS will be used to implement and analyze general types of simulation.

ESC 310. INTRODUCTION TO COMPUTERS II (3)  
PR: ESC 301. Component parts of a computer system. Internal representation and manipulation of data and program instructions. Algorithms and flowcharting. Programming languages and languages. (No credit for engineering majors.)

ESC 311. INTRODUCTION TO COMPUTERS III (3)  
PR: ESC 310. Continuation of the material in ESC 310. (No credit for engineering majors.)

ESC 312. INTRODUCTION TO COMPUTERS IV (3)  
PR: ESC 311. Continuation of the material in ESC 311. (No credit for engineering majors.)

ESC 501. COMPUTER SYSTEMS (3)  
PR: ESC 302 or equivalent. Study of computer systems components, I/O devices, memory devices, theory of computer operation. (Not available to students who have taken ESC 310, 311 and 312.)

ESC 502, 503. COMPUTER LANGUAGES AND COMPUTATION I, II (3,3)  

ESC 551. COMPUTERS FOR RESEARCH I (3)  
PR: Graduate Student Status. The use of FORTRAN IV and WATFIV languages in solving research problems.

ESC 651. COMPUTERS FOR RESEARCH II (3)  
PR: ESC 551 or equivalent. Continuation of the material covered in ESC 551. Use of computer library programs and plotting equipment.
Engineering Technology (ETK)

UPPER LEVEL COURSES

ETK 361. THE ROLE OF ANALYSIS IN TECHNOLOGY (3)
PR: MTH 213 or equivalent or CI. The application of determinants, exponentials, natural logarithms, complex numbers and elementary differential equations to technical problems.

ETK 421. PRINCIPLES OF INDUSTRIAL OPERATIONS I (3)
PR: ETK classification or CC. Techniques of work measurement and methods design.

ETK 422. PRINCIPLES OF INDUSTRIAL OPERATIONS II (3)
PR: ETK classification or CC. Techniques of production control and inventory control.

ETK 423. PRINCIPLES OF INDUSTRIAL OPERATIONS III (3)
PR: ETK 421, ETK 422. Techniques of plant location and layout.

ETK 431. FUNDAMENTAL TOPICS IN POWER GENERATION (3)
PR: Enrollment in Engineering Technology Program or CI. Introduction to thermodynamics, forms of energy and energy equations, processes of a perfect gas, thermodynamic cycles, properties of steam, Rankine Cycle, equipment survey, heat transfer, fluid flow, combustion and mixtures of gases and vapors.

ETK 441. FUNDAMENTAL TOPICS IN AIR CONDITIONING (3)
PR: Enrollment in Engineering Technology Program or CI. Introduction to thermodynamics, forms of energy and energy equations, processes of a perfect gas, thermodynamic cycles, refrigeration cycles, properties of refrigerants, heat transfer and fluid flow, mixtures of gases and vapors, preliminary psychrometrics and analysis of motors.

ETK 442. AIR CONDITIONING SYSTEMS DESIGN, I (3)
PR: EGR 424 or CI. Design of packaged air conditioning systems, system selection, equipment selection and installation, ductwork design and air distribution, use of outside air with problems in bypassing and recirculation.

ETK 444. AIR CONDITIONING SYSTEMS DESIGN II (3)
PR: ETK 443 or CI. Design of applied air conditioning systems, advanced load calculations, system selection, chilled water systems, multi-zone systems, equipment survey: chillers, fans and pumps, associated electrical equipment, controls, humidification, dehumidification, and installation.

ETK 445. AIR CONDITIONING DESIGN SEMINAR (3)
PR: ETK 444. Consideration of the total air conditioning system from the view of design engineer, client, and contractor. Specification writing, load calculation, system selection and installation, and cost criteria.

ETK 451. FUNDAMENTAL TOPICS IN CONSTRUCTION TECHNOLOGY I (5)
PR: MTH 213 or equivalent. Introduction to the principles of statics, equilibrium of rigid bodies, friction, strength of materials and application of materials and their properties in design of structures.

ETK 452. FUNDAMENTAL TOPICS IN CONSTRUCTION TECHNOLOGY II (3)
PR: ETK 451. Selection and application of materials in construction technology with associated consideration of material properties, change of properties and environmental effects.

ETK 453. CLIMATE CONTROL IN BUILDINGS (3)
PR: Enrollment in Engineering Technology Program or CI. Heat and moisture in the atmosphere and human comfort, heat loads, heat sources, heat and ventilation distribution in spaces, air conditioning and air distribution, control of temperature and humidity.

ETK 454. ACOUSTICS IN CONSTRUCTION TECHNOLOGY (2)
Fundamentals of architectural acoustics, behavior of sound in closed spaces, noise control, and noise reduction.

ETK 455. SANITARY ENGINEERING IN CONSTRUCTION TECHNOLOGY (2)
Water, water systems, and water supply. Sanitation and waste disposal, piping systems for hot and cold water, plumbing for sewage disposal and storm drainage.

ENG 480. SPECIAL TOPICS IN TECHNOLOGY I (1-5)
PR: CC

ENG 481. SPECIAL TOPICS IN TECHNOLOGY II (1-5)
PR: CC

ENG 482. SPECIAL TOPICS IN TECHNOLOGY III (1-5)
PR: CC

ENG 522. INTRODUCTION TO ELECTRONICS FOR SCIENTISTS (5)
PR: None. Basic electronic devices and instruments, dc and ac circuits, diodes and power supplies, transistor circuits, integrated circuits, laboratory instruments, transducers and special instruments. (2 three-hour lecture labs, 1 two-hour problem discussion). No credit toward graduate degree requirements.

ENG 601. SPECIAL TECHNICAL TOPICS I (1-4)
PR: CC

ENG 602. SPECIAL TECHNICAL TOPICS II (1-4)
PR: CC

ENG 603. SPECIAL TECHNICAL TOPICS III (1-4)
PR: CC

ENGLISH (ENG)

LOWER LEVEL COURSES

ENG 100. ENGLISH AS A SECOND LANGUAGE—COMPOSITION (3)
Practice and drill in basic English sentence patterns, with emphasis on writing, punctuation, vocabulary, and idiom. The course is designed as a service course for foreign students enrolled in the university. Some previous study of English is a prerequisite. (Formerly CBS 100.)

ENG 101, 102, 103. FRESHMAN ENGLISH (3,3,3)
Instruction and practice in the skills of writing and reading. Courses must be taken in numerical sequence. Credit for Freshman English may be earned by examination. (Formerly CBS 101, 102)

ENG 200. SPEED READING DEVELOPMENT (3)
A course designed to develop speed reading techniques on various levels of difficulty. Emphasis is placed on com-
A study of literary trends and cultural influences since WW II, with emphasis upon major British and American novels. (Formerly ENG 301.)

**ENG 211. CURRENT NOVELS** (5)

A study of literary trends and cultural influences since WW II, with emphasis upon major British and American novels. (Formerly ENG 301.)

**ENG 212. CURRENT DRAMA** (5)

A study of major forms and themes in drama from Theatre of the Absurd to the present, including works of such playwrights as Beckett, Ionesco, Genet, Pinter, and Albee. (Formerly ENG 302.)

**ENG 213. CURRENT SHORT FICTION** (5)

Traditional and experimental short stories of this generation as they probe significant issues from fantasy to realism, from religion to the absurd. Among the writers to be considered are Updike, Malamud, O’Connor, Roth, Barth, Ionesco, and Barthelme. (Formerly ENG 303.)

**ENG 214. INTRODUCTION TO LITERATURE: GENERAL** (5)

The art, nature, and significance of literature in its various forms; special emphasis on the elements of fiction, drama, and poetry, and on the techniques of reading literature for intelligent enjoyment. (Formerly ENG 314.)

**ENG 215. INTRODUCTION TO LITERATURE: FICTION** (5)

An examination of the short story and the novel as literary forms; not limited to any historical period. Explores the literature of innocence, adolescence, love, sharing, maturity. (Formerly ENG 315.)

**ENG 216. INTRODUCTION TO LITERATURE: POETRY** (5)

An examination of the poem as a form; it is not restricted to any specific period. (Formerly ENG 316.)

**ENG 217. INTRODUCTION TO LITERATURE: DRAMA** (5)

A study of the major forms of drama — tragedy, comedy, melodrama, farce; including the works of such playwrights as Sophocles, Shakespeare, Molière, Ibsen, Chekhov, and Shaw. (Formerly ENG 317.)

**UPPER LEVEL COURSES**

**ENG 300. HIGHLIGHTS OF BRITISH LITERATURE TO 1750** (5)

An introductory course consisting of selected highlights of English literature from the Middle Ages to 1750. (Formerly ENG 311.)

**ENG 301. HIGHLIGHTS OF BRITISH LITERATURE 1750 TO 1945** (5)

An introductory course consisting of selected highlights of English literature from 1750 to 1945. (Formerly ENG 311.)

**ENG 302. HIGHLIGHTS OF AMERICAN LITERATURE TO 1945** (5)

An introductory course consisting of selected highlights of American literature from the beginnings to 1945. (Formerly ENG 312.)

**ENG 306. AMERICAN POPULAR LITERATURE: THE ROARING TWENTIES** (5)

An exploration of the interaction of film, literature, and the popular arts in the Roaring Twenties of the U.S. Traces the movement of American culture from Main Street and Spoon River to the Modern Urban Metropolis. Studies of such figures as Fitzgerald, Cummings, Hemingway, Stein, E. A. Robinson, Sandburg, Chaplin, and Bessie Smith.

**ENG 307. TWENTIETH CENTURY DRAMA AND THE FILM** (5)

A study of six to eight major twentieth century plays by such playwrights as Shaw, Beckett, Williams, Chekhov, Sartre, O’Neill, Miller, Hansberry, and Ionesco, and the translation of these plays into the medium of the film.

**ENG 308. MODERN LITERATURE, FILM, AND THE POPULAR ARTS** (5)

Exploration into the nature and function of modern literature, film, and some of the popular arts like fantasy, westerns, science fiction, war stories, and detective stories. The works of such writers as Vonnegut, Tolkein, Thurber, Heller, Barthelme, Berger, and Kesey are examined.

**ENG 309. SHAKESPEARE: TEXTS AND FILMS** (5)

An introduction to the art of William Shakespeare through a comparative analysis of four of his most famous dramas and modern film adaptations of them: Hamlet, King Lear, Romeo and Juliet, and Henry V.

**ENG 310. SHAKESPEARE I** (5)

Reading of eight to ten representative plays, with special attention to developing the students’ ability to read and interpret the text. (Formerly ENG 411.)

**ENG 311. EARLY ENGLISH LITERATURE** (5)

A survey of representative works of poetry, prose, and drama of the Old English, Middle English, and early Renaissance to 1557, including Beowulf, Chaucer, Malory, More, Hooker, Skelton, Wyatt, among others. (Formerly ENG 201.)

**ENG 312. LITERATURE OF THE ENGLISH RENAISSANCE** (5)

A survey of representative works of poetry, prose, and drama of the English Renaissance, from approximately 1558 to 1649, including Sidney and Spenser to Donne and Marvell, with special attention to the emergence of the New Poetry. (Formerly ENG 201.)

**ENG 313. THE RISE AND DECLINE OF NEOCLASSICAL LITERATURE** (5)

A survey of Neoclassical English literature beginning with Marvell and the late work of Milton, and ending with the late Neoclassicism of Johnson, Boswell, and Goldsmith. (Formerly ENG 202.)

**ENG 314. THE ROMANTIC WRITERS** (5)

The poetry and poetics of Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats; with attention to the lesser figures, the eighteenth century background, and the continuing importance of romantic thinking in contemporary affairs and letters. (Formerly ENG 202, 203.)

**ENG 315. VICTORIAN AND EDWARDIAN LITERATURE** (5)

A survey of representative figures of the Victorian and Edwardian periods, ending in 1914, including poetry, prose, and drama of such authors as Carlyle, Tennyson, Browning, Swinburne, Rossetti, Dickens, Wilde. (Formerly ENG 203.)

**ENG 316. MODERN BRITISH LITERATURE FROM 1914 TO 1945** (5)

Survey of poetry, drama, and fiction of such writers as Eliot, Yeats, Thomas, Conrad, Shaw, Joyce, Lawrence, Huxley, Woolf, Forster, Waugh, Owen, Auden, O’Casey, among others. (Formerly ENG 307.)

**ENG 317. CONTEMPORARY BRITISH AND AMERICAN LITERATURE FROM 1945 TO THE PRESENT** (5)

An introduction to the fiction, poetry, and drama of such writers as Beckett, Ginsberg, Nabokov, Roethke, Plath, Vonnegut, Welty, Malamud, Durrell, Mailer, MacLeish, and others.

**ENG 330. ROMANTIC AMERICAN LITERATURE TO 1860** (5)

A study of the thought and art in poetry and prose of representative writers of the American Romantic period, with emphasis upon Emerson, Thoreau, Poe, Hawthorne, and Melville. (Formerly ENG 305.)

**ENG 331. AMERICAN LITERATURE FROM 1860 TO 1912** (5)

A study of representative works of selected American Realists and early Naturalists, among them Whitman, Dickinson, Twain, James, Howells, Crane, Dreiser, Wharton, Robinson, Frost. (Formerly ENG 306.)

**ENG 332. MODERN AMERICAN LITERATURE FROM 1912 TO 1945** (5)

A study of poetry, drama, and fiction by such writers as Pound, Fitzgerald, Hemingway, Faulkner, Cummings, Williams, Anderson, Lewis, Steinbeck, Wright, Ellison, Wolfe, West, Stevens, and others. (Formerly ENG 307.)

**ENG 340. LITERATURE OF THE WESTERN WORLD: ANCIENT** (5)

The Bible, the best modern English translations of Homer, Aeschylus, Sophocles, Euripides, Aristophanes, Plato, or
others among the Greeks; of Virgil, Ovid, Juvenal, Sappho, Petronius, or others among the Romans. (Formerly ENG 335.)

ENG 341. LITERATURE OF THE WESTERN WORLD: MEDIEVAL, RENAISSANCE, AND NEOCLASSICAL (5)
A study in English of western writers of the Medieval, Renaissance, and Neoclassical periods and cultural, intellectual, and historical contexts, including such writers as Dante, Boccaccio, Machiavelli, Rabelais, Montaigne, Molière, and others. (Formerly ENG 335, 336.)

ENG 342. LITERATURE OF THE WESTERN WORLD: MODERN (5)
A study in English of Voltaire, Rousseau, Dostoevsky, Baudelaire, Brecht, Camus, and others: the great literary traditions of Romanticism, Naturalism, and Symbolism. (Formerly ENG 336.)

ENG 343. MODERN EUROPEAN NOVEL (5)
A study of the Modern European novel in translation as it developed from the 19th century to the present, including such writers as Dostoevsky, Flaubert, Kafka, Hesse, Camus, and Soolzhentsinyn. (Formerly ENG 437.)

ENG 345. MODERN SHORT NOVEL (5)
A study of the novella from the 19th century to the present. Writers to be included will be: Flaubert, Dostoevsky, Lawrence, Mann, Kafka, Bellow, Roth, and others.

ENG 350. ADVANCED EXPOSITORY WRITING (5)
Techniques and strategics of exposition; methods and styles of writing the article, the report, the formal and informal essay, and the persuasive argument. (Formerly ENG 325.)

ENG 351. NARRATION AND DESCRIPTION (5)
Writing short papers in narration and description, and the personal essay; analyzing selected essays to heighten sensitivity to language. (Formerly ENG 321.)

ENG 352. THE WRITING OF POETRY (5)
Introduction to the writing of poetry. This course will introduce the student to a variety of forms and techniques in the writing of poetry.

ENG 353. IMAGINATIVE WRITING: FICTION (5)
Introduction to the writing of fiction. This course will introduce students to the variety of forms and techniques in the writing of imaginative prose.

ENG 360. INTRODUCTION TO LITERATURE IN CONTEXT (5)
PR: ENG 103. Study of major ideas in various sectors of contemporary culture brought in conjunction with literature; examination of interfaces between literature and other disciplines.

ENG 370. BLACK FICTION (5)
A study of significant Black American fiction writers from the 19th century to the present, including such writers as W. E. B. DuBois, Jean Toomer, Richard Wright, and Ralph Ellison. (Formerly ENG 415.)

ENG 371. BLACK POETRY AND DRAMA (5)
A study of Black American poetry and drama from the 18th century to the present, including such writers as Phyllis Wheatley, Langston Hughes, Etheridge Knight, Nikki Giovanni, LeRoi Jones, Ed Bullins. (Formerly ENG 416.)

ENG 372. AMERICAN INDIAN LITERATURE (5)
A survey of native American Literature from pre-Columbian religious and folk literature to the current voices in the pan-Indian movement.

ENG 373. FOLKFOLK AND POPULAR LITERATURE (5)
Literature of fairytales, folksongs, ballads, and blues. Perrault, Grimm, Andersen, and others; traditional British and American ballads and folksongs; modern ballads and blues from folk, country, delta, and big city sources; the songs of Bob Dylan and friends. (Formerly ENG 337.)

ENG 374. FANTASY AND SCIENCE FICTION (5)
A survey of fantasy and science fiction in England and America from Mary Shelley to the present; includes such writers as Poe, Melville, Ray Bradbury, Arthur C. Clarke, among others.

ENG 375. LITERATURE AND THE OCCULT (5)
An introduction to the occult tradition as major ingredient in English, Continental, and American literature; analysis of the origins, classifications, and areas of the various magic arts from classical times through the present. (Formerly ENG 338.)

ENG 376. THE BIBLE AS LITERATURE (5)
Major emphasis on literary types, literary personalities of the Old and New Testaments, and Biblical archetypes of British and American literary classics. (Formerly ENG 319.)

ENG 377. RELIGIOUS AND EXISTENTIAL THEMES (5)
Theological and philosophical ideas, allusions, and symbols in the writings of Dostoevsky, Nietzsche, Mann, Joyce, Eliot, Camus, Sartre, and others. (Formerly ENG 511.)

ENG 378. SEXUAL POLITICS IN LITERATURE, I (5)
A study of feminism, antifeminism, sexual identity, the feminine mystique, stereotyped and liberated female images from Sappho through Shakespeare with special emphasis on how this early literature has perpetuated cultural myths, rituals, superstitions, and misconceptions about women. (Also offered as WSP 483.)

ENG 379. SEXUAL POLITICS IN LITERATURE, II (5)
A study of feminism, antifeminism, sexual identity, the feminine mystique, stereotyped and liberated female images from the 17th century to the present, with special emphasis on women writers and on the emergence of the women's movement. (Also offered as WSP 483.)

ENG 383. SELECTED TOPICS IN ENGLISH STUDIES (1-5)
PR: Sophomore standing. Varying from quarter to quarter, the course examines in depth a predominant literary theme or the work of a select group of writers.

ENG 385. MODERN SATIRE AND INJECTIVE (5)
Explores the artistic nature and variety of satire in the 20th century, a period rich in satirical writing. Lecture and class discussion. Selections from Strachey, Waugh, Pound, Lowell, Nabokov, Faulkner, Golding, and Grass.

ENG 387. TWENTIETH CENTURY BEST SELLERS (5)
A survey of some of the best-selling novels in twentieth century America. Such fiction as Peyton Place, Law, Chatterley's Lover, Exodus, and The Catcher in the Rye have sold in excess of 5,000,000 copies since original publication and have served to reveal our changing national literary taste.

ENG 389. LITERATURE AND CENSORSHIP (5)
Significant works of modern literature, driven underground by suppression and censorship; by such writers as D. H. Lawrence, Celine, Henry Miller, Allen Ginsberg, William Burroughs, Lenny Bruce, and others.

ENG 391. LITERATURE OF THE GROTESQUE (5)
From Dante's Inferno to the madhouse of Beckett's Watt, this course provides a complete conceptual history of the grotesque from its origin to the present. In attempting to define the nature of the grotesque — its essential traits and goals — the student will read such diverse writers as Goethe, Shakespeare, Poe, Pirandello, O'Neill, Sherwood Anderson, and Carson McCullers. He will also be asked to learn pertinent critical terms with which the literature of the grotesque is conceptually related, such as tragiocomedy, absurdity, allegory, gothic novel, and Sturm und Drang.

ENG 392. LITERATURE AND PSYCHOLOGY (5)
A study of major works of literature as a primary source for analyzing personality concepts, presenting the theories and foreshadowing those of psychologists per se. To explore the figurative structure of works of literature as a unique medium for the expression of both conscious and unconscious dynamics of personality.

ENG 393. HEROES AND ANTI-HEROES (5)
A study of the patterns in the figure of the hero and the anti-hero to the present time. Readings from then to now include works such as Beowulf, The Iliad, King Lear, Don Quijote (Part I), Don Juan (Canto I), A Farewell to Arms, The Ginger Man, and Catch 22.
ENG 395. THE TALMUD AS LITERATURE (5)
An introduction to the artistic elements of one of the great books of the Jewish religion. Emphasis on stories, fables, legends (Aggahah), but some general background in Talmudic structure and history is also provided. No previous knowledge of Judaism or religious texts is required.

ENG 397. VOCABULARY DEVELOPMENT (3)
A practical course in rapid vocabulary improvement for students in all areas. Stress is on words in context.

ENG 400. OLD ENGLISH LITERATURE (5)
PR: ENG 300 or ENG 311. Old English prose and poetry in translation. (Formerly ENG 500.)

ENG 401. MIDDLE ENGLISH LITERATURE (5)
PR: ENG 300 or ENG 311. A study of representative works of the Middle English period with a consideration of the social and historical backgrounds. (Formerly ENG 502.)

ENG 402. CHAUCER (5)
PR: ENG 300 or ENG 311. An intensive study of The Canterbury Tales and major critical concerns. (Formerly ENG 503.)

ENG 406. SIXTEENTH CENTURY PROSE AND POETRY (5)
PR: ENG 300 or ENG 312. A study of representative prose, including fiction, and the lyric and narrative poetry of Sidney, Spenser, Marlowe, and Shakespeare, together with selected poems of Donne. (Formerly ENG 506, 508.)

ENG 407. THE NEW PHILOSOPHY IN SEVENTEENTH CENTURY LITERATURE (5)
PR: ENG 300 or ENG 312. Study of the new philosophy of science in the prose of Bacon, Donne, Brown, and others; close analysis of counter-culture, tradition, and revolt in the Metaphysical and Cavalier poets, including Donne, Jonson, Herbert, Herrick, Vaughan, and Marvell. (Formerly ENG 505, 508.)

ENG 408. ENGLISH DRAMA FROM THE BEGINNINGS TO 1642 (5)
PR: ENG 300 or ENG 312. The emergence of drama in England from its liturgical origins through the mystery and morality plays to its significant achievement in the Renaissance. Excludes Shakespeare; emphasis upon Marlowe, Jonson, Webster, and Middleton. (Formerly ENG 503, 504.)

ENG 409. MILTON (5)
PR: ENG 300 or ENG 312. Study of the poetry and major prose of John Milton, with special emphasis on Paradise Lost. (Formerly ENG 507.)

ENG 410. SHAKESPEARE II (5)
PR: ENG 310. Three or four of Shakespeare’s greatest dramas seen in depth; the close reading of the text, the controversies of interpretation, and the Elizabethan and Jacobean setting. (Formerly ENG 519, 520.)

ENG 413. RESTORATION AND EIGHTEENTH CENTURY SATIRE (5)
PR: ENG 300 or ENG 313. A study of selected Neoclassical satires, the techniques of their expression, and the historical conflicts out of which they arose. (Formerly ENG 521, 559.)

ENG 414. EIGHTEENTH CENTURY BRITISH NOVEL (5)
PR: ENG 301 or ENG 313. A study of the emergence of modern realistic prose fiction in the eighteenth century, with emphasis on Fielding, Richardson, Smollett, and Sterne. (Formerly ENG 429.)

ENG 418. ROMANTIC LITERATURE: FORM, GENRE, AND ARCHETYPE (5)
PR: ENG 301 or ENG 314. An intensive study of one or more formal types of British literature occurring between 1785 and 1832, such as Romantic Nature Poetry, Romantic Historical Novels and Poems, etc. Specific topics will vary. (Formerly ENG 513.)

ENG 419. ROMANTIC LITERATURE: MAJOR WRITERS (5)
PR: ENG 301 or ENG 314. A concentrated study of two or more representative Romantic writers from among Burns, Blake, Wordsworth, Coleridge, Scott, Austen, Byron, Shelley, Hazlitt, and Keats. (Formerly ENG 513.)

ENG 424. THE POETRY OF THE VICTORIANS (5)
PR: ENG 301 or ENG 315. An intensive study of the works of three or more representative Victorian poets. (Formerly ENG 523.)

ENG 425. NINETEENTH CENTURY BRITISH NOVEL (5)
PR: ENG 301 or ENG 315. A study of such major British novelists as Austen, Scott, Thackeray, Dickens, the Brontes, Eliot, Meredith, and Hardy. (Formerly ENG 430.)

ENG 426. REPRESENTATIVE THEMES IN VICTORIAN LITERATURE (5)
PR: ENG 301 or ENG 315. A study of representative works in Victorian prose, poetry, drama, and fiction, with particular attention to an important unifying theme, idea, or concern. (Formerly ENG 523.)

ENG 430. AMERICAN LITERATURE OF THE COLONIAL-FEDERAL PERIOD (5)
PR: ENG 300, ENG 302, or equivalent. The social, philosophic, political, and aesthetic foundations of American literature, from the period of early settlement through the writings of Cooper, Irving, and Bryant. (Formerly ENG 305.)

ENG 431. THE AMERICAN NOVEL FROM THE BEGINNINGS TO 1920 (5)
PR: ENG 302, ENG 330, or ENG 331. A study of major American novelists through representative novels. Authors studied may include Cooper, Hawthorne, Melville, James, Twain, Dreiser, and others. (Formerly ENG 425.)

ENG 432. AMERICAN DRAMA (5)
PR: One course in American Literature. A historical-analytical study of American drama from the 19th century to the present. Included are such playwrights as Boker, Boucicault, Herne, O'Neill, Howard, Rice, Hellman, Williams, Miller, Albee, and Hansberry. (Formerly ENG 426.)

ENG 435. MODERN AMERICAN FICTION FROM 1920 TO 1945 (5)
PR: One course in American literature. A critical study of American fiction since WW II, including a consideration of trends and influences in American prose fiction from 1920 to 1945. Includes works by such writers as Hemingway, Faulkner, Wolfe, Fitzgerald, Steinbeck, Anderson, and others.

ENG 436. MODERN BRITISH FICTION FROM 1900 TO 1945 (5)
PR: ENG 301 or ENG 316. A critical study of British fiction from 1900 to 1945, with emphasis on such writers as Conrad, Lawrence, Joyce, Woolf, Forster, Huxley, Waugh, and others.

ENG 437. CONTEMPORARY AMERICAN FICTION FROM 1945 TO THE PRESENT (5)
PR: One course in American literature. A critical study of American fiction from the war novel to the Absurd. The course will consider the impact upon fiction of such forces as naturalism, science, existentialism, surrealism, and European influences. Among the writers to be considered are Mailer, Ellison, Donleavy, Nabokov, Bellow, Pynchon, Mailer, O'Connor, Malamud, and Updike. (Formerly ENG 528.)

ENG 438. CONTEMPORARY BRITISH FICTION FROM 1945 TO THE PRESENT (5)
PR: One course in British literature. A critical study of British fiction since WW II, including a consideration of those forces such as the Angry Young Men, the Absurd, the philosophical novel, and Continental influences. Writers to be considered will be Orwell, Murdoch, Beckett, Burgess, Durrell, Amis, and others. (Formerly ENG 528.)

ENG 441. MODERN BRITISH AND AMERICAN POETRY FROM 1900 TO 1945 (5)
PR: One course in British or American literature. Study of selected Modern British and American Poets from Hopkins to Auden, with attention to poetic theory. (Formerly ENG 527.)

ENG 442. CONTEMPORARY BRITISH AND AMERICAN POETRY FROM 1945 TO THE PRESENT (5)
PR: One course in British or American literature. Intensive study of six or seven contemporary poets: Theodore
ENG 445. MODERN DRAMA FROM 1880 TO 1945 (5)
PR: One course in British or American literature. A study of major dramatists from the rise of Realism up to the Theatre of the Absurd, including works by Ibsen, Strindberg, Shaw, Chekhov, Pirandello, Brecht, and others. (Formerly ENG 459.)

ENG 446. CONTEMPORARY DRAMA FROM 1945 TO THE PRESENT (5)
PR: One course in British or American literature. A study of major dramatists from the Theatre of the Absurd to the present, including such playwrights as Beckett, Ionesco, Genet, Albee, Pinter, Duerrenmatt, Miller, Williams, and others. (Formerly ENG 459.)

ENG 450. THEORY OF FICTION (5)
PR: 20 hours of literature. Intensive study of the genres and varieties of fiction to ascertain the theoretical and technical problems involved in the work of fiction. (Formerly ENG 585.)

ENG 451. WORKSHOP IN FICTION (5)
PR: ENG 350 or ENG 351. Study and writing of the short story and sections of the novel. Evaluation of student work in conferences, selected readings. May be taken twice for credit. When the course is offered twice in the same academic year, the second offering is open only to students who took the course in the previous quarter. (Formerly ENG 423.)

ENG 452. WORKSHOP IN POETRY (5)
PR: One advanced writing course. Self-expression in traditional and contemporary forms. Student-teacher conferences and classroom discussion. Selected readings. May be taken twice for credit. (Formerly ENG 421.)

ENG 453. LITERARY CRITICISM (5)
PR: 20 hours of literature. Examination and discussion of the works of major literary critics from Aristotle to the present, with emphasis on their meaning, their implied world view, and their significance for our own time and literature. (Formerly ENG 531.)

ENG 475. STRUCTURE OF AMERICAN ENGLISH (5)
PR: ENG 103. An introductory survey, comparison, and contrast of traditional, structural, and generative-transformational grammars and their techniques for the analysis and description of linguistic structure in general, and contemporary American English in particular. (Formerly ENG 517.)

ENG 476. HISTORY OF THE ENGLISH LANGUAGE (5)
PR: 20 hours of literature. The evolution of language from Anglo-Saxon through Middle English to Modern English. Changes in the pronunciation, syntactic, and semantic systems; discussion of the forces which influenced them; a consideration of how these changes may influence the interpretation of literature. (Formerly ENG 515.)

ENG 477. LINGUISTICS AND LITERATURE (5)
PR: ENG 475 or LIN 301. The application of relevant materials from the fields of comparative and descriptive linguistics to analysis and interpretation of literature — poetry, prose, and drama, with a view to complementing the traditional modes. (Formerly ENG 516.)

ENG 481. INDIVIDUAL RESEARCH (1-5)
PR: 12 hours of literature. Directed study in special projects. Special permission of chairman required.

ENG 483. SELECTED TOPICS IN ENGLISH STUDIES (1-5)
PR: Sophomore standing. The content of the course will be governed by student demand and instructor interest. It will examine in depth a recurring literary theme or the work of a small group of writers. Special courses in writing may also be offered under this title. May be repeated for different topics.

ENG 485. DIRECTED READING (5)
PR: Junior standing. Readings in special topics. (Formerly ENG 585.)

FOR GRADUATE STUDENTS ONLY

ENG 601. PROBLEMS IN COLLEGE ENGLISH INSTRUCTION: COMPOSITION (5)
PR: Graduate standing. An examination of the objectives of freshman English and an investigation of current techniques for achieving those objectives, emphasizing the problems of developing critical reading and the techniques of expository writing at the college level.

ENG 602. PROBLEMS IN THE COLLEGE ENGLISH INSTRUCTION: LITERATURE (5)
PR: Graduate standing. A course that will allow the prospective college English teacher to experiment with teaching techniques that will determine the most effective ways to teach literature and that will teach college English teachers the variety and importance of literary techniques and their relevance to subject matter.

ENG 610. STUDIES IN OLD ENGLISH (5)
PR: Graduate standing. A study of Old English language, prose style, poetry. May be retaken with different subject matter three times.

ENG 616. STUDIES IN MIDDLE ENGLISH (5)
PR: Graduate standing. Selected focused studies in language and in various authors and writings 1100-1500: Chaucer, the Pearl poet, Everyman, ballads, drama. May be retaken with different subject matter three times.

ENG 620. STUDIES IN SIXTEENTH-CENTURY BRITISH LITERATURE (5)
PR: Graduate standing. Selected focused studies in 16th-century British literature: Shakespeare, Sidney, Spenser, Marlowe, and others. May be retaken with different subject matter three times.

ENG 625. STUDIES IN SEVENTEENTH-CENTURY BRITISH LITERATURE (5)
PR: Graduate standing. Selected focused studies in British literature, 1600-1660; Bacon, Donne, Jonson, Herbert, Milton, and others. May be retaken with different subject matter three times.

ENG 630. STUDIES IN RESTORATION AND EIGHTEENTH-CENTURY BRITISH LITERATURE (5)
PR: Graduate standing. Selected focused studies in Restoration-Eighteenth-Century British literature: Dryden, Defoe, Pope, Swift, Fielding, Sheridan, Johnson, Boswell, and others. May be retaken with different subject matter three times.

ENG 640. STUDIES OF THE ENGLISH ROMANTIC PERIOD (5)
PR: Graduate standing. A study of pre-Romantic and Romantic prose fiction, nonfiction, and poetry. May be retaken with different subject matter three times.

ENG 645. STUDIES IN VICTORIAN LITERATURE (5)
PR: Graduate standing. A study of Victorian poetry; Victorian fiction, Victorian non-fictional prose, and Victorian drama. May be retaken with different subject matter three times.

ENG 650. STUDIES IN AMERICAN LITERATURE TO 1860 (5)
PR: Graduate standing. Selected focused studies in American literature before 1860: the Puritans, Franklin, Cooper, Irving, Poe, Emerson, Hawthorne, Melville, and others. May be retaken with different subject matter three times.

ENG 660. STUDIES IN AMERICAN LITERATURE 1860-1920 (5)
PR: Graduate standing. Selected focused studies in American literature: Whitman, Twain, Howells, James, Crane, Dreiser, and others. May be retaken with different subject matter three times.

ENG 670. STUDIES IN MODERN BRITISH LITERATURE (5)
PR: Graduate standing. A study of Irish and English drama, the modern novel, poetry, criticism and the short story. May be retaken with different subject matter three times.
ENV 672. STUDIES IN MODERN AMERICAN LITERATURE (5)
PR: Graduate standing. Modern American drama, poetry, fiction, and literary criticism; authors include Faulkner, Hemingway, Fitzgerald, O'Neill, Anderson, Wolfe, Cummings, Frost, and Eliot. May be retaken with different subject matter three times.

ENG 675. STUDIES IN CONTEMPORARY LITERATURE (5)
PR: Graduate standing. Drama, poetry, fiction, and literary criticism; authors to be studied include Ionesco, Thomas, Miller, T. Williams, Beckett, Camus, and Burgess. May be retaken with different subject matter three times.

ENG 681. GRADUATE RESEARCH (1-5)
PR: CI and Graduate standing. Directed study in special projects. Special permission of chairman required.

ENG 683. SELECTED TOPICS IN ENGLISH STUDIES (1-10)
PR: Graduate standing. Current topics offered on a rotating basis include The Nature of Tragedy; The Nature of Comedy and Satire; The Nature of Romanticism and Classicism; and The Nature of Myth, Allegory, and Symbolism. Other topics will be added in accordance with student demand and instructor interest.

ENG 684. STUDIES IN CONTINENTAL LITERATURE (5)
PR: Graduate standing. General areas include the Renaissance, the Enlightenment, the Novel in Europe, the Romantic Movement on the Continent, and Classical Comedy. May be retaken with different subject matter three times.

ENG 685. DIRECTED READING (1-10)
PR: Graduate standing. Directed reading in authors or literary movements.

ENG 686. STUDIES IN STYLE (5) (Advanced Composition for Teachers)
PR: Graduate standing. Poetics, rhetoric, dramatic style, prose style, short fiction, the novel, and the essay. May be retaken with different subject matter three times.

ENG 687. STUDIES IN ENGLISH LANGUAGE AND LINGUISTICS (5)
PR: ENG 475 (formerly ENG 517) and ENG 476 (formerly ENG 515), or CI. An advanced study of the origin, historical development, and contemporary structure of British and American English in its social and cultural milieu, with emphasis upon modern techniques for linguistic analysis and description.

ENG 690. SCHOLARSHIP AND CRITICISM (5)
PR: Graduate standing. Selected focused study of research approaches to English. May be retaken with different subject matter once.

ENG 691. GRADUATE SEMINAR IN ENGLISH (5-10)
PR: Consent of graduate adviser. May be retaken with different subject matter to a maximum of ten hours.

ENG 693. BIBLIOGRAPHY FOR ENGLISH STUDIES (2)
PR: Graduate standing. Detailed study of bibliographies of cultural milieus, genres, periods, and authors.

ENG 699. MASTER'S THESIS (5)
PR: Admission to the English Masters graduate program. Writing a Master of Arts thesis in the field of English. Taking this course and the M.A. thesis are optional.

ENG 702. PROBLEMS IN ADVANCED ENGLISH INSTRUCTION OF COMPOSITION (5)
PR: Admission to the Ph.D. program in English. Apprrenticed, closely supervised study of and practice in teaching of college and university advanced composition. Student may elect to work with nonfiction, fiction, or poetry.

ENG 703. PROBLEMS IN ADVANCED ENGLISH INSTRUCTION AND SCHOLARLY RESEARCH (5)
PR: Ph.D. Candidacy. This course is to provide closely supervised training in upper-level college English instruction and experience with professional research. Experience in the lecture, seminar discussion, examining, evaluation, conferences, directing undergraduate research, course development, use of secondary materials, publication procedure, and collation.

ENG 791. DOCTORAL SEMINAR (5-10)
PR: Admission to Ph.D. program. This seminar will provide intensive small-group discussion as well as shared and individual guided research in a student's area of doctoral specialty over two consecutive academic quarters.

ENG 799. DISSERTATION (1-15)
PR: Consent of Department. The supervised writing of a doctoral dissertation. (S/U only.)

ENVIRONMENT (ENV)

ENV 301. DIALOGUE IN ENVIRONMENTAL SURVIVAL (4)
A multidisciplinary course dealing with environmental problems. (S/U only.)

FINANCE (FIN)


LOWER LEVEL COURSES

FIN 201. PERSONAL FINANCE (5)
Survey of the problems and techniques of family financial planning. Includes consumer credit, insurance, home ownership, and personal investing, with attention given to current economic and legal constraints. Not available for credit to upper level students who have been admitted to the College of Business Administration.

FIN 202. INTRODUCTION TO INVESTMENTS (4)
Designed for non-business administration students who have not taken accounting or corporation finance, it emphasizes the operations of the security markets in the U.S. and the risks and returns of alternative investment media. Not available for credit to upper level students who have been admitted to the College of Business Administration.

FINANCE (FIN)

FIN 301. PRINCIPLES OF FINANCE (5)
PR: ACC 300, and ECN 201. Fundamental tools and techniques applicable to financial planning. Emphasizes the problems of acquisition, supervision, and allocation of resources, and the management of the liquidity and profitability of firms.

FIN 303. PRINCIPLES OF INSURANCE (5)
Analysis of insurable risks of both businesses and individuals. An examination of the characteristics of those areas of risk and uncertainty where the mechanisms of insurance are effective alternatives. The concept, contracts, and institutions involved in insurance are examined in relationship to the socio-economic environment.

FIN 305. PRINCIPLES OF REAL ESTATE (5)
Economics of urban land utilization and the nature of
property rights. Problems of urban development and the valuation of real property in terms of the structure and operations of the real estate market.

FIN 321. MONEY AND BANKING (4)
PR: ECN 202. Examines the structure and operations of our monetary system, commercial banking, central banking, money, and capital markets, and provides an introduction to monetary theory and policy.

FIN 351. INTERNATIONAL FINANCE (5)
PR: ECN 202 or Cl. Principles of acquisition, supervision, and allocation of funds by multi-national firms.

FIN 403. LIFE, HEALTH, & DISABILITY INSURANCE (5)
PR: FIN 303, ECN 331. The course will analyze the use of life, health and disability insurance contracts as a method of dealing with the risks of death, sickness, and disability. It will also include an analysis of cost determination of the various types of coverage.

FIN 411. ADVANCED CORPORATION FINANCE (4)
PR: FIN 301. An examination of the financial policies of corporations, with special reference to dividend policy, financial structure, capital expenditures, acquisitions, mergers, and reorganization.

FIN 421. PRINCIPLES OF INVESTMENT (4)
PR: FIN 301 and ECN 202. Survey of the risks and returns of investment media in relation to the investment objectives of individual and institutional investors. Includes an examination of the capital markets, information flows, and analytical techniques in terms of their impact upon the valuation process.

FIN 431. FINANCIAL INSTITUTIONS (4)
PR: FIN 321. A study of the interrelationship of financial intermediaries and their role in the capital market in the saving allocation, investment and financial decision making process.

FIN 451. FEDERAL RESERVE SYSTEM AND MONETARY POLICY (4)
PR: ECN 323 or FIN 321. An analysis of the Federal Reserve System, with special emphasis on the formulation and administration of monetary policy and on monetary theory.

FIN 461. FINANCIAL POLICIES AND STRATEGIES (3)
PR: FIN 411. Senior seminar for majors in finance. Quantitative and qualitative analysis of financial policies based on independent readings and empirical research.

FIN 471. PORTFOLIO MANAGEMENT (3)
PR: FIN 421. Study of portfolio policies and strategies of individual and institutional investors emphasizing techniques of diversification. This course utilizes both the quantitative and case study approaches to problem solving.

FIN 489. SPECIAL STUDIES IN FINANCE (1-5)
PR: Cl. Independent study program under the guidance of departmental staff. Experimental courses will periodically be offered under this number.

FOR SENIORS AND GRADUATE STUDENTS
FIN 501 BUSINESS FINANCE (3)
PR: ACC 501 and ECN 501 or their equivalent. Accelerated introduction to fundamentals of business finance. Emphasis is placed on the formal presentation of financial models for decision making. The institutional features of the financial environment are also covered.

FOR GRADUATE STUDENTS ONLY
FIN 601. FINANCIAL MANAGEMENT (3)
PR: ECN 503, FIN 501 or their equivalent. An examination of financial practice at the level of the individual firm with emphasis on quantitative analysis of the variables affecting solvency and profitability.

FIN 602. CAPITAL MARKETS (3)
PR: ECN 501 and 502 or their equivalent. An investigation of the capital markets and their relationship to the external financing of firms.

FIN 611. FINANCIAL POLICY (3)
PR: FIN 601. A case study approach to financial policy and strategy with an emphasis on major financial decisions in the area of mergers, acquisitions, recapitalization, and reorganization. It will also involve case studies of financial decisions such as dividend policy, leasing, and external financing.

FIN 621. INVESTMENTS (3)
PR: FIN 501 or equivalent, Cl. An examination of the risks and returns of alternative investment media within the framework of various valuation models. Special attention is given to the investment process and the criteria for investment decisions.

FIN 651. THEORY OF FINANCE (3)
PR: FIN 601, GBA 603 or Cl. A systematic and rigorous course in the theory of finance. Topics will include the theory of choice and the allocation of financial resources, criteria for optimal investments, under certainty and uncertainty, the financing decision and the cost of capital.

FIN 683. SELECTED TOPICS IN FINANCE (1-6)
PR: Graduate standing and Cl. A variable credit course depending upon the scope and magnitude of the work agreed to by the student and the responsible member of the faculty. Will include both special lecture series, and independent research activities under the direction of the department.

FINE ARTS (INTERDISCIPLINARY) (FNA)


UPPER LEVEL COURSES
FNA 301. THE ARTS TODAY (2)
A survey of the current activity in the arts, both performing and visual, offering the student the opportunity to become more aware of the scope and variety of the arts, both nationally and internationally. Current newspapers, periodicals, and broadcast media will be utilized. May be repeated once. (S/U only.)

FRENCH (FRE) — see Modern Languages

GENERAL BUSINESS ADMINISTRATION (GBA)

LOWER LEVEL COURSES
GBA 261. LAW AND THE INDIVIDUAL (5)
A study of the nature, functions, sources, formulation, and administration of law with special emphasis on the practical aspects of criminal, tort, estate, divorce, property, business, constitutional, and other areas of law. Not available for
credit to students who have been admitted to the College of Business.

UPPER LEVEL COURSES

**GBA 333. COMPUTERS IN BUSINESS** I. (3)
An introductory interdisciplinary examination of the impact of computers on all areas of business decision-making. Problems are reduced to schematic logic, programmed and tested against desired computer output. Computer hardware, software, history and terminology are introduced.

**GBA 351. COMPUTERS IN BUSINESS II** (5)
PR: GBA 333. An advanced interdisciplinary examination of the impact of computer systems on the business enterprise. Concepts of data collection, information theory and business systems analysis are developed.

**GBA 361. BUSINESS LAW I** (5)
The nature of legal institutions, essentials of a binding contract, remedies granted in event of breach of contract and rights acquired by assignment of contracts.

**GBA 362. BUSINESS LAW II** (5)
PR: GBA 361. Legal problems in marketing of goods, nature of property, sales of personal property, securing of credit granted, nature and use of negotiable instruments.

**GBA 363. THE LAW OF BUSINESS ASSOCIATIONS** (5)
PR: GBA 361. A study of the law of corporations, the law of partnerships, and the law of agency.

**GBA 371. BUSINESS COMMUNICATIONS** (4)
Analysis and application of the principles of persuasion in business communication; composition and evaluation of functional business letters; examination of effective organization strategy, text, tabular and graphic presentation in formal business report.

**GBA 489. INDIVIDUAL RESEARCH** (1-2)
Individual research in the student's major area supervised by an appropriate faculty member.

**GBA 499. SENIOR SEMINAR IN ADMINISTRATION** (3)
PR: Senior Standing. The course is intended to provide a unifying, integrating, and coordinating opportunity to tie together concepts, principles, and skills learned separately in other, more specialized courses in Business Administration.

FOR SENIORS AND GRADUATE STUDENTS

**GBA 501. CBA WORKSHOP** (1-6)
Professional applications workshop in various areas of finance, marketing, economics, accounting, management. May be repeated when subjects differ.

**GBA 570. MANAGEMENT ASSISTANCE AND COUNSELING** (2-4)
PR: CI. Instruction and fieldwork in technical problems, experiences by small business entrepreneurs, and by certain public-non-profit organizations. Qualified students apply and develop their knowledge and skills in a real private-public environment.

FOR GRADUATE STUDENTS ONLY

**GBA 601. LEGAL ENVIRONMENT OF BUSINESS** (3)
A study of the governmental regulation of business emphasizing the constitutional limitations on the powers of the federal government, the administration of the federal antitrust laws, and administrative law.

**GBA 603. QUANTITATIVE METHODS I** (3)
PR: College Algebra or equivalent. Mathematical techniques for administrative problems, including linear programming, game theory, and optimization models and procedures using calculus and matrix algebra.

**GBA 665. QUANTITATIVE METHODS II** (3)
PR: College Algebra, ECN 331, or equivalents. Probability and sampling, Bayesian decision theory, and the design of experiments, as applied to administrative problems.

**GBA 615. INTEGRATIVE SEMINAR** (3)
PR: C.I. The integration of analysis and policy for the decision-making process in administration. This course should be taken at the end of a student's program.

**GBA 683. SELECTED TOPICS IN BUSINESS AND GENERAL ADMINISTRATION** (1-6)
The course content will depend on student demand and instructor's interest.

**GBA 699. THESIS** (6)

GEOGRAPHY (GPY)


LOWER LEVEL COURSES

**GPY 100. GEOGRAPHY OF CURRENT EVENTS** (4)
Application of basic geographic principles to the analysis of contemporary events in various parts of the world.

UPPER LEVEL COURSES

**GPY 301. SYSTEMATIC GEOGRAPHY** (5)
Principles and concepts of the discipline; maps, earth-sun relations, weather, and climate.

**GPY 302. SYSTEMATIC GEOGRAPHY** (5)
PR: GPY 301 or CI. Landforms and conservation of resources. Latter part of course deals with man's use of the natural environment.

**GPY 303. HUMAN GEOGRAPHY** (5)
PR: GPY 301 or CI. Systematic treatment of man's activities on earth: population, settlement, agriculture, industry, trade, transportation, and political aspects are among those considered.

**GPY 315. ELEMENTS OF GEOGRAPHY** (1)
An independent study program in the basic elements of physical and cultural geography. Sections 001-005 are equivalent to GPY 301; sections 006-010 are equivalent to GPY 302; sections 011-015 are equivalent to GPY 303. These courses may not be taken if a student has had their equivalent. Topics include maps and map reading, history of geography, earth form, weather, climate, soils, water, plants and animals, landforms and minerals, conservation, political, economic, language and religion, settlement and population, and urban. Course is designed primarily for nonmajors. A student may enroll for a maximum of five hours (5 sections) during any quarter. (S/U only.)

**GPY 371. GENERAL GEOGRAPHY** (5)
Varied topics in regional and topical geography. May be repeated as topics vary, but the same topic may not be repeated for credit. Open to anyone in the University.

**GPY 403. PHYSICAL GEOGRAPHY** (5)
PR: GPY 301-302 or CI. Courses include meteorology, climatology, physiography, biogeography, soils, water bodies. May be repeated as courses vary, but the same course may not be repeated for credit.

**GPY 405. CULTURAL GEOGRAPHY** (5)
PR: GPY 301-302-303 or CI. Courses include economic, political, urban, population, settlement, conservation, and historical geography. May be repeated as courses vary, but the same course may not be repeated for credit.

**GPY 407. REGIONAL GEOGRAPHY** (5)
PR: GPY 301-302 or CI. Synthesis and analysis of the physical and cultural elements in a selected geographic region such as Africa, South America, Europe, Soviet Union, North
America. May be repeated as regions vary, but the same region may not be repeated for credit.

**GPY 409. GEOGRAPHIC TECHNIQUES AND METHODOLOGY (5)**
PR: GPY 301-302-303 or CI. Courses include cartography, graphics, map design and analysis, air photo interpretation, field methods, quantitative analysis, seminar. May be repeated as courses vary, but same course may not be repeated for credit.

**FOR SENIORS AND GRADUATE STUDENTS**

**GPY 501. GEOGRAPHIC LITERATURE AND HISTORY (4)**
PR: Senior or graduate standing in geography, or CI. The origins and development of the discipline as revealed through an examination of the principal written sources. Special attention paid to leading personalities and modern periodicals.

**GPY 503. METHODOLOGY I: QUANTITATIVE (4)**
PR: Senior or graduate standing in geography, and a course in statistics, or CI. The application of quantitative techniques to geographic problems; factor, sensitivity, and spatial analysis.

**GPY 505. METHODOLOGY II: CARTOGRAPHIC (4)**
PR: Senior or graduate standing in geography, GPY 409 (Cartography), or CI. Application of various techniques for presenting graphic illustrations as research tools.

**GPY 507. METHODOLOGY III: FIELD WORK (4)**
PR: Senior or graduate standing in geography. Data collection in a field situation, including observation, classification, interpretation, and presentation of the data.

**GPY 581. INDIVIDUAL RESEARCH (1-5)**
PR: 30 hours in geography and CI, or graduate standing in geography. Arrangement must be made with chairman prior to registration. May be repeated.

**GPY 585. DIRECTED READING (1-5)**
PR: 30 hours in geography and CI, or graduate standing in geography. Arrangement must be made with chairman prior to registration. May be repeated.

**FOR GRADUATE STUDENTS ONLY**

**GPY 601. METHODOLOGY IV: ACADEMIC (4)**
PR: Graduate standing in geography. Current trends in college geography, with the emphasis on the junior college program. Not available to thesis students.

**GPY 603. SEMINAR IN ADVANCED PHYSICAL GEOGRAPHY (4)**
PR: Graduate standing in geography. Analytic study of a problem selected from one or more aspects of the atmosphere, biosphere, hydrosphere, or lithosphere. May be repeated once for credit, but topic may not be repeated.

**GPY 605. SEMINAR IN ADVANCED CULTURAL GEOGRAPHY (4)**
PR: Graduate standing in geography. Analytic study of a problem selected from one or more aspects of the cultural landscape (urban, political, economic, population, settlement). May be repeated once for credit.

**GPY 607. SEMINAR IN ADVANCED REGIONAL GEOGRAPHY (4)**
PR: Graduate standing in geography. Analytic study of a selected region of the world. May be repeated once for credit, but region may not be repeated.

**GPY 609. SEMINAR IN ADVANCED TECHNIQUES & METHODOLOGY (4)**
PR: Graduate standing in geography. Analytic study of a selected geographic technique (such as remote sensing, graphics, photo interpretation, or computer applications) or an investigation into an aspect of methodology. May be repeated once for credit but topic may not be repeated.

**GPY 689. DIRECTED TEACHING (1-9)**

**GPY 699. THESIS (1-9)**

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**GEOLOGY (GLY)**


**LOWER LEVEL COURSES**

**GLY 201. INTRODUCTION TO GEOLOGY (4)**
An introduction to the materials, processes and history of the earth. Students may elect to enroll in GLY 202 concurrently. No credit for geology majors.

**GLY 202. BASIC GEOLOGY LABORATORY (1)**
Laboratory examination of mineral and rock specimens, topographic and geologic maps, aerial photographs, and fossils. To be taken in conjunction with GLY 201, 203, 205 or 371. May not be repeated for credit. No credit for geology majors.

**GLY 203. THE EARTH: PAST, PRESENT AND FUTURE (4)**
A general introduction to the history of the earth as demonstrated by the changes recorded in the rocks and the evolution of organisms preserved. Students may elect to enroll in GLY 202 concurrently. No credit for geology majors.

**GLY 205. ENVIRONMENTAL GEOLOGY (4)**
A first course in geology emphasizing environmental aspects of the earth's crust such as earthquakes, depletion of the earth's resources, water supply problems, and geologic land use and planning. Students may enroll in GLY 202 concurrently. No credit for geology majors.

**GLY 210. GEOLOGY I: EARTH MATERIALS (4)**
Study of minerals and rocks that comprise the earth's crust. Basic introduction to the origin and classification of earth materials. Fundamentals of the rock cycle. For science majors only. Lec.-lab.

**GLY 211. GEOLOGY II: EARTH PROCESSES (4)**
Study of surface and subsurface processes of the earth including weathering, transportation, and accumulation of sediment, earthquakes, and other crustal movement, and movements of fluids. Emphasis on streams, coasts, glacial environments, and aeolian environments, and the resulting landforms. For science majors only. Lec.-lab.

**GLY 212. GEOLOGY III: EARTH HISTORY (4)**
Study of the physical and biological history of the earth including evolution of the major groups of organisms, continental drift, and interpretation of ancient environments. For science majors only. Lec.-lab.

**UPPER LEVEL COURSES**

**GLY 302. PRINCIPLES OF INVERTEBRATE PALEONTOLOGY (5)**
PR: GLY 212 or CI. Emphasis on morphology and habits of fossils invertebrate groups as they evolved through geologic time. Comparisons with modern examples or similar organisms. Stratigraphic distribution of major groups. Lec.-lab.

**GLY 310. ROCKS, MINERALS AND GEMS (4)**
A general course in the occurrence, classification, and economics of earth materials. Designed for the non-science student or rock collector who is interested in something beyond a basic introductory course. Although no prerequisites are necessary, it is recommended that either GLY 201, 205 or 371 be taken prior to enrollment in GLY 310. No credit for geology majors.

**GLY 320. LIFE OF THE GEOLOGIC PAST (4)**
General course in development of organisms through geologic time including invertebrates, vertebrates, and plants. Designed for non-science majors interested in fossils, their
GLY 411. MINERALOGY (4)
PR: GLY 410 or CI. Origin, occurrence and chemistry of mineral groups with emphasis on rock forming minerals. Identification of common minerals by physical and chemical properties. Lec.-lab. (Formerly GLY 311.)

GLY 412. OPTICAL MINERALOGY (4)

GLY 441. ECONOMIC MINERAL DEPOSITS (4)

GLY 471. GEOLOGY OF SOILS (5)
PR: General Chemistry or equivalent. The origin, geologic development, formation, and nature of soils. Fundamentals of soil science, including the physical, chemical, and biological factors affecting soil fertility with special application to the soils and ecology of Florida. Lec.-lab, field trips.

GLY 475. HYDROGEOLOGY AND HUMAN AFFAIRS (5)
PR: Open to all junior and senior level students. Geologic analyses of the present critical and urgent problems of water resources, pollution control, water supply, flood control, and underground waste disposal as they relate to economic, legal, and other social aspects of modern society. Field trips. For non-majors.

GLY 481. UNDERGRADUATE RESEARCH (1-6)
PR: Senior or advanced junior standing and written permission of department prior to registration. Individual experimental investigations with faculty supervision. (S/U only.)

FOR SENIORS AND GRADUATE STUDENTS

GLY 503. SEDIMENTOLOGY (4)
PR: GLY 405, 412 or CI. Analysis of sediments, sedimentary rocks and sedimentary structures as related to their environments of deposition. Textural and mineralogical study of sediments and statistical applications of sediment analysis. Lec.-lab, field trips.

GLY 504. PETROLOGY OF CHEMICAL ROCKS (4)
PR: GLY 302, 412 or CI. Origin, mineralogy, and petrology of chemical and organic sedimentary deposits including evaporites, carbonates, cherts, oil and gas, coal and sedimentary iron ores. Lec.-lab, field trips.

GLY 512. MARINE GEOLOGY (4)
PR: Eight hours of geology or CI. General survey of the geology of the ocean floor from beaches to oceanic trenches including sediments, processes, tectonics and history.

GLY 513. IGNEOUS AND METAMORPHIC PEROGRAPHY (5)

GLY 521. PRINCIPLES OF APPLIED GEOPHYSICS (4)
PR: Senior or advanced Junior standing, one year of Physics, or CI. Elementary treatment of gravimetric, magnetic, electric, and seismic geophysical techniques as applied to site investigations and mineral deposits. Lec.-lab, field trips.

GLY 531. PRINCIPLES OF STRATIGRAPHY (4)
PR: GLY 405. Emphasis on classical principles of litho-and biostratigraphy, stratigraphic nomenclature, development of stratigraphic philosophy, and paleogeographic reconstruction of sedimentary basins. Lec.-lab, field trips.

GLY 532. ADVANCED STRATIGRAPHIC PALEONTOLOGY (5)
PR: GLY 302, 405 or CI. Morphology, geologic distribution and stratigraphic ranges of important invertebrate guide fossils. Lec.-lab, field trips.

GLY 533. GEOMORPHOLOGY (4)
PR: Senior or advanced junior standing and CC. Origin, evolution, and distribution of landforms.

GLY 541. GEOPHOTO INTERPRETATION (5)
PR: Senior standing, or CI. Geo-analysis of air photos and earth data, including some acquired by remote sensing techniques. Analysis of chemical and physical sample data. Lec.-lab.

GLY 553. ADVANCED HYDROGEOLOGY (5)
PR: GLY 351, MTH 213 or 303, PHY 215-216, or CI. Aquifer evaluation and quantitative determination of the hydraulic characteristics of hydrogeologic systems. Lec.-field-lab.

GLY 571. GENERAL GEOCHEMISTRY (4)
PR: One year college chemistry, GLY 411 or CI. Age, formation, and evolution of the earth with application of basic chemical concepts and processes that govern the distribution of elements in geologic environments.

GLY 573. ANALYTICAL TECHNIQUES IN GEOLOGY (5)
PR: One year college chemistry, GLY 412 or CI. Use and application of modern analytical methods including X-ray, atomic-absorption, and other geochemical techniques. Interpretation and statistical analysis of data acquired. Lec.-lab.

GLY 575. GEOTECHNICS (4)
PR: Senior or advanced Junior standing or CI. Concept of soil and rock mechanics, and their relationship to geological conditions influencing the location, design, construction, and maintenance of engineering projects. Lec.-field-lab.

GLY 583. SELECTED TOPICS IN GEOLOGY (1-6)
PR: Senior or advanced junior standing and CC. Each topic is a course in directed study under supervision of a faculty member. Course topics include: Introductory Geological Oceanography, Advanced Stratigraphic Paleontology, Palynology, Sedimentary Processes, Sedimentary Techniques, Universal Stage, Seismology, Marine Geophysics, Exploration
GLY 591. GEOLOGY SEMINAR (1)
PR: Senior or advanced junior standing and CC. May be repeated once. (S/U only.)

FOR GRADUATE STUDENTS ONLY

GLY 603. COASTAL SEDIMENTATION (4)
PR: GLY 503 or equivalent. Study of modern coastal sedimentary environments with emphasis on beaches, inlets, deltas, estuaries and marshes. Analysis of sedimentary processes and resulting morphology of sediment bodies. Lec.-lab, field trips.

GLY 608. CARBONATE PETROGRAPHY (4)
PR: GLY 412, 504 or equivalent or CI. Origin and environmental interpretation of carbonate rocks with emphasis on thin section study as means of interpreting ancient depositional and diagenetic environments. Lec.-lab.

GLY 609. SANDSTONE PETROGRAPHY (4)
PR: GLY 412, 503 or CI. Origin and environmental interpretation of sandstones including fine grained terrigenous sediments. Emphasis on thin-section study of sandstones as means of interpreting ancient depositional and diagenetic environments. Lec.-lab.

GLY 611. ADVANCED IGNEOUS PETROGENESIS (4)
PR: CI. Detailed study of igneous rocks and their origin.

GLY 612. ADVANCED METAMORPHIC PETROGENESIS (4)
PR: CI. Detailed study and interpretation of metamorphism and the origin of metamorphic rock complexes, utilizing thin section microscopy, X-ray diffraction, and chemical analyses.

GLY 620. MARINE PALEOECOLOGY (4)
PR: GLY 302, 503 or CI. Interpretation of the relationships between ancient organisms and their environment with emphasis on the substrate. Applications of modern benthic marine environments and sediment-organism relationships to the fossil record. Lec.-field trips.

GLY 621. MARINE MICROPALEONTOLOGY (4)
PR: 302 or CI. Morphology and geologic distribution of foraminifera, conodonts, ostracods, chitinozoans, discocysters, and coccolithophores. Lec.-lab. field trips.

GLY 625. PALEONTOLOGIC SYSTEMATICS AND TECHNIQUES (4)
PR: GLY 302 or CI. Principles of taxonomic paleontology including synonyms and morphologic descriptions. Preparation of fossils for photographing and camera lucida drawings.

GLY 652. DEVELOPMENT OF GROUND-WATER RESOURCES (5)
PR: GLY 553 or CC. Analysis of cause-effect relationships between oceans, streams, lakes, and aquifers; planning and design of hydrogeology resources investigations, Lec.-lab, field trips.

GLY 661. CLAY MINERALOGY (4)
PR: Graduate standing in geology or CI. Composition, structures, origin, and diagenesis of clay minerals. Identification of clay minerals by X-ray diffraction techniques.

GLY 672. SEDIMENTARY GEOCHEMISTRY (4)
PR: GLY 571 or CI. Fundamentals of aqueous geochemistry in relation to chemical and biochemical precipitation of sedimentary materials. Geochemistry of fluids with emphasis on diagenesis.

GLY 673. CHEMICAL EQUILIBRIA IN THE EARTH (4)
PR: GLY 571 or CI. Application of basic solution geochemistry and equilibria concepts to geologic problems with emphasis on geochemical reactions at low temperatures and pressures.

GLY 675. GEOLOGY OF FLORIDA (5)
PR: 24 hours of earth science credits or CI. Designed for teachers of earth science. Mineralogy, structure, stratigraphy, paleontology, geomorphology, tectonics, and petrology of Florida and contiguous areas. Lec.-field-lab. Alternate years.

GLY 681. GRADUATE RESEARCH GEOLOGY (1-15)
PR: CC. (S/U only.)

GLY 683. SELECTED TOPICS IN MARINE GEOLOGY (1-6)

GLY 689. DIRECTED TEACHING (3-9)
Not applicable toward thesis degree requirements. Supervised teaching for graduate teaching assistants in elementary and/or laboratory courses. A formalized, structured activity wherein a faculty member, by discussion and assignments, considers the principles, rationale, and modus operandi of elementary college courses. Designed to train teaching assistants and to provide help and training to those graduate students who plan to follow a college teaching profession. (S/U only.)

GLY 691. GRADUATE SEMINAR (2)
PR: CC, may be repeated for credit. (S/U only.)

GLY 699. THESIS (1-9)
PR: CC (S/U only).

GERMAN (GER)—see Modern Languages

GERONTOLOGY (AGE)—see Aging Studies

GREEK (GRE)—see Modern Languages

HEBREW (HEB)—see Modern Languages

HISTORY (HTY)

HTY 309. AMERICAN FOREIGN RELATIONS, 1877 TO PRESENT (4)
A history of American Foreign Relations in the Industrial era.
(Formerly HTY 410.)

HTY 310. AMERICAN FOREIGN RELATIONS, 1877 TO PRESENT (4)
A chronological study of the South in its relations with the rest of the United States focusing on the origins and development of Southern institutions and thought.

HTY 311. THE ORIGINS AND GROWTH OF THE AMERICAN SOUTH (4)
A study of the transition of American society from the era of Reconstruction to WWI focusing on industrialization, expansion and urbanization.

HTY 312. THE SOUTH AND THE NATION (4)
The growth of the "New South," and the increasing integration and assimilation of the South in the nation.

HTY 317. EARLY FLORIDA HISTORY (4)
A history of colonial Florida under the Spanish and English. Florida as an area of discovery, colonization and imperial conflict; the emergence of Florida within its regional setting.

HTY 318. MODERN FLORIDA HISTORY (4)
Florida from its acquisition by the United States in 1821 to the present time. stresses political, economic, and cultural growth and the affect of the environment.

HTY 319. THE EMERGENCE OF MODERN AMERICA (4)
A study of the transition of American society from the era of Reconstruction to WWI focusing on industrialization, expansion and urbanization.

HTY 320. THE GROWTH OF MODERN AMERICA (4)
A study of American Society from WWI to the Present with special emphasis on the emergence of the United States as a world power.

HTY 321. HELLENISTIC GREECE (4)
A study of Greece in the Ancient period focusing on the Pre-Hellenic and Hellenic periods to the death of Philip of Macedon.

HTY 322. HELLENISTIC GREECE (4)
A study of the career of Alexander The Great and of major developments in the Hellenistic period.

HTY 325. ROMAN REPUBLIC (4)
A study of the Roman Republic in the period from its establishment in 509 B.C. to the death of Julius Caesar in 44 B.C. A prelude deals with Roman origins in the Regal period.

HTY 326. ROMAN EMPIRE (4)
A study of the Roman Empire in the period from the death of Julius Caesar in 44 B.C. to the death of Marcus Aurelius, A.D. 180.

HTY 327. MEDIEVAL SOCIETY (4)
An investigation into the daily life and attitudes of the medieval peasant and townsman, and the agrarian-urban economy and society which affected their lives.

HTY 328. MEDIEVAL POLITICS (4)
An inquiry into the nature, distribution, and use of political power in the middle ages. Studies of the Ecclesiastical and secular nobility, their political actions, attitudes and lives.

HTY 330. EARLY MODERN EUROPEAN NATIONAL HISTORIES (4)
A study of major developments in specific countries. Each permanent section of the course will be devoted to the history of an individual country: Section 001, British history to 1715; Section 002, French history to 1789; Section 003, German history to 1870; Section 004, Russian history to 1855. May be repeated for credit providing student enrolls in a different permanent section.

HTY 331. MODERN EUROPEAN NATIONAL HISTORIES (4)
A study of Modern historical developments in specific countries. Each permanent section will be devoted to an individual country: Section 001, British history 1715 to Present; Section 002, French history 1789 to Present; Section 003, German history 1870 to Present; Section 004, Russian history 1855 to Present; Section 005, Italian history 1861 to Present. May be repeated for credit providing student enrolls in a different permanent section.

HTY 345. BRITISH EMPIRE (4)
British Empire and Commonwealth. A study of the first and
second British Colonial Empire, the emergence of the British Commonwealth into the Commonwealth of Nations.

HTY 347. HISTORY OF CANADA (4)
A study of the major themes in the political and social development of Canada, with particular emphasis on the origins and development of French-Canadian nationalism, continentalism, and dominion-provincial relations.

HTY 352. IMPERIAL SPAIN AND PORTUGAL (4)
A study of the peoples of the Iberian Peninsula from the late Medieval Period to 1898. (Formerly HTY 324.)

HTY 353. MEXICO (4)
A thematic study of Mexican history from Pre-Columbian cultures to the 20th Century, with special emphasis on colonial society, the emergence and development of the Mexican state and the Mexican Revolution.

HTY 354. CARIBBEAN HISTORY (4)
A thematic study of major political and socio-economic developments in the Caribbean area.

HTY 355. HISTORY OF BRAZIL (4)
A study of the social, economic, military and political development of Portuguese Brazil in an otherwise Spanish American continent. Emphasis is on the nineteenth and twentieth centuries.

HTY 357. ANCIENT AND IMPERIAL CHINA (4)
A survey of Chinese history from Pre-Columbian societal forms through the height of Chinese civilization in the Ming Dynasty (ca. 15th-16th Centuries).

HTY 358. MODERN CHINA (4)
A survey of the 19th and 20th Centuries up to the creation of the Chinese People’s Republic in 1949.

HTY 360. HISTORY OF THE RENAISSANCE (4)
A social and cultural view of Europe during the Renaissance. Specific attention will be given to the artistic and philosophical developments in relation to the social, economic and political situation. (Formerly HTY 425.)

HTY 361. THE REFORMATION AND THE WARS OF RELIGION (4)
A social and cultural approach to European history from Luther to the Thirty Years War, (1517-1648). Religious and political conflicts and solutions will be examined in light of the cultural, social and economic characteristics of the period. (Formerly HTY 426.)

HTY 362. HISTORY OF THE ENLIGHTENMENT (4)
The history of Europe from the Peace of Westphalia (1648) to the outbreak of the French Revolution. (Formerly HTY 428.)

HTY 363. HISTORY OF NINETEENTH CENTURY EUROPE (4)
A comparative study of major economic, political, and socio-cultural developments in 19th Century Europe.

HTY 364. HISTORY OF TWENTIETH CENTURY EUROPE (4)
A comparative study of major economic, political and socio-cultural developments in 20th Century Europe. (Formerly HTY 430.)

HTY 365. BYZANTINE HISTORY TO 867 (4)
A thematic treatment of the history of Byzantium from 324 A.D. to 867. Course explores social, economic religious and political developments together with consideration of literature, learning and the arts.

HTY 366. IMPERIAL BYZANTIUM (4)
A study of the Byzantine Empire during the period 867-1453. Emphasizing causes for its decline and fall.

HTY 367. INTRODUCTION TO AFRICAN HISTORY (4)
An outline survey of precolonial African history including a prefatory introduction to the use of primary sources (such as archaeology, oral tradition, cultural anthropology, comparative linguistics, documents) in reconstructing the African past. (Also listed as AFA 333.)

HTY 368. AFRICAN HISTORY SINCE 1850 (4)
Survey of the colonial and post-colonial history of Africa. Emphasis on the impact of European and other alien influences on the continent, emergence of independent African states and post-independence problems of nation building and economic development. (Also listed as AFA 334.)

HTY 371. CONTEMPORARY PROBLEMS IN HISTORICAL PERSPECTIVE (4)
Topics of contemporary significance are explored in terms of their historical development.

HTY 381. SPECIAL TOPICS (4)
This course is designed to emphasize a selected historical problem or issue that is meaningful and challenging to the student. A variety of instructional approaches will be taken to the material. Topics will be changed each quarter.

HTY 400. SOCIAL AND INTELLECTUAL HISTORY (4)
A study of major social and intellectual developments in the areas of concentration offered by the Department. Each area is represented by one of the following permanent sections: Section 001, The Ancient World; Section 002, Medieval Europe; Section 003, Modern Europe; Section 004, Latin America; Section 005, The United States of America. May be repeated for credit providing the student enrolls in a different section.

HTY 461. REVOLUTIONS IN THE MODERN WORLD (4)
A comparative study of the major revolutions in world history and a study of the relationship between revolution and other forms of social change.

HTY 465. SCIENCE AND CIVILIZATION (4)
A thematic study of the interrelationship of science and society in modern history, science as a social institution in history.

HTY 485. DIRECTED READING (1-4)
PR: CI. Arrangement with instructor prior to registration. Readings in special topics.

PART III

HTY 487. THEORY OF HISTORY (4)
PR: To be taken during the senior year. An investigation of the philosophical problems of history, with emphasis on the evolution of the discipline. (Formerly HTY 587.)

HTY 491. PRO-SEMINAR IN HISTORY (4)
PR: CI. Advanced topics in the fields emphasizing readings, discussion, research, and writing. One pro-seminar is required of all history majors. Non-majors may enroll with the consent of the instructor. Topics vary within each field. (Formerly HTY 591.)

HTY 492. RESEARCH IN HISTORY (4)
PR: CI. Introduction to the methods of historical research and writing, bibliography, and directed research in special topics designed to meet the particular needs and interests of individual students. Should be taken in the term immediately following enrollment in HTY 491. (Formerly HTY 592.)

FOR GRADUATE STUDENTS ONLY

HTY 600. ANALYSIS OF HISTORICAL KNOWLEDGE (4)
PR: Graduate Standing. A study of History as a form of knowledge with emphasis on explanatory devices and models of the discipline and the application of Social Science theory to the problems of Historical thought.

HTY 601. THEORY AND INTERPRETATION (4)
A systematic examination and evaluation of various schools of historical interpretation.

HTY 680. COLLOQUIUM IN HISTORY (4)
Reading and discussion of selected topics within the fields. Subject and scope to be determined by the instructor. May be repeated for credit.

HTY 685. READINGS IN HISTORY (1-4)
Arrangement with instructor prior to registration and CC. Individual reading and discussion of selected problems. May be repeated for credit.

HTY 691. SEMINAR IN HISTORY (4)
Research in selected problems within the fields. Subject and scope to be determined by the instructor. May be repeated for credit. The master’s candidate is required to satisfactorily
complete work in at least one graduate seminar to fulfill the requirement for the Master’s degree in History.

**HISTORY OF IDEAS (HII)**

*Director: J. B. Camp.*

**UPPER LEVEL COURSES**

**HII 301, 302. INTRODUCTION TO THE HISTORY OF IDEAS, I & II (4,4)**

301: A study of the principal forces shaping Western thought before 1700, concentrating on the developments of the Hellenic philosophical idea of Mind and the Christian idea of Will.

302: A study of principal forces shaping Western thought since 1700 — especially Modern Science and its derivative ideas.

**HII 305. THE IDEA OF PROGRESS (4)**

A study of the ways in which the idea of progress has affected philosophical, social, political, and literary theory since the Enlightenment. Among major authors considered are: Bacon, Descartes, Kant, Hegel, Marx, Condorcet, Helvetius, Compte, Mill, Darwin and Huxley.

**HII 306. THE IDEA OF UTOPIA (4)**

A study of the idea of utopia involving (1) an examination of various positive and negative examples of the utopian literary genre and (2) analysis of the idea in relation to the idea of historical progress. Among major authors considered are: Plato, More, Bellamy, Skinner, Huxley and Butler.

**HII 315. THE IDEA OF FREEDOM (3)**

An analysis of the idea of freedom, both in general and particular. Various philosophical, literary, and journalistic aspects will be analyzed: metaphysical, ethical, political, social, religious and economic.

**HII 401. INTRODUCTION TO THE IDEA OF NATURE, I (4)**

An introduction to the study of the idea of nature, concentrating on the three major pre-twentieth century conceptions of nature in their logical and historical aspects — hierarchy, mechanism, organism.

**HII 402. INTRODUCTION TO THE IDEA OF NATURE, II (4)**

An introductory investigation of the impact of twentieth century scientific theory on the idea of nature, with special attention on the post-modern idea of nature as indeterminate (or ambiguous.).

**HII 411. THE IDEA OF THE SELF (4)**

An investigation of the idea of the self as revealed in the works of major writers, philosophers and psychologists of the nineteenth century, with emphasis on the impact of this idea on contemporary thought.

**HII 483. SELECTED TOPICS (2-5)**

PR: CI. Course content determined by student’s need and instructor’s interest.

**FOR GRADUATE STUDENTS ONLY**

**HII 610. LANGUAGE AND NATURE (5)**

PR: Graduate standing. A study of the idea of nature in European literature in relation to the development of language as an instrument ordering human consciousness of the world, with special emphasis on the dialectic, relational, and polar modes of conceptual representation.

**HII 611. SEMINAR: LANGUAGE AND NATURE (5)**

PR: Graduate standing and HII 610 or CI. Studies concerning the relation between language and the idea of nature. Students will select topics or problems on which to prepare critical papers for presentation to the seminar for discussion.

**HII 620. LANGUAGE AND LIMIT (5)**

PR: Graduate standing. A study of the relation between two concepts of transfinite limit — Deity and Utopia — to each other and in relation to their bases in the language-induced order of consciousness: as reflected in the religious, aesthetic, and philosophical literature of their expression.

**HII 685. DIRECTED READING AND RESEARCH (1-10)**

PR: Graduate standing and consent of the program of the candidate’s major, and consent of the History of Ideas program. Individual studies in the history of ideas.

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**HUMANITIES (HUM)**


**UPPER LEVEL COURSES**

**HUM 308. THE HUMANITIES (4)**

PR: Freshman English or equivalent and sophomore standing. The Arts. Analyses of selected works of film, literature, music, and visual arts, including a variety of periods, nationalities and art forms, emphasizing artistic diversity.

**HUM 311, 312, 313. HUMANITIES AND HUMANE VALUES (5,5,5)**

PR: Freshman English or equivalent and sophomore standing. Masterpieces of music, visual arts, theater, literature, and philosophy in varying cultural and historical situations.

**HUM 315. THE HUMANITIES (4)**

Studies in Culture: The classical and medieval periods. Analyses of selected works of classical and medieval architecture, drama, sculpture, intellectual prose, and other art forms. Typical course focus is on architecture, drama, and intellectual prose. (Formerly CBS 315.)

**HUM 316. THE HUMANITIES (4)**

Studies in Culture: The Renaissance and the 19th Century. Analyses of selected fiction, drama, painting, architecture, music, and other art forms. Typical course focus is on painting and music. (Formerly CBS 316.)

**HUM 317. THE HUMANITIES (4)**

Studies in Culture: The 20th Century. Analyses of selected works of 20th Century art, primarily emphasizing film, with secondary emphases on painting and fiction. (Formerly CBS 317.)

**HUM 411, 412. TWENTIETH-CENTURY ARTS AND LETTERS (5-5)**

PR: Sophomore standing or CI. Case studies in the arts and letters of the twentieth century.

**HUM 415, 416. ARTS AND LETTERS OF THE ROMANTIC PERIOD (4-4)**

PR: Sophomore standing or CI. Case studies in the arts and letters of the romantic period.

**HUM 417, 418. NINETEENTH-CENTURY ARTS AND LETTERS (4-4)**

PR: Sophomore standing or CI. Case studies in the arts and letters of the nineteenth century.
HUM 419, 420. THE ENLIGHTENMENT (4,4)
  PR: Sophomore standing or CI. Case studies in the arts and letters of the Enlightenment.
HUM 423, 424. RENAISSANCE ARTS AND LETTERS (4,4)
  PR: Sophomore standing or CI. Case studies in the arts and letters of the Renaissance.
HUM 427, 428. MEDIEVAL ARTS AND LETTERS (4,4)
  PR: Sophomore standing or CI. Case studies in the arts and letters of the middle ages.
HUM 431, 432. CLASSICAL ARTS AND LETTERS (4,4)
  PR: Sophomore standing or CI. Case studies in the arts and letters of the ancient world.

FOR SENIORS AND GRADUATE STUDENTS
HUM 535, 536, 537. HUMANITIES IN AMERICA (4,4,4)
  Case studies in the arts and letters of the United States.
HUM 538. AFRICAN ARTS AND LETTERS (4)
  Examples from both the traditional and contemporary arts and letters of Africa. Africa as a subject in Western art.
HUM 539, 541. HUMANITIES IN THE ORIENT: INDIA (4)
  Examples from the arts and letters of India and the relationship of these arts to the Hindu and Buddhist philosophy-religions.
HUM 542. HUMANITIES IN THE ORIENT: CHINA (4)
  Examples from the arts and letters of China; their relationship to Taoism, Confucianism and other Chinese philosophies; Western influences on 20th-century Chinese arts and letters.
HUM 543. HUMANITIES IN THE ORIENT: JAPAN (4)
  Examples from the arts and letters of Japan, their relationship to Zen Buddhism and other Japanese philosophy-religions; Western influences on 20th-century Japanese arts and letters.
HUM 545. LATIN AMERICAN ARTS AND LETTERS (4)
  Analysis of selected Latin American works of art in their cultural context.
HUM 581. DIRECTED STUDY (1-5)
  Specialized individual study determined by the student’s needs and interest.
HUM 591. SELECTED PROBLEMS IN HUMANITIES (3)
  Problems in the interrelationships among the fine arts and the natural, social and behavioral science. A senior essay for humanities majors.

FOR GRADUATE STUDENTS ONLY
HUM 611. STUDIES IN CONTEMPORARY ARTS AND LETTERS (4)
  Concentration on major artists and recent trends.
HUM 623. STUDIES IN THE RENAISSANCE (4)
  Masterpieces and major artists of the Renaissance in Continental Europe and England.
HUM 681. DIRECTED STUDY (1-4)
  Specialized independent study determined by the student’s needs and interests.
HUM 683. SELECTED TOPICS IN HUMANITIES (1-4)
  Each topic is a course of study in a subject not covered by a regular course. May be repeated for credit with change of content.

ITALIAN (ITA)—see Modern Languages

INTERDISCIPLINARY LANGUAGE-LITERATURE (LLI)

LOWER LEVEL COURSES
LLI 200. USE OF THE LIBRARY (2)
  An introduction to the resources of the University of South Florida Library. Emphasis will be placed on library materials germane to the course work of the undergraduate. (S/U only.)

UPPER LEVEL COURSES
LLI 383. SELECTED TOPICS (3-5)
  Course contents depend on student’s need and instructor’s interest. Agreement with instructor required prior to registration.

FOR SENIORS AND GRADUATE STUDENTS
LLI 583. SELECTED TOPICS (2-5)
  Course contents depend on student’s need and instructor’s interest. Agreement with instructor required prior to registration.

LINGUISTICS (LIN)

Director & Associate Professor: R. W. Cole; Professors: A. M. Gessman, R. C. O’Hara; Associate Professor: S. I. Ritterman; Assistant Professors: J. P. Broderick, J. C. Callisch III, J. J. Smith.

UPPER LEVEL COURSES
LIN 301. INTRODUCTION TO LINGUISTICS (4)
  Introduction to the basic principles of linguistic science: phonological and grammatical analysis and description; language change and genetic relationships. (Note: One section of LIN 301 is for Anthropology majors and requires ANT 201 as a prerequisite.)

LIN 321. LANGUAGE AND MEANING (4)
  A survey introduction for non-specialists to the basic principles of semantics and the way language conveys ideas.
LIN 401. DESCRIPTIVE LINGUISTICS (4)
  PR: LIN 301, ENG 475, or CI. Introduction to the basic techniques of formalizing linguistic descriptions through elementary phonological, morphological, and syntactic data solution problems drawn from a variety of languages. Both taxonomic and generative analyses and descriptions will be developed and compared.
LIN 483. SELECTED TOPICS (3-5)
  PR: CI. Course content depends upon students’ needs and
instructor's interest and may range over the entire field of linguistics.

FOR SENIORS AND GRADUATE STUDENTS

LIN 511. HISTORY OF LINGUISTIC THOUGHT (4)
Survey of the development of language study in the West from Antiquity to the present: Classical and medieval theories of language; origins of traditional grammar; rationalist linguistic theory and philosophical grammar, and an examination of the origin of contemporary linguistic controversies.

LIN 530. FIELD METHODS (4)
PR: LIN 401 and SPE 503. An introduction to the techniques of gathering language data in the field and to making an analysis of such data. Native informants are brought on campus to replicate the field experience: students will become familiar with equipment and tools used by linguists in the field.

LIN 540. SOCIOLINGUISTICS (4)
PR: LIN 301 or ENG 475. An analysis of the interrelation of a language and the structure of the society using it. The linguistic behavior patterns characteristic of particular social, political, economic, educational, and racial groups. Problems in communication between strata.

LIN 541. PSYCHOLINGUISTICS (4)
PR: LIN 301 or ENG 475. The nature of linguistic structure and its correlates in behavior and perception. Examination of the hypotheses of Whorf, Chomsky, and others.

LIN 543. SEMIOTICS (4)
PR: CI. Introduction to kinematics and paralinguistics: the linguistic structure of gesture, proxemics, and other significant areas of non-verbal communication and signaling behavior.

LIN 545. DEVELOPMENTAL PSYCHOLINGUISTICS (4)
PR: LIN 301, ENG 475, or CI. A survey of current research and theory in the processes of normal language acquisition and development.

LIN 551. STUDIES IN COMPARATIVE STRUCTURE (5)
PR: CI. An introduction to linguistic typology consisting in a systematic comparison of characteristic representatives of the various language types, such as Vietnamese, Malay, Hungarian, Swahili, Sanskrit, Hebrew, and others. No knowledge of any of these languages on the part of the student is presumed.

LIN 581. INDIVIDUAL RESEARCH (3-5)
PR: CI. Specialized individual work in area of student's interest.

LIN 583. SELECTED TOPICS (3-5)
PR: CI. Course content depends upon students' needs and instructor's interest and may range over the entire field of linguistics. Study of languages not otherwise offered, such as Japanese and Hindi. May be repeated.

LIN 585. DIRECTED READING (4)
PR: CI. Readings in special topics. Must be arranged prior to registration.

FOR GRADUATE STUDENTS ONLY

LIN 600. INTRODUCTION TO GRADUATE STUDY IN LINGUISTICS (2)
Required of all M.A. candidates. An introduction to the aims and methodology of linguistics as a graduate discipline: the field of linguistics and its relationship to adjacent arts and sciences; bibliographical resources; methods of research; and, a brief survey of the historical development of linguistics and current issues in the field.

LIN 601. SYNTACTIC DESCRIPTION (4)
Analysis of syntactic descriptions of various languages through data-solution problems in co-occurrence relations, agreement, permutation, conjoining, and embedding. Feature grammars and other models are discussed.

LIN 602. PHONOLOGICAL DESCRIPTION (4)
Analysis of the phonological component of a grammar, its role and formal structures. The generative model is compared to taxonomic descriptions. Theory and data-solution problems.

LIN 611. HISTORICAL LINGUISTICS (4)
An advanced survey of the principles and methodology of historical linguistics.

LIN 612. COMPARATIVE LINGUISTICS (4)
The principles and methodology of comparative linguistics, focusing upon a major Indo-European subfamily, such as Romance, Germanic, or Balto-Slavic.

LIN 621. STUDIES IN SEMANTICS (4)
Selected problems in the area meaning and the relationship between linguistic structure and cognition. Mappings of presupposition, kinship fields, emotive concepts, and other problems are surveyed. Theories such as Fodor-Katz-Chomsky, Ross-Lakoff-McCawley, and others are contrasted.

LIN 631. FORMAL STYLISTICS (4)
Studies in the relationship between the development of a language and literary criticism; developments in modern linguistic theory and their application to problems of aesthetics, literary structure, and style.

LIN 641. PRINCIPLES OF ENGLISH AS A SECOND LANGUAGE (4)
Analysis of the phonological, morphological, and syntactic features of English as a basis for linguistic application to problems of English language acquisition by non-native speakers.

LIN 661. TOPICS IN THEORETICAL LINGUISTICS (4)
Offerings will include current issues in any area of linguistic theory.

LIN 671. TOPICS IN APPLIED LINGUISTICS (4)
Offerings may include topics in such fields as sociolinguistics, psycholinguistics, and stylistics.

LIN 683. SELECTED TOPICS (3-5)
Content will depend upon instructor's interests and student's needs. Such topics as computational and mathematical linguistics, biolinguistics, dialectology and linguistic geography, and pidgins and creoles may be treated, as well as the study of the structures of languages not ordinarily taught.

LIN 685. DIRECTED READING (3-5)
Readings in special topics and specialized individual work. Must be arranged prior to registration.

LIN 699. RESEARCH AND THESIS (1-8)
Required of all candidates for the M.S. degree in Linguistics. Registration may be repeated, but accumulated credit may not exceed eight hours.

MANAGEMENT (MAN)


UPPER LEVEL COURSES

MAN 301. PRINCIPLES OF MANAGEMENT (5)
Study of the fundamentals of management, integrating the classical, behavioral, and management science approaches into an organized system of concepts and practices.
MAN 312. INTRODUCTION TO MANAGEMENT SCIENCE (4)
A survey of management science techniques and their application to problem solving and decision making. Some knowledge of accessing computer subroutines is needed, however, arrangements can be made for interested students to meet this requirement during the early part of the course.

MAN 322. ORGANIZATIONAL BEHAVIOR ANALYSIS (4)
A survey of the behavioral and research literature in the behavioral and social sciences relevant to organizational functioning. Emphasis will be placed on the role of the individual, the group and inter-group relations in organizational settings and the impact of managerial environments on organizational behavior and change. Two hours lecture, two hours management problem laboratory.

MAN 332. INDUSTRIAL RELATIONS (4)
PR: MAN 301 or CI. A conceptualization of the administrative problems arising from unionization. Emphasis on the relationships between management and employee representatives in private and public employment, and on the historical and legal framework of industrial relations.

MAN 341. PERSONNEL MANAGEMENT (3)
PR: MAN 301 or CI. Systematic analysis of major functions in personnel, including manpower planning, recruiting, selection, job evaluation, performance appraisal, wage and salary, incentives, training and development, etc., emphasizing the role of the individual in the organization.

MAN 421. OPERATIONS MANAGEMENT: A SYSTEMS APPROACH (3)
A systems approach to the study of effective operations management tools and concepts. Computerized approaches to problem solving are introduced and an emphasis is placed on interpretation of output for decision making purposes. A knowledge of the basic tools and techniques of management science is required.

MAN 431. ADVANCED ORGANIZATIONAL BEHAVIOR ANALYSIS (3)
Methods of analyzing complex organizational functioning and performance will be studied using selected behavioral models. This course assumes a familiarity with the literature in the field of organizational behavior and its general implications for management. One hour lecture and two hours management laboratory.

MAN 451. INTERPERSONAL DYNAMICS LABORATORY (3)
The development of first hand understanding of the personal, inter-personal and inter-group factors involved in social interaction. A general knowledge of the literature in the field of organizational behavior and social psychology is assumed. One hour lecture and two hours behavior dynamics laboratory.

MAN 453. CHANGING ORGANIZATIONS (3)
The central unifying concept is the role of the Change Agent. Theory and research related to social-organizational change and resistance to change is considered along with its implications for the design of conditions and their differential effects on organizational climate. A knowledge of the literature in organizational and social behavior is necessary. Lecture and management laboratory.

MAN 461. LABOR RELATIONS LAW (3)
A survey of the various legal constraints applicable to labor-management relations. Includes practice in use of library resources for discovering statutes, cases or administrative rulings. This course assumes a general understanding of the organizations of management and union, the role of each in collective bargaining, and traditional methods for resolving industrial conflict. Three hours laboratory under supervision of instructor.

MAN 465. LABORATORY IN THE RESOLUTION OF GROUP CONFLICT (3)
An application of conflict resolution theory to a variety of social settings, including industrial and governmental organizations and inter-racial conflict. This course assumes a general understanding of inter-personal and group behavior. Three hours laboratory under the supervision of instructor.

MAN 471. MANAGEMENT SCIENCE APPLICATIONS (3)
A study of the application of management science models to typical organizational problems. Emphasis is on (1) problem formulation (2) data collection and (3) interpretation and implementation of solutions. A laboratory using decision science problems of organizations is a major part of this course. A knowledge of the basic tools and techniques of management science is required.

MAN 472. MANAGEMENT SCIENCE MODELS (3)
A study of the theoretical basis of various management science models. These include linear, integer, dynamic, quadratic and geometric programming; plus, gradient methods and branch and bound. A knowledge of the basic tools and techniques of management science is required.

MAN 473. SIMULATION AND MODELING TECHNIQUES (3)
A study of manual and computer simulation techniques and their application to problem solving in management (behavioral and quantitative). Knowledge of a computer language is advised as well as knowledge of the basic tools and techniques of management science is required.

MAN 489. GUIDED RESEARCH IN MANAGEMENT (1-4)
PR: Graduating quarter or CI. Student engages in integrating field project, or other research in which special interests and as much course work as possible can be utilized. Only most general departmental supervision is exercised; management is by results.

MAN 499. INTEGRATIVE SEMINAR IN MANAGEMENT (3)
PR: MAN 312, 322, 332, two additional upper level MAN courses, and senior standing; or CI. A capstone course intended to integrate the concepts, generalizations, principles, and skills learned separately in previous, more specialized courses in Management and Administration. Emphasis on objectives, strategy, major policy, situation analysis, decision-making, action planning, and implementation.

FOR SENIORS AND GRADUATE STUDENTS
MAN 501. SURVEY OF MANAGEMENT (3)
An analysis of the theory and practice of management, including study of the determination of goals and means, the functions of management, decision-making, and the administrative process.

MAN 572. URBAN MANAGEMENT (3)
PR: CI. Urban environment identified and described as a management system of interest groups, organizational structure and institutional behavior constraints. Measurement and collection of data as system model input. Strategy and tactics of decision making and conflict resolution which urban managers need to control urban crisis.

FOR GRADUATE STUDENTS ONLY
MAN 601. HUMAN RESOURCE MANAGEMENT (3)
Investigates some of the complex factors important for a basic understanding of human behavior in formal organizations. Within a systems framework (the variables considered are mutually dependent) and using the case method approach, discussion topics include motivational aspects of individual, inter- and intra-group behavior.

MAN 602. ADMINISTRATIVE DECISION PROCESSES (3)
PR: GBA 603, GBA 605 (both may be concurrent). Analysis of the rational components of executive decision and action: objective functions, constraints, admissible courses of ac-
tion, search, sequential learning, and decision revision. Students build models of characteristic systems and use optimization techniques and heuristic simulation to investigate model properties.

MAN 603. ORGANIZATIONAL COMMUNICATIONS (3)
Analysis, organization, and presentation of research findings. Students learn through individual efforts and class discussion how to define a topic, determine appropriate research design, collect and organize data relevantly, and present written material in forms acceptable to industry and the academic community. Each student is expected to complete at least one research project and contribute to the efforts of his colleagues through group interaction in weekly "workshop" sessions which typify the class meetings.

MAN 604. SIMULATION AND ANALYSIS OF ADMINISTRATIVE SYSTEMS (3)
PR: GBA 603 or CI. To present a method of modeling problems which cannot be solved analytically, running the model through time, collecting statistical data on the models operation, and validating the results. Modified models are then tested and the process continues until the "optimum" model is achieved. Examples are considered from many functional areas and a project at a local business or government agency is "solved."

MAN 606. ADVANCED MANAGEMENT SCIENCE (3)
PR: GBA 603, MAN 602. Study of current operations research techniques and their applications in business.

MAN 607. SEMINAR IN INDUSTRIAL RELATIONS (3)
An in-depth study and analysis of critical and/or current problems in industrial relations.

MAN 608. SEMINAR IN OPERATIONS ANALYSIS (3)
PR: GBA 603, MAN 602. Analytical study of planning and control with particular stress on operational problems and decision-making. Basic analytical tools useful in operational situations will be examined. These tools are related to such areas in scheduling, budgeting, quality, as well as other selected topics.

MAN 609. ADVANCED INTERPERSONAL DYNAMICS (3)
PR: MAN 601 or equivalent. The study of personal and interpersonal behavior through experiencing the information via experiments, as well as a study of the relevant literature.

MAN 610. SEMINAR IN QUANTITATIVE METHODS I (3)
PR: GBA 603, GBA 605, MAN 606, MAN 608. Operational analysis of management measurements including: cost-benefit analysis, payoff-trees and tables, PERT/CPM, mathematical programming, heuristics, simulation, and the computer as a tool in managerial decisions. Emphasizes the functional use of quantitative methodology applied to a real problem.

MAN 611. SEMINAR IN ORGANIZATION THEORY (3)
PR: MAN 601. The study of the structure, functions, and dynamics of modern organizations. Theories of behavior are applied to an analysis of formal and informal organizations. Emphasis is placed on surveying the literature and developing a research design for an empirical test of a student-selected topic.

MAN 613. SEMINAR IN ORGANIZATIONAL CHANGE (3)
PR: MAN 601. The study of organizational change with special stress on adaptation of the firm, or sub-strata of the firm, to environmental alteration. Intra-firm analysis, and organizational development are also covered.

MAN 615. SEMINAR IN ADMINISTRATIVE POLICY (3)
PR: Final quarter of M.S. degree program or CC. A course designed to present an organized and integrated approach to the managerial decision-making process. This course should be taken in the final quarter of the program.

MAN 621. THE MANAGEMENT PROCESS (4)
PR: Post master status and CC. Scientific tools for efficient organization, direction and evaluation of administrative systems and projects. Topics include goal specification, search procedures, systems design, program budgeting, performance measurement and adaptive control.

MAN 622. MANAGEMENT OF PROFESSIONALS (4)
PR: Post-master level, basic foundations in Psychology and Sociology and CC. Problem-solving to emphasize concepts and theories explaining organizational behavior of professional employees.

MAN 624. BEHAVIOR IN ORGANIZATIONS (3)
PR: MAN 601 or MAN 622 or CI. Topics will emphasize the role of a manager in either private or public sectors as discussed in the literature with special emphasis on applications of concepts. Attention will be concentrated on managerial situations other than blue collar workers in production, i.e. service of governmental organizations, especially staff positions.

MAN 683. SELECTED TOPICS IN MANAGEMENT (1-6)
The content and organization of this course will vary according to the current research interest of the faculty and needs of students.

MAN 699. FIELD RESEARCH OR THESIS (6)
PR: Consent of Chairman

MARINE SCIENCE (OGY)


UPPER LEVEL COURSES
OGY 311. INTRODUCTION TO OCEANOGRAPHY (3)
Topics in biological, chemical, geological and physical oceanography presented in lectures by a number of specialists in these fields.

FOR SENIORS AND GRADUATE STUDENTS
OGY 521. CHEMICAL OCEANOGRAPHY (4)
PR: CHM 213 and CI. The ocean as a chemical system, including composition, physical-chemical aspects, role of nutrients, trace metals, interaction between bottom and overlying water, modern methods of analysis in routine use in oceanography. Lec.-lab.

OGY 531. GEOLOGICAL OCEANOGRAPHY (4)
PR: Graduate standing or CI. An introduction to the physical, historical sedimentary, and structural geology of the ocean basins and their borders. Lec.-lab.

OGY 541. PHYSICAL OCEANOGRAPHY (4)
PR: Graduate standing or CI, PHY 305. The world ocean including its morphology, physical properties, currents, waves, tides, heat budget, and related topics. Lec.-lab.

OGY 551. BIOLOGICAL OCEANOGRAPHY (4)
PR: Graduate standing or CI, BIO 201-203. The study of life in the sea with special reference to distribution, reproduction, adaptation, competition, and populations. Lec.-lab. For students who have not majored in a biological science.

OGY 583. SELECTED TOPICS IN OCEANOGRAPHY (1-4)
PR: CI. Special topics in biological, chemical, geological, and physical oceanography.

FOR GRADUATE STUDENTS ONLY
OGY 610. SCIENTIST-IN-THE-SEA I, HYPERBARIC OPERATIONS (4)
PR: CI and diver certification (NAV1 or equiv.). Basic principles, physiology, and psychology involved in submarine
hyberbaric operations, inside and outside habitats. Lec.-lab. (Also listed as EGB 610.)

**OGY 611. SCIENTIST-IN-THE-SEA II, MARINE SCIENCES** (4)
PR: CI and diver certification (NAVI or equiv.). Research equipment and techniques for underwater work in oceanography presented by practicing research workers in the field. Lec.-lab. (Also listed as EGB 611.)

**OGY 612. SCIENTIST-IN-THE-SEA III, UNDERWATER ENGINEERING** (4)
PR: CI and diver certification (NAVI or equiv.). The ocean as a constraint for construction and devices. Factors involved in planning and design of underwater operations and experimental devices. Lec.-lab. (Also listed as EGB 612.)

**OGY 622. METHODS IN CHEMICAL OCEANOGRAPHY** (2)
PR: OGY 521 or CI. An intensive study of the use and limitations of field and laboratory equipment which is a standard form of chemical oceanographic research into the behavior of dissolved and particulate constituents in seawater.

**OGY 632. METHODS IN GEOLOGICAL OCEANOGRAPHY** (2)
PR: OGY 531 or CI. Description and application of the modern techniques of geology and geophysics used to investigate the marine environment. Included in the subject matter are basic remote sensing techniques, sampling problems, seismic profiling, laboratory methods and interated data analysis. Lec.-lab., field trips.

**OGY 642. METHODS IN PHYSICAL OCEANOGRAPHY** (2)
PR: OGY 541 or OGY 521 and CI. Field and laboratory techniques for acquisition, reduction, display, and discussion of physical oceanographic data (e.g., waves, tides, currents, dissolved and suspended constituents).

**OGY 643. OCEANIC MODELING** (3)
PR: OGY 541, MTH 501 or equivalent, and CI. Theory of oceanic modeling including classical analytic wind-driven circulation models, thermohaline models, and both explicit and implicit techniques for numerical modeling of circulation, upwelling, tidal velocities, and diffusion.

**MARKETING (MKT)**


**UPPER LEVEL COURSES**

**MKT 301. BASIC MARKETING** (5)
PR: EGN 201-202 or CI. Survey of the marketing of goods and services within the economy. The integration of functional, commodity, and institutional approaches from the consumer and managerial viewpoints.

**MKT 311. PRINCIPLES OF SALESMSHIP AND SALES MANAGEMENT** (3)
PR: MKT 301. Personal selling and sales management as basic elements in the marketing strategy of firms. Includes the scientific management of resources and the dynamics of interpersonal and small group behavior and decision processes.

**MKT 312. PRINCIPLES OF ADVERTISING AND SALES PROMOTION** (3)
PR: MKT 301. A comprehensive coverage of advertising, stressing purposes, techniques, organization, research, and media selection including relationships with other marketing mix components. Consideration given to economic and social aspects of advertising and total promotional strategies.

**MKT 315. MARKETING INSTITUTIONS AND CHANNELS** (4)
PR: MKT 301. A detailed study of marketing channels as a functional area of marketing management responsibility and as a part of marketing strategy. Attention given to wholesaling and retailing and their structural, dynamic interrelationships including distribution logistics.

**MKT 316. MARKETING MODELS AND MARKETING SYSTEMS** (3)
PR: EGN 331, MKT 315, and GBA 333. An investigation of the utility of formal, logical, mathematical, and other quantitative methods and models as these might be applied to marketing management.

**MKT 401. MARKETING LOGISTICS** (3)
PR: MKT 315, EGN 331, GBA 333, or CI. Analysis of the logistics of marketing systems for firms engaged in the marketing of goods and services. Component parts of each system are studied and analytical tools are presented for selecting those alternatives which will attain the goals of the firm.

**MKT 403. PUBLIC RELATIONS AND THE MARKETING PROCESS** (3)
PR: MKT 312 or CI. Principles, practices, and problems in public relations as an integrated part of and supplement to marketing management responsibilities and decisions.

**MKT 405. INDUSTRIAL MARKETING** (3)
PR: MKT 315. Problems of marketing industrial goods. Characteristics of markets, channels, industrial sales, promotional practices, research and marketing policies.

**MKT 407. MANAGEMENT OF ADVERTISING AND SALES PROMOTION** (3)
PR: MKT 312 or CI. Discussion and analysis of cases bearing
on managerial aspects of advertising and sales promotion including research, budget determination, strategy, tactics, and evaluation of results.

MKT 409. INTERNATIONAL MARKETING (3)
PR: MKT 312, MKT 315, or CI. A study of the procedures and problems associated with establishing marketing operations in foreign countries. The institutions, principles and methods involved in the solution of these business problems will be treated as well as effects of national differences on business practices.

MKT 411. MARKETING RESEARCH (4)
PR: MKT 312, MKT 315, ECN 331 or MTH 345; or CI. A study of research methods applicable to problem-solving in the field of marketing.

MKT 413. CONSUMER BEHAVIOR (3)
PR: MKT 301 or CI. An investigation and application of the behavioral factors affecting consumer demand. Consideration given to industrial, governmental and ultimate consumers.

MKT 414. SEMINAR IN MARKETING AND CONSUMER BEHAVIOR RESEARCH (3)
PR: MKT 312, MKT 411, MKT 413. Indepth discussion, formulation application, and evaluation of advanced research techniques and practices as currently applied to facilitate marketing decisions.

MKT 417. RETAILING MANAGEMENT (3)
PR: MKT 301, MKT 315, MKT 413. A comprehensive analysis of the retailing structure, institutions and environment. To include pertinent management theories and practices of organizing, planning and controlling retail operations.

MKT 419. MARKETING MANAGEMENT PROBLEMS (4)
PR: MKT 411, MKT 413, and 3 other MKT courses, or CI. The integration of marketing knowledge applied to decision roles in managing the total marketing effort of firms, and coordination with other major functional areas on specific problems.

MKT 489. SPECIAL STUDIES IN MARKETING (3)
PR: MKT major and CI. Intensive independent research in marketing under the direction of a major professor; progress and final analysis reported in seminar.

FOR SENIORS AND GRADUATE STUDENTS

MKT 501. SURVEY OF MARKETING (3)
PR: ECN 501. A critical analysis of the field of marketing including aspects of marketing policies, institutions, research, and trends. Special emphasis given to product development, pricing strategy, channel selection, and promotion as a basis for marketing management decisions. Assigned readings, discussions, and reports.

MKT 502. ADVANCED MARKETING PROBLEMS (3)
PR: MKT 501 or CI. A study of the marketing problems of the firm approached from a management point of view. Emphasis is placed upon the development of the student's ability to analyze marketing situations, identify problems, determine solutions, implement corrective action, and plan marketing strategy.

FOR GRADUATE STUDENTS ONLY

MKT 601. ADVANCED MARKETING PROBLEMS (3)
PR: MKT 501 or ECN 605 or CI. A study of the marketing problems of the firm approached from a management point of view. Emphasis is placed upon the development of the student's ability to analyze marketing situations, identify problems, determine solutions, implement corrective action, and plan marketing strategy.

MKT 602. ANALYSIS FOR MARKETING MANAGEMENT (3)
PR: MKT 601, GBA 603, GBA 605, or CI. The use of quantitative techniques and analytical concepts in marketing decision making; marketing research model building and simulation; selected statistical decision techniques and computer applications.

MKT 603. SEMINAR IN MARKETING (3)
PR: MKT 501 or CI. The study of contemporary marketing thought, advanced marketing concepts, and recent developments in the field of marketing. Readings, discussions, and individual investigation.

MKT 605. BEHAVIORAL CONCEPTEs IN MARKETING DECISION MAKING (3)
PR: MKT 601 or CI. The application and techniques of the behavioral sciences to the understanding and improvement of the marketing process and decision making concerning consumer behavior.

MKT 607. SEMINAR IN PROMOTIONAL POLICY AND STRATEGY (3)
PR: MKT 605 or CI. An analysis of theories and practices of advertising, selling and sales management, and sales promotion as they relate to the total marketing program of firms. Emphasis upon the coordination of promotional policy and strategy.

MKT 609. MARKETING CHANNELS AND PHYSICAL DISTRIBUTION MANAGEMENT (3)
PR: MKT 602, MKT 605, or CI. An analysis of the development of integrated distribution systems. Channel alternatives including the institutions involved and physical flow as a part of marketing strategy.

MKT 611. MARKETING RESEARCH AND INFORMATION SYSTEMS (3)
PR: MKT 602, GBA 603, GBA 605, or CI. A study of the marketing research process, methods and techniques and the need and applicability of information systems.

MKT 683. DIRECTED RESEARCH IN MARKETING (1-6)
PR: MKT 601, MKT 602, and CI. Intensive advanced independent research in marketing guided by a marketing professor.

MASS COMMUNICATIONS (COM)


UPPER LEVEL COURSES

COM 300. SURVEY OF MASS COMMUNICATIONS (3)
The functions of agencies of mass communication and their impact upon society; critical analyses of press performance in relation to current events; evaluation of the press through a study of its history. Not open for credit to Mass Communications majors.

COM 301. THE POPULAR ARTS IN AMERICA (4)
A survey of the growth of the popular arts (motion pictures, radio, television, art, best sellers, jazz and other forms of music, the comics, etc.) as mirrors, transmitters and transformers of American cultural values.

COM 302. WRITING FOR THE MASS MEDIA (4)
PR: Sophomore standing; 2.0 GPR; grade of "C" in English 101, 102, 103; typing proficiency. An introduction to the basic skills of writing for the mass media with practice in library research, persuasive writing, and informational writing.

COM 303. MASS COMMUNICATIONS AND SOCIETY (4)
PR: Sophomore standing; 2.0 GPR; grade of "C" in English 101, 102, 103; typing proficiency. A survey of the history, theory, processes, and philosophy of mass communications and the mass media in the United States, and their relationship to the other major institutions of American society.

COM 311. INTRODUCTION TO ADVERTISING (4)
PR: COM core. A study of the structures, functions, and persuasive language of advertising in mass media with attention to social, political, economic and legal aspects.

COM 312. ADVERTISING MEDIA STRATEGY (4)
PR: COM 311. Problems, techniques, strategy of media
research, planning, budgeting, and effective utilization in advertising.

COM 313. ADVERTISING COPY (4)
PR: ECN 100 or ECN 201, MKT 301, COM 311. Study and laboratory experience in preparation of advertising copy for newspapers, magazines, radio, television, direct mail, outdoor displays and special items.

COM 314. RADIO-TELEVISION ADVERTISING (4)
PR: COM 311. An intensive study and analysis of radio and television for advertising purposes, including copywriting, script and storyboard preparation, time buying and selling techniques, audience research methods, and basic production concepts.

COM 321. MAGAZINE ARTICLE AND FEATURE WRITING (4)
PR: COM 330, ENG 321, ENG 325, or Cl. Planning, researching, writing and marketing articles for general and special interest magazines and newspaper magazine supplements; experience in developing article ideas; inductive analysis of contemporary magazine articles.

COM 325. MAGAZINE EDITING (4)
PR: COM 321 or Cl. Comparative study of types of magazines and business papers as to objectives and content; planning to meet magazine objectives and reader interest; article and photograph selection and preparation for printing; use of research methods in planning and evaluation; ethical and legal problems of the editor.

COM 330. BEGINNING REPORTING (4)
PR: COM core. Basic instruction in news judgment, sources of news, newsgathering and newswriting techniques. Typing ability is required.

COM 331. ADVANCED REPORTING (4)
PR: COM 330. Getting information and writing the more complex and specialized story, techniques of investigative and analytical reporting, including ethical and legal considerations.

COM 334. CRITICAL WRITING: EDITORIALS, REVIEWS, COLUMNS (4)
PR: COM 331, COM 433. Interpretive and opinion writing for the mass media. Analysis and discussion of current events as a basis for critical thinking and editorial writing; evaluation of editorial pages of leading newspapers. Study of journalistic techniques involved in writing art, drama, music and book reviews and satire, sports or personal columns.

COM 337. REPORTING PRACTICUM (2)
PR: COM 435 and Cl. For selected News-Editorial Sequence majors. Practical experience outside the classroom in a live newspaper reporting situation where the student works for academic credit under the tutelage of a professional practitioner.

COM 338. NEWSPAPER MANAGEMENT (2)
PR: COM 330 or Cl. A pro-seminar to discuss advertising, business, circulation, mechanical, personnel, promotional, and news-editorial operations of the press with editors and managers of leading daily and weekly newspapers.

COM 341. PRINCIPLES OF PUBLIC RELATIONS (4)
PR: COM core. The functions of public relations within corporate and institutional structures; ethical standards of practice, and relationships of the practice to the public media and other modes of contemporary communication.

COM 351. LITERATURE AND THE FILM (3)
PR: ENG 102. A study of what happens when a novel is adapted for the movies; of the insights of modern writers and literary critics into the motion picture as an art form analogous to, yet distinct from, literature and of the impact of literature on film-making. Not open for credit to COM majors.

COM 352. PHILOSOPHY AND THE FILM (3)
A study of the philosophical implications of the motion picture as an art form; esthetics in general versus film esthetics; the connections between the world views of such modern philosophers as Bergson, Whitehead, and Bradley, and the world view expressed through the motion picture; the connections between "pure ideas," the ideas in the documentary film, and the ideas in the fictional film. Not open for credit to COM majors.

COM 353. INTRODUCTION TO FILM WRITING (4)
PR: COM 354 or Cl. An introduction to the techniques of writing for the film employing adaptations from fiction and examinations of scripts as models and as subjects for critical analysis. Special emphasis on learning the Language of the Camera.

COM 354. THE FILM AS MASS COMMUNICATION I: SYNTAX (4)
PR: COM core. The language, conventions, elements and patterns of the film medium as related to current models of effective mass communication and new theories of non-verbal communication. Concurrent laboratory experiences in control of light and line.

COM 355. THE FILM AS MASS COMMUNICATION II: RHETORIC AND STYLISTICS (4)
PR: COM 354. A continuation of COM 354 to include the effective arrangements of scenes and sequences in motion picture and television films. Concurrent laboratory experiences in sound and editing.

COM 356. THE FILM AS MASS COMMUNICATION III: WORKSHOP (4)

COM 357. CLASSICS OF THE SILENT FILM (4)
Examples of the silent film studies from social, intellectual, historical, and artistic points of view.

COM 358. CLASSICS OF THE SOUND FILM (4)
Examples of the sound film studies from social, intellectual, historical, and artistic points of view.

COM 361. INTRODUCTION TO BROADCASTING (4)
PR: COM 356. A survey of the organization, structure, and function of the broadcasting industry. (Formerly SPE 241)

COM 362. BROADCAST NEWS (4)
PR: COM 330. The study and methods in gathering, writing and editing newscasts for radio and television. (Formerly COM 335)

COM 363. BROADCAST ANNUCING (4)
PR: COM 361. Development of skills required for effective announcing and other appearances before microphone and cameras. (Formerly SPE 343)

COM 364. RADIO PRODUCTION AND DIRECTION (4)
PR: COM 361. Radio production and direction; laboratory and broadcast experiences (Formerly SPE 347)

COM 367. RADIO PRACTICUM (2)
PR: COM 364 and Cl. The study, rehearsal, and production of radio programs and materials. (Formerly SPE 348)

COM 368. WRITING FOR RADIO AND TV (4)
PR: COM 361. The writing of radio and television scripts such as documentaries, children's programs, commercials, dramas, talks and demonstrations. (Formerly SPE 349)

COM 371. PHOTOJOURNALISM (4)
PR: COM core. Camera operation, darkroom techniques, picture composition; editing, ethics, history and laws in connection with photojournalism.

COM 372. PHOTOJOURNALISM II (4)
PR: COM 371 or Cl. Advanced process and practice of photography for publication. Content includes advanced camera and laboratory techniques, publication requirements and theory of photochemical color separation used in magazine and newspapers. Emphasis is placed on student production.

COM 375. TYPOGRAPHY I (4)
PR: COM core. The history and design of type, major classifications of type faces, typographic nomenclature, printer's measurements and the science of type design and identification. Laboratory work.

COM 376. TYPOGRAPHY II (4)
PR: COM 375 or Cl. A study of the history of typesetting,
the emergence of computers and coldtype composition; extensive study and use of copyfitting methods for body type, display, and headlines; principles of typography and photocomposition including readability and legibility. Laboratory work.

COM 383. SELECTED TOPICS IN MASS COMMUNICATION STUDIES (1-4) Courses designed to meet current or specific topics of interest to the instructor and students.

COM 400. INTERNATIONAL COMMUNICATION (4) Mass communications as internal and international systems; flow of the news; international news communications networks; satellite communication; overseas activities of American media interests; international propaganda; communication and national development; international media organizations and their activities.

COM 403. HISTORY AND PRINCIPLES OF COMMUNICATIONS LAW (4) PR: COM core. Historic and Constitutional backgrounds of freedom and control of expression, statutory enactments, major Supreme Court cases, court decisions and administrative rulings which have shaped legal control of communications.

COM 405. GOVERNMENT AND THE MEDIA (4) PR: COM 403. The relationships between government and the media, with emphasis on current activities of such regulatory agencies as the Federal Communications Commission, the Federal Trade Commission and other commissions; the courts, the Congress and the Executive; examination of media and industry codes and standards.

COM 414. ADVERTISING CAMPAIGNS (4) PR: COM 312, 313. Advanced advertising course requiring planning and production of complete general advertising campaign, including research, production methods, budgeting and media schedules.

COM 417. ADVERTISING PRACTICUM (2) PR: Senior standing and Cl. For selected Advertising Sequence majors. Practical experience outside the classroom in a live advertising situation where the student works for academic credit under the tutelage of a professional practitioner.

COM 425. MAGAZINE PLANNING AND PRODUCTION (4) PR: COM 325, 371, 375. Research in new magazine design and production techniques; training in the creative use of typography, photography, art work, text in the "area concept"; letterpress and offset production; financial management of magazines; preparation of a detailed dummy for a model magazine.

COM 427. MAGAZINE PRACTICUM (2) PR: Senior standing and CI. For selected Magazine Sequence majors. Practical experience outside the classroom in a live magazine or industrial publication situation where the student works for academic credit under the tutelage of a professional practitioner.

COM 433. NEWS EDITING I (4) PR: COM 330. Evaluating news and its display; editing and rewriting copy for the mass media, with emphasis on the daily newspaper; news judgment, headlines, makeup; ethical problems.

COM 434. NEWS EDITING II (4) PR: COM 433. Continuation of COM 433, with more intensive practice on the copydesk in evaluating, processing, editing and headlining live wire copy and local copy; experimental makeup; managing the copy desk. Current events and analysis of selected daily newspapers.

COM 435. PUBLIC AFFAIRS REPORTING (4) PR: COM 331 or COM 362. Covering city council meetings, courthouse, city hall, courts, society, and other special assignments. Emphasis is on coverage of major governmental units of all levels of government, including examination and interpretation of public documents and records.

COM 437. EDITING PRACTICUM (2) PR: Senior standing, COM 434, and Cl. For selected News-Editorial Sequence majors. Practical experience outside the classroom in a daily newspaper copydesk, where the student works for academic credit under the tutelage of a professional news editor.

COM 441. WRITING FOR PUBLIC RELATIONS (4) PR: COM 330, 341. Persuasive writing techniques unique to the practice of public relations; application of principles and ethical practices to problem-solving situations drawn from case studies; writing formats used in promotional and publicity literature.

COM 447. PUBLIC RELATIONS PRACTICUM (2) PR: Senior standing and CI. For selected Public Relations Sequence majors. Practical experience outside the classroom in a professional public relations situation where the student works for academic credit under the tutelage of a professional practitioner.

COM 450. ADVANCED CAMERA TECHNIQUES. (4) PR: COM 354. Advanced camera technology, professional procedures, emulsion selection, color control, studio and location shooting, laboratory methods, matte shooting and special effects. Use of Arriflex Mitchell, and Bell & Howell equipment.


COM 452. SOCIAL HISTORY OF THE FILM, 1945 TO THE PRESENT (4) PR: COM core. A continuation of COM 451, covering the development of the film from 1945 to the present. (COM 451 is not a prerequisite.)

COM 453. THE DOCUMENTARY FILM (4) PR: Sophomore standing. The development of the documentary movement; earliest newsreels; Flaherty, Grierson and the GPO Unit, U.S. Government-sponsored films, the Canadian Film Board, Cinema Verite; study of about 60 fact-films from some 20 countries. Stresses objective criteria, critical analysis.

COM 454. FILM CRITICISM (4) PR: COM 330, 451, 452, 453, Cl. The film as a mass medium, comparing and contrasting its mass communication aspect with other important aspects. Critical analyses of selected films and intensive readings in the theory of film. Literary, social, dramatic, philosophic and historic approaches to film criticism.

COM 455. ADVANCED FILM LIGHTING (4) PR: COM 450 or Cl. Advanced lighting of studio and location sets stressing professional procedures and standards from pre-production to post-production.

COM 456. SENSITOMETRY AND PHOTOMETRY (4) PR: COM 354. The materials and processes of cinema photo; response of materials to development and exposure.


COM 458. FILM DIRECTING (4) PR: COM 354. Introduction to the techniques of film direction.

COM 461. TV PRODUCTION AND DIRECTION (4) PR: COM 361 and junior standing. A basic course in the techniques of producing and directing TV programs. (Formerly SPE 441.)

COM 462. ADVANCED TV PRODUCTION AND DIRECTION (4) PR: COM 461 and junior standing. Intensive study and practice of the techniques of TV production and direction with emphasis on both creative and experimental aspects of TV programming. (Formerly SPE 442.)
COM 463. TV NEWS FILM (4)
PR: COM 362 or CI. Techniques in filming for television news.

COM 466. MEDIA CRITICISM: BROADCASTING (4)
PR: COM 361. A critical study of contemporary broadcast content. (Formerly COM 482.)

COM 467. TV PRACTICUM (2)
PR: COM 461 or CI. The study, rehearsal and production of television programs and materials. (Formerly SPE 443.)

COM 468. THE BROADCAST PROGRAM (4)
PR: COM 361. Program concepts, resources, costs, selection and scheduling. Analysis of programming in terms of structure, appeals and strengths.

COM 471. COLOR PHOTOGRAPHY (4)
PR: COM 372 or CI. Development of knowledge and skills of color photography for publication and presentation. Emphasis will be on the use of transparency and negative color materials in their application to the media. Laboratory required.

COM 481. INDIVIDUAL RESEARCH IN MASS COMMUNICATION (1-4)
PR: CC and CI. The course provides means for a student to do independent study in an area not covered by a numbered course.

COM 483. SELECTED TOPICS IN MASS COMMUNICATION STUDIES (1-4)
PR: Junior standing. Courses designed to meet current or specific topics of interest to the instructor and students.

COM 485. DIRECTED READINGS IN MASS COMMUNICATION STUDIES (1-4)
PR: Junior standing, CC and CI. Reading and directed study in special topics.

COM 491. SENIOR SEMINAR: INTERCOMMUNICATION—THE MASS MEDIA IN PERSPECTIVE (4)
PR: Senior standing; open only to Mass Com. majors. The inter-relationships among the mass media and institutions; their effect upon each other and upon contemporary society.

FOR SENIORS AND GRADUATE STUDENTS

COM 500. THEORY OF MASS COMMUNICATION (4)
PR: Senior standing. The nature of the mass communication process its effects on individuals and groups; the moral, ethical, social and political implications in influencing and directing behavior. Analyses of theories of mass communication.

COM 530. JOURNALISM STUDIES (4)
PR: Senior standing. Not open for credit to COM majors. An intensive review of mass communication theory and practice as they relate to content in secondary school journalism courses, with some emphasis also on supervision of school publications.

COM 539. SEMINAR: PROBLEMS IN NEWS-EDITORIAL JOURNALISM (2)
PR: Senior standing and COM 433 or COM 491, or CI. A study of the role of the free press in a democratic society and its efforts to fulfill its social and ethical obligations by analyses and discussions of the problems which face the reporter, the editor, and the publisher.

COM 541. PUBLIC INFORMATION (4)
PR: COM 441 or CI. The nature of government public information organization, practices and criticisms thereof; the role of information specialists in reporting government at all levels to the public; conceptual differences in approach and techniques between governmental and private sector public relations.

COM 550. FILM STUDIES (4)
PR: Senior standing. Not open for credit to COM majors. An intensive review of film theory and practice as they relate to content in secondary school subjects such as English, social studies, history or journalism. Laboratory work.

COM 554. FILM PRODUCTION MANAGEMENT (4)
PR: COM 356. The planning and management of motion picture productions.

COM 581. INDIVIDUAL RESEARCH IN MASS COMMUNICATION (1-4)
PR: Senior standing, CC and CI. The course provides means for a student to do independent study in an area not covered by a numbered course.

COM 583. SELECTED TOPICS IN MASS COMMUNICATION STUDIES (1-4)
PR: Senior standing. Courses, including summer workshops, designed to meet current or specific topics of interest to the instructor and students.

COM 585. DIRECTED READINGS IN MASS COMMUNICATION (1-4)
PR: Senior standing, CC and CI. Reading and directed study in special topics.

MATHEMATICS (MTH)


LOWER LEVEL COURSES

MTH 107, 108. MATHEMATICS AND THE MODERN WORLD, I, II (4,4)
Illustrates the relationship of mathematics to our world and puts the development of mathematics in a historical perspective.

MTH 109, 110. FUNCTIONAL MATHEMATICS I, II (4,4)
Designed as a terminal course for general cultural purposes. Explores the language of mathematics through the study of logic and set theory.

MTH 122. COLLEGE ALGEBRA (4)
Real numbers and their properties, algebraic expressions, equations and inequalities, functions, polynomials, exponential and logarithmic functions. (No credit for students with credit in MTH 101 or MTH 211.)

MTH 123. COLLEGE TRIGONOMETRY (3)
Angles, Trigonometric functions, properties and graphs of trigonometric functions, right triangles, laws of sines and cosines, polar coordinates. (No credit for students with credit in MTH 101.)

MTH 211. ELEMENTARY CALCULUS I (4)
PR: One year of secondary school mathematics or CC. Basic Algebraic concepts, real numbers, functions, graphs. The sequence MTH 211-212-213 is primarily for students from Biological Sciences, Social Sciences, and Business. (No credit for math majors or students with credit in MTH 122.)

MTH 212. ELEMENTARY CALCULUS II (4)
PR: MTH 211 or CC. The derivative, techniques of differentiation, curve sketching, applications of the derivative. (No credit for Mathematics majors or students with credit in MTH 302.)
MTH 213. ELEMENTARY CALCULUS III (4)  
PR: MTH 212. Antiderivatives, the definite integral, techniques of integration, logarithmic and exponential functions, applications. (No credit for Mathematics majors or students with credit in MTH 303.)

UPPER LEVEL COURSES

MTH 302. CALCULUS I (5)  
PR: MTH 101 with a grade of “C” or better or CC. Limits derivatives applications, definite integral. (No credit for students with credit in MTH 212.)

MTH 303. CALCULUS II (4)  
PR: MTH 302 with a grade of “C” or better or CC. Antiderivatives, the definite integral, applications, log, exponential, and trig functions. (No credit for students with credit in MTH 213.)

MTH 304. CALCULUS III (4)  
PR: MTH 303 with a grade of “C” or better or CC. Integration, polar coordinates, conic sections, vectors, indeterminate forms and improper integrals.

MTH 305. CALCULUS IV (4)  
PR: MTH 304 with a grade of “C” or better or CC. Vectors in 3-space, partial derivatives, multiple integrals, infinite series.

MTH 309. SET THEORY (3)  
PR: MTH 302 or CC. Relations, functions, order, cardinal numbers.

MTH 310. ELEMENTARY PROBABILITY (4)  
Counting techniques, probability, expectation, probability distributions, the law of large numbers. (No credit for Mathematics majors.)

MTH 311. MATRICES AND APPLICATIONS (4)  
Vectors and matrices with applications selected from linear programming, game theory and graph theory. Emphasis on applications to business and the social sciences. (No credit for Mathematics majors.)

MTH 323. LINEAR ALGEBRA (4)  
PR: MTH 302 or CC. Vectors, matrices, systems of linear equations, linear transformations.

MTH 331. NUMBER SYSTEMS (5)  
The counting numbers, their properties and operations. The integers, their properties and operations. Prime numbers, modular arithmetic. Rational numbers, their properties and operations. (No credit for Mathematics majors.)

MTH 332. BASIC ALGEBRAIC CONCEPTS (4)  
PR: MTH 331. Equations, systems of equations and inequalities. The real numbers as a complete ordered field. Complex numbers. (No credit for Mathematics majors.)

MTH 333. INFORMAL GEOMETRY (4)  
Concepts of length, congruence, similarity, transformations in the plane. Ruler and compass constructions, impossible constructions coordinate systems, graphs, lines and curves. (No credit for Mathematics majors.)

MTH 345. INTRODUCTORY STATISTICS I (5)  
Hypothesis testing, estimation; normal, Chi-square, t, F, binomial, multinomial distributions; ANOVA, CR, RCB designs; single df, regression, correlation, contingency tables.

MTH 346. INTRODUCTORY STATISTICS II (5)  
PR: MTH 345 or CC. Factorials, ANCOV; multiple curvilinear regression; response surfaces; Latin square, Split Plots, incomplete blocks designs; distribution free methods.

MTH 351. ENGINEERING CALCULUS I (4)  
PR: Pass diagnostic tests in algebra and trigonometry. Differentiation, limits, differentials, extrema, indefinite integral.

MTH 352. ENGINEERING CALCULUS II (4)  
PR: MTH 351. Definite integral, trigonometric functions, log, exponential, applications.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>MTH 514</td>
<td>REAL ANALYSIS II</td>
<td>MTH 513</td>
<td>Continuation of MTH 513.</td>
</tr>
<tr>
<td>MTH 515</td>
<td>CALCULUS ON MANIFOLDS</td>
<td>MTH 511 and 514</td>
<td>Calculus of several variables.</td>
</tr>
<tr>
<td>MTH 520</td>
<td>COMPLEX ANALYSIS I</td>
<td>MTH 405</td>
<td>Complex numbers, analytic functions and mappings, integrals.</td>
</tr>
<tr>
<td>MTH 521</td>
<td>COMPLEX ANALYSIS II</td>
<td>MTH 520</td>
<td>Power series, residues and poles, conformal mapping.</td>
</tr>
<tr>
<td>MTH 523</td>
<td>ALGEBRA I</td>
<td>MTH 305, 309, 511</td>
<td>An introduction to group theory.</td>
</tr>
<tr>
<td>MTH 524</td>
<td>ALGEBRA II</td>
<td>MTH 523</td>
<td>An introduction to Galois theory.</td>
</tr>
<tr>
<td>MTH 525</td>
<td>APPLIED STATISTICAL METHODS I</td>
<td>MTH 445, CC</td>
<td>Statistical inference in physical and engineering sciences utilizing sample probability distributions, point and interval estimation and test of significance.</td>
</tr>
<tr>
<td>MTH 526</td>
<td>APPLIED STATISTICAL METHODS II</td>
<td>MTH 525</td>
<td>Applications of analysis of variance and covariance, regression analysis use of $x^2$ for contingency tables and goodness of fit procedures.</td>
</tr>
<tr>
<td>MTH 531</td>
<td>TOPOLOGY I</td>
<td>MTH 305 and MTH 309</td>
<td>Metric and topological spaces, continuity, homeomorphisms, connectedness, fundamental group, compact spaces, separation axioms, product spaces.</td>
</tr>
<tr>
<td>MTH 532</td>
<td>TOPOLOGY II</td>
<td>MTH 531</td>
<td>Continuation of MTH 531.</td>
</tr>
<tr>
<td>MTH 535</td>
<td>TENSOR ANALYSIS</td>
<td>MTH 431 or CC</td>
<td>The calculus of tensors, applications to differential geometry and physics.</td>
</tr>
<tr>
<td>MTH 541</td>
<td>PARTIAL DIFFERENTIAL EQUATIONS AND APPLICATIONS</td>
<td>MTH 401 and CC</td>
<td>Separation of variables, the heat equation, wave equation, Laplace's equation, classification, Green's functions with emphasis on applications.</td>
</tr>
<tr>
<td>MTH 543</td>
<td>INTEGRAL TRANSFORMS I</td>
<td>MTH 401, 405, or CC</td>
<td>Introduction to integral transforms with special emphasis on the Laplace and Fourier transforms, applications to differential equations.</td>
</tr>
<tr>
<td>MTH 544</td>
<td>INTEGRAL TRANSFORMS II</td>
<td>MTH 543</td>
<td>Continuation of MTH 543.</td>
</tr>
<tr>
<td>MTH 545</td>
<td>PROBABILITY THEORY I</td>
<td>MTH 406 or MTH 513</td>
<td>Concepts of probability theory, axioms of probability, random variables, probability distributions and distributions of functions of stochastic variables.</td>
</tr>
<tr>
<td>MTH 546</td>
<td>PROBABILITY THEORY II</td>
<td>MTH 545</td>
<td>Concepts of mathematical expectation, moment generating functions, probability generating functions, characteristic functions and limit theory of probability distributions.</td>
</tr>
<tr>
<td>MTH 547</td>
<td>MATHEMATICAL STATISTICS I</td>
<td>MTH 546</td>
<td>Sample distribution theory, point &amp; interval estimation theory and theory of hypothesis testing.</td>
</tr>
<tr>
<td>MTH 548</td>
<td>MATHEMATICAL STATISTICS II</td>
<td>MTH 547</td>
<td>Statistical decision theory to include admissibility of Bayes rules, risk functions, minimax invariant rules and most powerful tests.</td>
</tr>
<tr>
<td>MTH 549</td>
<td>STOCHASTIC PROCESS I</td>
<td>MTH 546</td>
<td>Basic concepts of stochastic processes, finite Markov chains, random-walks with applications to life sciences and engineering.</td>
</tr>
<tr>
<td>MTH 550</td>
<td>NON-PARAMETRIC STATISTICS I</td>
<td>MTH 547, CC</td>
<td>Theory and methods of non-parametric statistics, order statistics, tolerance region and their applications.</td>
</tr>
<tr>
<td>MTH 553</td>
<td>INTRODUCTION TO GRAPH THEORY</td>
<td>MTH 448 or CC</td>
<td>Mathematical Theory associated with algorithms for computer information processing; expected time and space requirements of algorithms, comparison of algorithms, construction of poitional algorithms, theory, underlying particular algorithms.</td>
</tr>
<tr>
<td>MTH 554</td>
<td>TIME SERIES ANALYSIS I</td>
<td>MTH 547</td>
<td>Basic concepts of the theory and applications of time series analysis, to include filtering, forecasting modeling, spectral analysis of univariate realizations with applications.</td>
</tr>
<tr>
<td>MTH 556</td>
<td>ASYMPTOTIC METHODS</td>
<td>MTH 501 or 542 and MTH 540 or 567</td>
<td>Asymptotic series, applications to differential equations and integrals, and perturbation theory.</td>
</tr>
<tr>
<td>MTH 560</td>
<td>ANALYSIS OF ALGORITHMS</td>
<td>MTH 448 or CC</td>
<td>Mathematical Theory associated with algorithms for computer information processing; expected time and space requirements of algorithms, comparison of algorithms, construction of poitional algorithms, theory, underlying particular algorithms.</td>
</tr>
<tr>
<td>MTH 561</td>
<td>ANALYSIS OF ALGORITHMS II</td>
<td>MTH 560</td>
<td>Continuation of MTH 560.</td>
</tr>
<tr>
<td>MTH 562</td>
<td>MULTIVARIATE STATISTICAL ANALYSIS I</td>
<td>MTH 548 and 511, or CC</td>
<td>The multivariate normal, estimation of mean vector and covariance matrix, correlation analysis, generalized $T^2$-statistics and testing of the general linear hypothesis.</td>
</tr>
<tr>
<td>MTH 563</td>
<td>ANALYSIS OF NUMERICAL METHODS I</td>
<td>MTH 323, MTH 401, EGB 231 or CC</td>
<td>Corequisite: MTH 405. Numerical matrix techniques, iterative solutions of equations, polynomial approximations, numerical differentiation and integration, solution of ordinary and partial differential equations, accuracy and round-off error, convergence.</td>
</tr>
<tr>
<td>MTH 564</td>
<td>ANALYSIS OF NUMERICAL METHODS II</td>
<td>MTH 563</td>
<td>Continuation of MTH 563.</td>
</tr>
<tr>
<td>MTH 567</td>
<td>GEOMETRY FOR TEACHERS</td>
<td>MTH 423 and 424</td>
<td>Vectors, measures, perpendicularity and parallelism, properties of geometric figures, induction and deduction. (No credit for Math. majors.)</td>
</tr>
<tr>
<td>MTH 573</td>
<td>ABSTRACT ALGEBRA FOR TEACHERS</td>
<td>MTH 323 and MTH 420 and bachelor's degree or CC</td>
<td>Groups, fields, vector spaces as they relate to high school algebra and geometry. (No credit for Math. majors.)</td>
</tr>
<tr>
<td>MTH 574</td>
<td>COMPLEX VARIABLES FOR TEACHERS</td>
<td>MTH 305 and MTH 420 and bachelor's degree or CC</td>
<td>Algebra and geometry of the complex numbers, functions of a complex variable, limits, derivatives, integrals, elementary functions and their geometry, fundamental theorem of algebra. (No credit for Math. majors.)</td>
</tr>
<tr>
<td>MTH 575</td>
<td>MATHEMATICAL ANALYSIS I FOR TEACHERS</td>
<td>MTH 305</td>
<td>Advanced consideration of limits continuity, derivatives, differentials. (No credit for Math. majors.)</td>
</tr>
</tbody>
</table>
| MTH 576 | MATHEMATICAL ANALYSIS II FOR TEACHERS | MTH 575 or CC | Advanced considerations of the definite
<table>
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<tr>
<th>Course Code</th>
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<th>Description</th>
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<tbody>
<tr>
<td>MTH 583</td>
<td>SELECTED TOPICS (1-6)</td>
<td>PR: Senior or junior standing and CC. Each topic is a course of study.</td>
<td>01-History of Mathematics, 03-Logic and Foundations, 05-Number Theory, 07-Topics in Algebra, 09-Mathematics for Physics, 11-Topics in Probability and Statistics, 13-Topics in Analysis, 15-Topics in Topology.</td>
</tr>
<tr>
<td>MTH 603</td>
<td>THEORY OF ORDINARY DIFFERENTIAL EQUATIONS I (4)</td>
<td>PR: MTH 501 or CC. Existence theorems, topics in oscillation theory, asymptotic behavior, stability and boundedness of solutions of differential equations.</td>
<td></td>
</tr>
<tr>
<td>MTH 604</td>
<td>THEORY OF ORDINARY DIFFERENTIAL EQUATIONS II (4)</td>
<td>PR: MTH 603. Continuation of MTH 603.</td>
<td></td>
</tr>
<tr>
<td>MTH 605</td>
<td>MEASURE AND INTEGRATION I (3)</td>
<td>PR: MTH 514. Abstract measure and integration in sigma rings, applications to Euclidean spaces, Fubini's Theorem, Radon-Nikodym Theorem, Lp spaces.</td>
<td></td>
</tr>
<tr>
<td>MTH 606</td>
<td>MEASURE AND INTEGRATION II (3)</td>
<td>PR: MTH 605. Continuation of MTH 605.</td>
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</tr>
<tr>
<td>MTH 607</td>
<td>MEASURE AND INTEGRATION III (3)</td>
<td>PR: MTH 606. Continuation of MTH 606.</td>
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</tr>
<tr>
<td>MTH 612</td>
<td>COMPLEX ANALYSIS II (3)</td>
<td>PR: MTH 611. Continuation of MTH 611.</td>
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</tr>
<tr>
<td>MTH 613</td>
<td>COMPLEX ANALYSIS III (3)</td>
<td>PR: MTH 612. Continuation of MTH 612.</td>
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</tr>
<tr>
<td>MTH 614</td>
<td>INTRODUCTION TO FUNCTIONAL ANALYSIS I (4)</td>
<td>PR: MTH 605. Linear Topological Spaces, normed linear spaces. Hahn-Banach Theorem, theorems on linear operators, dual spaces.</td>
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</tr>
<tr>
<td>MTH 615</td>
<td>INTRODUCTION TO FUNCTIONAL ANALYSIS II (4)</td>
<td>PR: MTH 614. Continuation of MTH 614.</td>
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</tr>
<tr>
<td>MTH 624</td>
<td>ADVANCED ALGEBRA I (4)</td>
<td>PR: MTH 524 or CC. Algebraic automata theory.</td>
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</tr>
<tr>
<td>MTH 625</td>
<td>ADVANCED ALGEBRA II (4)</td>
<td>PR: MTH 625 or CC. Algebraic coding theory.</td>
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</tr>
<tr>
<td>MTH 632</td>
<td>ADVANCED TOPOLOGY I (4)</td>
<td>PR: MTH 532 and CC. Function spaces, compactifications, covering spaces, other topics.</td>
<td></td>
</tr>
<tr>
<td>MTH 633</td>
<td>ADVANCED TOPOLOGY II (4)</td>
<td>PR: MTH 632. Continuation of MTH 632.</td>
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</tr>
<tr>
<td>MTH 635</td>
<td>ALGEBRAIC TOPOLOGY (3)</td>
<td>PR: MTH 633 or CC. Homotopy, homology groups, local homology groups.</td>
<td></td>
</tr>
<tr>
<td>MTH 636</td>
<td>TOPOLOGICAL ALGEBRA I (4)</td>
<td>PR: MTH 633 and CC. Topological semigroups, topological groups, topological rings and fields, Haar measure.</td>
<td></td>
</tr>
<tr>
<td>MTH 637</td>
<td>TOPOLOGICAL ALGEBRA II (4)</td>
<td>PR: MTH 636. Continuation of MTH 636.</td>
<td></td>
</tr>
<tr>
<td>MTH 639</td>
<td>DIFFERENTIAL GEOMETRY (3)</td>
<td>PR: CC. Local differential geometry, curvature, evolutes and involutes, calculus of variations.</td>
<td></td>
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<tr>
<td>MTH 643</td>
<td>PARTIAL DIFFERENTIAL EQUATIONS I (4)</td>
<td>PR: MTH 541 or CC. Classification of second order equations, Cauchy problems, Dirichlet and Neumann problems, mixed problems, properties of solutions.</td>
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<tr>
<td>MTH 644</td>
<td>PARTIAL DIFFERENTIAL EQUATIONS II (4)</td>
<td>PR: MTH 643. Continuation of MTH 643.</td>
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<tr>
<td>MTH 645</td>
<td>ADVANCED PROBABILITY THEORY I (3)</td>
<td>PR: MTH 606 or CC. Measure theoretic approach to probability, random variables, distribution functions, expectation and characteristic functions.</td>
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<tr>
<td>MTH 646</td>
<td>ADVANCED PROBABILITY THEORY II (3)</td>
<td>PR: MTH 645. Convergence of sequence of random variables, weak and strong laws of large numbers, limit theory of probability distributions.</td>
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<tr>
<td>MTH 649</td>
<td>STOCHASTIC PROCESS II (3)</td>
<td>PR: MTH 549 or CC. Continuous parameter Markov chains, martingale theory, stationary processes with discrete and continuous increments.</td>
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<tr>
<td>MTH 650</td>
<td>NON-PARAMETRIC STATISTICS II (3)</td>
<td>PR: MTH 550 or CC. Theory and applications of advanced non-parametric methods to include order statistics Kolmogorov-Smirnov and Cramer statistics.</td>
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<tr>
<td>MTH 654</td>
<td>TIME SERIES ANALYSIS II (3)</td>
<td>PR: MTH 554. Multivariate time series analysis of stationary process to include the theory of filtering, forecasting and spectral analysis.</td>
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<tr>
<td>MTH 657</td>
<td>CALCULUS OF VARIATIONS (4)</td>
<td>PR: MTH 514 and CC. Maxima and minima of functionals, problems of Lagrange, Bolza and Mayer and other topics.</td>
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<tr>
<td>MTH 671</td>
<td>MATHEMATICAL OPTIMIZATION THEORY III (3)</td>
<td>PR: MTH 558 or CC, MTH 615. Linear programming in abstract spaces; integer programming; stochastic programming. Recent research in mathematical programming and related areas.</td>
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<tr>
<td>MTH 681</td>
<td>GRADUATE RESEARCH (1-15)</td>
<td>PR: CC (S/U only.)</td>
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<tr>
<td>MTH 683</td>
<td>SELECTED TOPICS (1-6)</td>
<td>PR: CC. 01-Topology, 02-Analysis, 03-Algebra, 04-Applied Mathematics, 05-Graph Theory, 06-Number Theory, 07-Mathematics for Physics, 08-Probability, 09-Statistics, 10-Complex Analysis.</td>
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<tr>
<td>MTH 688</td>
<td>RECENT ADVANCES IN MATHEMATICS WITH EMPHASIS ON THEIR IMPACT ON COLLEGE-LEVEL COURSES (3-6)</td>
<td>A course designed to consider and study the recent developments of mathematics especially those developments that have an effect on altering the basic concepts and ideas of mathematics and imply a change in the presentation of introductory material in the field. (Credit not applicable toward thesis degree requirements.) (S/U only.)</td>
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<tr>
<td>MTH 689</td>
<td>DIRECTED TEACHING (3-9)</td>
<td>Not applicable toward thesis degree requirements. Supervised teaching for graduate teaching assistants in elementary and/or laboratory courses. A formalized, structured activity wherein a faculty member, by discussion and assignments, considers the principles, rationale, and modus operandi of elementary college courses. Designed to train teaching assistants and to provide help and training to those graduate students who plan to follow a college teaching profession. (S/U only.)</td>
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<tr>
<td>MTH 691</td>
<td>GRADUATE SEMINAR (1-6)</td>
<td>Direction of this seminar is by a faculty member. Students are required to present research papers from the literature. (S/U only.)</td>
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<tr>
<td>MTH 699</td>
<td>MASTER THESES (1-9)</td>
<td>May be taken more than once, but not more than a total of nine hours credit will be allowed. (S/U only.)</td>
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<tr>
<td>MTH 799</td>
<td>PH.D. DISSERTATION (1-9)</td>
<td>May be taken more than once. (S/U only.)</td>
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</table>
MEDICAL TECHNOLOGY (MET)

Director & Professor: E. D. Olsen; Associate Directors: Prof. W. S. Silver, Assoc. Prof. J. R. Linton.

UPPER LEVEL COURSES
MET 311. INTRODUCTION TO MEDICAL TECHNOLOGY (1)
PR: Senior standing and acceptance into an approved affiliated hospital. An introduction to the principles and practices of medical technology and their relationship to patient care. A hospital internship course for medical technology majors.

MET 431. CLINICAL MICROSCOPY I (5)
PR: Senior standing and acceptance into an approved affiliated hospital. Lecture and laboratory instruction such as urinalysis, parasitology, and histological technique. A hospital internship course for medical technology majors.

MET 432. CLINICAL MICROSCOPY II (5)
PR: Senior standing and acceptance into an approved affiliated hospital. A continuation of MET 431. A hospital internship course for medical technology majors.

MET 442. HEMATOLOGY (6)
PR: Senior standing and acceptance into an approved affiliated hospital. Lecture and laboratory instruction in the methods of study of hematological disorders. A hospital internship course for medical technology majors.

MEDICINE (MED)

Anatomy
Chairman: H. N. Schnitzlein; Professor: J. W. Ward; Associate Professor: J. J. Dwornik; Assistant Professors: R. K. Boler, N. A. Moore, E. G. Salter, Jr.; Instructor: G. C. Morgan.

MED 600. GROSS ANATOMY (7)
PR: Admission to College of Medicine. A study of the gross structure of the human body. Lec.-lab and discussion.

MED 602. MICROSCOPIC ANATOMY (4)
PR: Admission to College of Medicine. A study of the microscopic structure of normal tissues and organs with emphasis on human material. Lec.-lab and discussion.

MED 603. NEUROANATOMY (4)
PR: Admission to College of Medicine. A study of the gross and microscopic structure and the functions of the human nervous system. Lec.-lab and discussion.

MED 604. ANATOMY SEMINAR (0)
PR: Consent of Chairman, Department of Anatomy. A weekly discussion of anatomical topics of special interest. Lec and discussion.

MED 701. REGIONAL ANATOMY I — Head and Neck (5)
PR: Enrolled in College of Medicine. Regional gross anatomy of the head and neck. This course offers an anatomical background for the clinical practices of Otorhinolaryngology, Oral Surgery, Plastic Surgery, Maxillo-facial surgery, and Ophthalmology.

MED 702. REGIONAL ANATOMY II — Thorax, Abdomen, Pelvis and Perineum (10)
PR: Enrolled in College of Medicine. Regional gross anatomy of the thorax, abdomen, pelvis and perineum. This course offers the anatomical basis for the clinical practices of Surgery, Obstetrics and Gynecology and Medicine.

MED 703. REGIONAL ANATOMY III — Extremities (5)
PR: Enrolled in College of Medicine. Gross anatomy of the upper and lower extremities. This course will provide the anatomical substrate for the clinical practice of orthopedic and plastic surgery.

MED 704. SYSTEMIC ANATOMY (20)
PR: Enrolled in the College of Medicine. Gross and microscopic structure of the various organ systems. This course will provide the detailed anatomical background for the clinical practice of Medicine and its included subspecialties.

MED 705. MEDICAL DEVELOPMENTAL ANATOMY AND TERATOLOGY (5)

MED 706. ADVANCED NEUROANATOMY (5)
PR: Enrolled in College of Medicine. A comprehensive study of the structure and functional pathways of the central nervous system. This course will provide the basis for the clinical practice of Neurology, Neurosurgery and Psychiatry.

MED 707. ADVANCED MICROSCOPIC ANATOMY (5)
PR: Enrolled in College of Medicine. A survey of the ultrastructure of cells and tissues with emphasis on human organs and electron microscopic technique. Provides a background for medical research.

MED 708. APPLIED NEUROANATOMY (10)
PR: Enrolled in College of Medicine. Demonstration of applicability of Neuroanatomy to the clinical practice of medicine. Lectures and demonstrations in Neuroanatomy will be correlated with a practice in a neurosurgical environment.

Biochemistry
Acting Chairman & Professor: J. G. Cory.

MED 605. BIOCHEMISTRY (9)
PR: Admission to College of Medicine. A study of the chemistry and metabolism of biologically important compounds. The interrelationships of various metabolic pathways
will be discussed with emphasis on the biochemical aspects of human diseases. Lec.-lab and discussion.

MED 606. BIOCHEMISTRY SEMINAR (0)
PR: Consent of instructor. Current literature dealing with the biochemical basis of human disease will be discussed. Lec. and discussion.

Comprehensive Medicine

Professor: R. J. Loisele; Associate Professors: D. W. MacCorquodale, M. M. Rath, W. M. Tucker

MED 709. POPULATION DYNAMICS (2)
PR: Enrolled in College of Medicine. An introduction to the determinants and measurement of fertility, mortality, and migration with special emphasis on fertility, including family planning programs.

MED 710. INTRODUCTORY EPIDEMIOLOGY (2)
PR: Enrolled in College of Medicine. Basic concepts of epidemiological methodology utilizing current research in chronic disease, including cancer, heart disease, and stroke as models.

Family Practice

MED 711. OUT-PATIENT FAMILY MEDICINE (20)
PR: Enrolled in College of Medicine. With approval of the Dean, students may elect eleven weeks association on a tutorial basis with an approved practitioner of family medicine. With him, they will see patients in the office, make rounds and house calls, and be "on call" for emergencies.

MED 712. IN-PATIENT FAMILY MEDICINE (10)
PR: Enrolled in College of Medicine. Students will serve as clinical clerks on services offering approved residencies in Family Practice.

Interdisciplinary

MED 790. EXTRAMURAL CLERKSHIP (20)
PR: Enrolled in College of Medicine. This elective offers the opportunity to gain special extramural experience in programs approved by the Dean and appropriate faculty of the College of Medicine. May be repeated up to 40 credit hours.

MED 763. PERINATOLOGY (20)
PR: Enrolled in College of Medicine. Multidisciplinary experience in management of the high-risk obstetric patient and fetus. Factors of importance during pregnancy, labor, delivery, and the first month of life. Emphasis will be placed on teratogenic influences, abnormal conditions of pregnancy as related to the fetus and newborn, and early management of the infant. Will include modern concepts of intrauterine monitoring and physiology and current problems in maternal-fetal relationships.

MED 764. PEDIATRIC CARDIOLOGY (10)
PR: Enrolled in College of Medicine. Participation in pediatric cardiac clinic and in pediatric cardiac catheterization laboratory.

MED 765. PSYCHOLOGICAL BASIS OF CARDIOLOGY (10)
PR: Enrolled in College of Medicine. Correlative sessions aimed at gaining the skills in interpreting data from various cardiovascular tests including the catheterization laboratory and the exercise laboratory.

MED 766. RESEARCH AND CLINICAL EXPERIENCE IN ALLERGY (10-20)
PR: Enrolled in College of Medicine. This course is designed to provide both clinical and research experience for the student interested in allergic problems. The first 5 1/2-week period will be given at the College of Medicine where the student will be involved in current research activities and participate in the Allergy Clinics. The second period will be spent in the Allergy Section, Watson Clinic, Lakeland.

MED 777. DEPARTMENTAL OVERVIEWS (10-20)
PR: Enrolled in College of Medicine. A course designed to reconsider and amplify basic principles in any area where the student requires additional background.

Medical Microbiology

Chairman: C. W. Fishel; Professor: J. G. Cory; Associate Professors: D. G. Halkias, L. J. Paradise; Assistant Professors: R. J. Grasso, G. J. Lancz, W. M. LeFor; Instructor: T. W. Klein.

MED 607. MEDICAL MICROBIOLOGY (9)
PR: Admission to College of Medicine. A study of the role of bacteria, viruses, mycological agents, and parasites as they are related to disease production. Host response to these agents is also an important aspect particularly as related to immune processes. Lec.-lab and discussion.

MED 608. MEDICAL MICROBIOLOGY SEMINAR (0)
PR: Consent of Chairman, Department of Medical Microbiology. Presentation and discussion of current topics of interest in medical research. Lec. and discussion.

MED 727. EXPERIMENTAL ONCOLOGY (10)
PR: Enrolled in College of Medicine. A course dealing with the biological aspects of neoplasia which will include lectures on differentiation, immunological aspects of tumor growth, viral, chemical and physical carcinogenesis, tumor metabolism and approaches to chemotherapy.

MED 728. CLINICAL MICROBIOLOGY (10)
PR: Enrolled in College of Medicine. The students will receive further training oriented toward the understanding of methods used in the laboratory diagnosis of bacterial, mycotic and parasitic diseases. Correlation of clinical diagnosis and microbiological findings will be made by reviewing patients’ charts and discussing the case with the attending physician.

Medicine


MED 619. INTRODUCTION TO MEDICINE (14)
PR: Admission to College of Medicine. A course designed to provide the student with a comprehensive frame of reference for viewing health and disease as an interplay of biological, social and psychological factors. Lec., patient contact, and discussion. This course includes Physical Diagnosis and Tutorial Clerkships.

MED 621. PHYSICAL DIAGNOSIS (5)
PR: Admission to College of Medicine. The basic techniques of clinical evaluation are presented emphasizing history taking and the demonstration of normal and abnormal physical findings. Lec., patient contact, and discussion.

MED 624. MEDICINE CLERKSHOP (20)
PR: Admission to College of Medicine. Each student is assigned to a number of patients, all of whom are followed closely through the entire hospital course. This casework is the primary teaching device. Also, special conferences and clinics provide instruction in various medical and related subspecialties.

MED 739. ADVANCED GENERAL MEDICINE EXTERNSHIP (12)
PR: Enrolled in College of Medicine. The basic objective is
to achieve a higher level of knowledge and capability in the diagnosis and treatment of adult medical illness. The student will assume a higher degree of responsibility for patient care than during the basic clerkship. Students will be expected to function essentially as interns writing and executing orders over the signature of the House Staff. They will take night calls as a member of the care team.

MED 740. INTERNAL MEDICINE ELECTIVE (12)
PR: Enrolled in College of Medicine. The objective is to provide an indepth experience for the student specifically interested in clinical internal medicine as a career. The student will be functionally attached to the Chief Resident. Students will participate in consultations, attend morning report and change-over rounds. In addition, there will be reading assignments and clinical projects according to the interest of the student.

MED 741. CLINICAL CARDIOLOGY (12)
PR: Enrolled in College of Medicine. By functioning essentially as a primary care physician on the Cardiology specialty ward and Coronary Care Unit, the clinical aspects of cardiac disease will be emphasized through primary patient care, daily staff rounds and attendance at cardiac conference.

MED 742. ELECTROCARDIOGRAPHIC INTERPRETATION (10)
PR: Enrolled in College of Medicine. To offer experience in interpretation of electrocardiograms through daily reading with staff instruction. Interpretation of sector-cardiograms and echocardiograms will also be introduced.

MED 743. CLINICAL DERMATOLOGY (10)
PR: Enrolled in College of Medicine. Rotation will include outpatient clinic, inpatient consultations, inpatient rounds on Dermatology patients and with part of the time spent at one of the clinical faculty members' private office. Increase in the depth of medical knowledge through correlation between cutaneous disorders and internal disease; evaluation of skin problems as to the significance of the various disorders in regard to the patient's general health and physical and mental impairment; familiarization with the practice of Dermatology at the level of the general physician.

MED 744. CLINICAL ENDOCRINOLOGY AND METABOLISM (10)
PR: Enrolled in College of Medicine. Students will attend endocrine clinics, see consultations on the wards, and participate in specialty rounds and conferences. Each student will be assigned several patients to evaluate and discuss in depth with the senior staff.

MED 745. GASTROENTEROLOGY ELECTIVE (10)
PR: Enrolled in College of Medicine. This elective is intended as an experience in Clinical Gastroenterology and Hepatology. An acceptable level of competence in interpretation of symptoms and physical findings, in utilization of appropriate laboratory and other diagnostic studies, in knowledge of the basic therapeutic approaches, in interpretation of gastrointestinal radiographs, and in performance of sigmoidoscopy will be achieved through a combination of personal instruction and direct patient contact. Participation in and/or observation of a variety of other G.I. procedures will be afforded. Attendance at combined meetings of the G.I. section will provide a further source of learning. Opportunities to participate in an on-going clinical research project will be made available for those students taking more than one unit. May be repeated once.

MED 746. HEMATOLOGY-ONCOLOGY (10)
PR: Enrolled in College of Medicine. Students will be taught the clinical abnormalities and most of the laboratory techniques for diagnosing the common hematological disorders and many of the oncological disorders. This will be done by accompanying fellows and residents on consultations, making rounds with the staff, studying blood and bone marrow slides under the supervision of the attending staff and fellow, and studying specialized laboratory techniques under the direction of the senior technicians. Interested and prepared students will be permitted to do clinical or laboratory research projects under the direction of the attending staff or fellow.

MED 747. INFECTIOUS DISEASE (10)
PR: Enrolled in College of Medicine. The division offers electives which will provide the student with in-depth acquaintance with the clinical and clinical laboratory aspects of infectious disease. The student participates in the consultative evaluation of routine, complex and emergent infections and is expected to develop competence in the ordering, understanding and interpretation of clinical microbiological studies. As a part of the learning experience students will review serious or unusual microbiological isolates in the clinical laboratory and examine the patients from whom they were isolated. They will make daily rounds with the Infectious Disease resident, intern and nurse, and with the faculty attending, and will present patients and pertinent laboratory findings for discussion. May be repeated once.

MED 748. ADVANCED CLINICAL NEUROLOGY (10)
PR: Enrolled in College of Medicine. The objectives are to learn to perform and interpret the neurologic examination; interpret laboratory and radiologic data; arrive at a reasonably correct clinical diagnosis and understand the principles of management and treatment. The student will be assigned hospitalized patients and outpatients under the supervision of the resident and faculty.

MED 749. CLINICAL NEPHROLOGY (10)
PR: Enrolled in College of Medicine. This course is to provide general experience in clinical adult nephrology, fluid and electrolyte problems, and the care of acutely ill patients. This will include evaluation of patients with early and late renal failure, nephrotic syndrome, acute renal failure, etc. Exposure to both acute hemodialysis and peritoneal dialysis will be available. The student will see and evaluate consultations.

MED 750. CLINICAL ALLERGY AND PULMONARY DISEASE (10)
PR: Enrolled in College of Medicine. Training in diagnosis and management of a broad spectrum of pulmonary diseases including those of allergic origin.

MED 785. MEDICINE IN THE TROPICS (20)
PR: Enrolled in College of Medicine. This is an eleven week elective involving the senior student in supervised care of patients in a hospital located in the tropical zones of the Western Hemisphere, in a different clinical setting. The student will work closely with a physician, carry out a clinical research project, and maintain contact with the sponsoring faculty. Reference text material will be available at each site. The course is designed to provide the student with familiarity with tropical diseases. As important, however, is exposure to medical techniques and facilities employed in treatment of common illnesses as they occur in tropical countries. This experience will improve the students' appreciation for the practice of "Global Medicine."

Obstetrics/Gynecology
Chairman: J. M. Ingram; Associate Professor: C. L. Lay; Assistant Professor: C. J. Hochberg.

MED 628. OBSTETRICS-GYNECOLOGY CLERKSHIP (13)
PR: Admission to College of Medicine. Consists of eight weeks of general clinical obstetrics and gynecology. Students are assigned patients, and share in patient care of the obstetric and gynecology wards, delivery suite, operating rooms and outpatient clinics. The faculty and students participate in daily tutorial sessions, clinical conferences, and obstetric and gynecologic pathology seminars. Audiovisual learning aids and specialized study carrels are available to the student at all times.

MED 713. GYNECOLOGIC ONCOLOGY (10)
PR: Enrolled in College of Medicine. A survey of malignancy
of the reproductive system. The didactic portion of the course is supplemented by presentation of patients currently in the therapy on the wards, in Radiotherapy, and in the Gynecologic Cancer Clinic. Principles of surgery, radiotherapy, chemotherapy, and cryotherapy will be covered in depth.

MED 714. RESEARCH IN OBSTETRICS-GYNECOLOGY (10)
PR: Enrolled in College of Medicine. For the student who is interested in concentrating upon one area of research and in reporting the results in a paper. Advice by the departmental faculty in researching the literature and in approaching a particular subject will be given. This elective will be offered to students who have demonstrated interest in research and unusual proficiency in the Clinical Clerkship in Obstetrics/Gynecology.

MED 715. PREPARATION FOR PRACTICE (10)
PR: Enrolled in College of Medicine. For students who are preparing for family practice, or who are considering obstetrics and gynecology as a specialty. Inpatient and outpatient duties in obstetrics and gynecology. Special lectures in obstetric management and office gynecology, with emphasis on office practice techniques. May be repeated one time.

MED 716. THE INFERTILE COUPLE (10)
PR: Enrolled in College of Medicine. A clinical study of infertility in the human for students who desire additional instruction in examination, diagnosis, and treatment of the infertile couple. Assigned reading of pertinent medical literature, both historical and current, is correlated with didactic lectures and with clinical observation in patients. The student is made familiar with diagnostic techniques and the use of specialized apparatus and instruments, and participates in the treatment of patients in the clinic and office.

Ophthalmology

Chairman: W. C. Edwards; Assistant Professors: S. Cantolino, W. E. Layden, H. M. Ramseur, R. J. Sever.

MED 717. TUTORIAL COURSE OR ADVANCED OPHTHALMOLOGY (20)
PR: Enrolled in College of Medicine. A practical working course in ophthalmology. This course intends to bridge the gap between medical school and ophthalmology residency.

MED 718. MEDICAL OPHTHALMOLOGY (5)
PR: Enrolled in College of Medicine. To augment introductory material on eye examination and recognition of eye diseases. Particular emphasis placed on medical diseases as they affect the ocular system (i.e., diabetes, thyroid, vascular disorders, etc.). Designed to compliment careers in internal and family medicine.

MED 719. NEURO OPHTALMOLOGY (5)

Pathology

Chairman: H. Sidransky; Professor: H. A. Azar; Associate Professor: S. Bloom; Assistant Professors: J. B. Edlow, C. T. Garrett, J. K. Lynn, M. E. McIntosh, L. R. Nelson, H. S. Wilks; Instructor: M. A. Carta.

MED 617. PATHOLOGY (16)
PR: Admission to College of Medicine. Course will consist of lectures and laboratory which will cover general and systemic pathology. Major emphasis will be given to the etiology and pathogenesis of disease states. Gross and microscopic appearance of organs and tissues in disease will be examined and studied. Students will participate in post-mortem examinations.

MED 618. PATHOLOGY SEMINAR (0)
PR: Consent of Chairman, Department of Pathology. Presentation and discussion of current topics of medical importance in general area of pathology. Lec. and discussion.

MED 620. LABORATORY MEDICINE (4)
PR: Admission to College of Medicine. Course will deal with the fundamentals of laboratory procedures in relation to diagnosis and patient care. Didactic demonstrations and laboratory exercises will be conducted to acquaint the student with the significance of laboratory tests.

MED 729. ELECTIVE IN LABORATORY MEDICINE (CHEMISTRY, HEMATOLOGY) (10)
PR: Enrolled in College of Medicine. The student will participate under supervision in the examination and evaluation of laboratory tests (clinical chemistry, hematology). Emphasis will be on correlation of laboratory data with clinical diagnoses. The student and laboratory staff will review selected abnormal findings at daily morning "rounds."

MED 730. PATHOLOGIC ANATOMY (AUTOPSIES AND SURGICAL PATHOLOGY) (20)
PR: Enrolled in College of Medicine. The student will perform autopsies and examine surgical specimens under supervision at the Veterans Administration Hospital. He or she will be expected to attend all Pathology Conferences. Particular attention will be given to clinico-pathological correlation.

MED 731. SURGICAL PATHOLOGY (10)
PR: Enrolled in College of Medicine. The student will participate in the processing and in the signing out of surgical specimens at the Veterans Administration Hospital. He or she will be expected to attend Tumor Board and other afternoon exercises dealing with clinico-pathological correlation.

MED 732. EXPERIMENTAL PATHOLOGY (20)
PR: Enrolled in College of Medicine. Experimental studies using morphologic and biochemical techniques with disease models pertaining to inflammation, degeneration, neoplasia, immunopathology or nutritional and metabolic disorders. Students will conduct experimental studies under supervision of senior investigator.

Pediatrics


MED 626. PEDIATRICS CLERKSHIP (13)
PR: Admission to College of Medicine. This is an eight week course designed to present the core curriculum in pediatrics. It is an integrated course consisting of a one-week rotation in the newborn nursery and a 7-week rotation of a combined in patient and out patient experience. The course is designed to present the student with an opportunity to become proficient in obtaining a pediatric history, performing a pediatric physical examination, and determining normal and abnormal growth and development. Methods of approaching the patient and solving the problems related to differential diagnosis will be stressed. All physicals, examinations, and records will be done under the supervision of the senior house-staff and will be reviewed by the attending staff. Clinical conferences will be presented for the student in addition to departmental conferences.

The student will present a one hour seminar at the conclusion of the course on a topic of his choice related to patients he has seen.

MED 719. OUTPATIENT PEDIATRICS, TAMPA GENERAL HOSPITAL (10)
PR: Enrolled in College of Medicine. Experience in follow-up of patients, specialty clinics, emergencies.
MED 720. INPATIENT PEDIATRICS, TAMPA GENERAL HOSPITAL (10)
PR: Enrolled in College of Medicine. Responsibility and decision making in critical pediatric problems.

MED 721. OUTPATIENT PEDIATRICS, ALL CHILDREN'S HOSPITAL (10)
PR: Enrolled in College of Medicine. Experience in follow-up of patients, specialty clinics, emergencies.

MED 722. INPATIENT PEDIATRICS, ALL CHILDREN'S HOSPITAL (10)
PR: Enrolled in College of Medicine. Responsibility and decision making in critical pediatric problems.

MED 723. NEONATAL RESEARCH (20)

MED 724. NEONATOLOGY (10)
PR: Enrolled in College of Medicine. Experience and responsibility of problems critical to the newborn.

MED 725. METABOLIC DISEASE RESEARCH (20)
PR: Enrolled in College of Medicine. Laboratory use of chromatography amino acid and organic acid analysers. Clinical or laboratory research. Experience in metabolic clinic. Independent investigation opportunities.

MED 726. PEDIATRIC ENDOCRINOLOGY (20)

Pharmacology


MED 609. PHARMACOLOGY (9)
PR: Admission to College of Medicine. Studies of pharmacodynamics of drugs including mechanisms of action, side effects, and toxicities. Lec.-lab and discussion.

MED 610. PHARMACOLOGY SEMINAR (0)
PR: Consent of Chairman, Department of Pharmacology. Presentation of current research investigations as related to medical problems. Lec. and discussion.

MED 733. CLINICAL PHARMACOLOGY (5)
PR: Enrolled in College of Medicine. The primary objective is to provide experience in the application of general pharmacological principles and the general principles of drug therapy for the rational rather than empiracal use of pharmacological agents. Organized primary as conferences around case-presentations, the focus is directed to the therapeutic indications, alternative choices, contraindications, side-effects, and toxicological aspects of representatives of the classes of drugs involved in the selected case. Lectures on selected topics of general clinico-pharmacological interest are also presented.

MED 734. IMMUNOPHARMACOLOGY (1/2)
PR: Enrolled in College of Medicine. The course concerns itself with the sequence of events which take place between the antigenantibody interaction, and the effect of the immunologically released pharmacologic mediators on their specific cells. While the pharmacologic mediation of immune reactions is the main subject of the course, current problems of drug allergy, as well as drug-induced immuno-suppression are also discussed.

MED 735. PULMONARY PHARMACOLOGY (5)
PR: Enrolled in College of Medicine. This course covers experimental methodology for study drug effects on the pulmonary system and on isolated portions of that system. The student participates in seminar type research discussions and planning, and participates in the collection of data in the laboratory and its analysis.

MED 736. DRUG METABOLISM AND PHARMACOGENETICS (5)
PR: Enrolled in College of Medicine. The pharmacological and clinical implications of drug metabolism are discussed. The enzymatic mechanisms of drug biotransformation reactions and alterations of these reactions due to pharmacological, environmental and genetic factors are presented. Application of information derived from drug metabolism studies to such clinical problems as dosage, dose interval, tolerance, and drug interactions are emphasized.

Physiology

Chairman: C. H. Baker; Associate Professor: D. L. Davis; Assistant Professors: J. M. Downey, R. P. Menninger, G. R. Nicolosi.

MED 611. MEDICAL PHYSIOLOGY (9)
PR: Admission to College of Medicine. A study of the functional aspects of components of the body and its organ systems and their integration into operational units. The physiology of homostasis and the central nervous system will be included. Lec.-lab and discussion.

MED 612. PHYSIOLOGY SEMINAR (0)
PR: Consent of Chairman, Department of Physiology. Seminars in which current research areas of interest as related to medicine are discussed. Lec. and discussion.

MED 737. RESEARCH IN PHYSIOLOGY (5)
PR: Enrolled in College of Medicine. Introduction to research techniques and problem solving in the laboratory. Participation in an ongoing research project in the department including experimentation and data handling. May be repeated twice.

MED 738. CARDIO-PULMONARY-RENAL PHYSIOLOGY (5)
PR: Enrolled in College of Medicine. Advanced course illustrating the interrelationships between the cardiovascular, pulmonary and renal organ systems with emphasis on clinical problems.

Psychiatry


MED 614. BIOSTATISTICS (1)
PR: Admission to College of Medicine. Presentation of methods of collection, tabulation, graphic illustration, and analysis of numerical data encountered in medical research areas. Lecture.

MED 615. INTRODUCTION TO PSYCHIATRY (3)
PR: Admission to College of Medicine. Principles of human behavioral science will be presented from the standpoint of the developing organism reacting to its environment. Lec. Patient contact, and discussion.

MED 616. PSYCHIATRY SEMINAR (0)
PR: Consent of Chairman, Department of Psychiatry. Current research surveys in Psychiatry. Lec. and discussion.

MED 627. PSYCHIATRY CLERKSHIP (13)
PR: Admission to College of Medicine. Standard clinical clerkship is in the second year of the medical school curriculum. Didactic material is presented one day per week in conjunction with clinical casework conducted on the wards of the affiliated hospitals. The main points of emphasis will be: (1) evaluation and management of psychiatric emergencies; (2) practical psychopharmacology; and (3) introduction to the process of psychotherapy, again emphasizing short term intervention for individuals and their families.
MED 769. GENERAL HOSPITAL PSYCHIATRY CLERKSHIP (10)
PR: Enrolled in College of Medicine. Evaluation and treatment of general hospital patients who have manifested psychoneurological disturbances as part of their illness is the focus of this clerkship.

MED 770. PSYCHIATRY LIAISON SERVICE ROUNDS (5)
PR: Enrolled in College of Medicine. Problem patients, generally from the medical and surgical ward will be interviewed by a member of the liaison staff following presentation by one of the residents. This will be followed by discussion which will emphasize problems in differential diagnosis and management.

MED 771. PSYCHIATRIC ILLNESS — BACKGROUNDS AND ORIGINS (5)
PR: Enrolled in College of Medicine. This course encompasses topics such as consciousness, waking, sleeping, memory and learning, emotionality, sensory and motor functions as well as speech, seen from the viewpoint of the psychiatrist with particular emphasis being laid upon the underlying cerebral substrata.

MED 772. PSYCHIATRY RELATED TO HUMAN ECOLOGY (5)
PR: Enrolled in College of Medicine. A series of informal discussions, field trips, and individual projects, relevant to the experimental analysis of micro-societies and their influence upon psychiatric illness.

MED 773. ELECTIVE IN CHILD PSYCHIATRY (10)
PR: Enrolled in College of Medicine. An opportunity to provide for interested students to augment their experience in the diagnosis and management of behavioral disorders in children. Emphasis is placed upon problems that are met in family and pediatric practice. Students participate in teaching conferences, supervisory sessions and case seminars. Observations of disturbed children in a nursery school setting introduces the student to the problems of the preschool period.

MED 774. DESIGN AND MANAGEMENT OF LEARNING ENVIRONMENTS IN PSYCHIATRY (10)
PR: Enrolled in College of Medicine. Students will apply principles of behavior analysis and modification to the design and management of learning environments within the department. Students will participate in design and management of the first year program in Psychiatry.

MED 775. PSYCHIATRIC RESEARCH TECHNIQUES (10)
PR: Enrolled in College of Medicine. Conferences, practice and selected readings in the area of psychiatric evaluation of autonomic and CNS functions in human subjects. Studies of emotional responding and studies of altered states of consciousness.

MED 776. INTRODUCTION TO PSYCHOSOMATIC MEDICINE (5)
PR: Enrolled in College of Medicine. Conferences will focus on major issues in Psychosomatic medicine. The format includes presentations by invited specialists and recent developments in ideology, diagnosis and management.

MED 778. QUANTITATIVE MODELS IN PSYCHIATRY AND PSYCHOPATHOLOGY (10)
PR: Enrolled in College of Medicine. A survey of univariate and multi-variate statistical models as they apply to research problems in psychiatry and psychopathology. Problems and topics of application will be selected primarily from the clinical areas.

MED 779. FORENSIC PSYCHIATRY (10)
PR: Enrolled in College of Medicine. This course includes examination of court defendants, visits to court rooms, and various correctional institutions, along with reading and discussion.

MED 782. PRINCIPLES OF PSYCHIATRIC THERAPY (5)
PR: Enrolled in the College of Medicine. Treatment of suitable patients under supervision. Basic readings in the teaching of psychiatric therapy will be assigned as well as other readings relevant to issues that appear during the course of supervision.

Radiology

Acting Chairman: A. D. Graham; Associate Professors: R. G. Isbell, M. L. Silbiger; Assistant Professor: J. R. Gutierrez.

MED 767. GENERAL RADIOLOGY (10-20)
PR: Enrolled in College of Medicine. The general principles of X-ray interpretation, including a review of pertinent anatomy, physiology, and general diagnosis. Techniques used, film interpretation and fluoroscopy.

MED 768. GENERAL AND SPECIALTY RADIOLOGY (10-20)
PR: Enrolled in College of Medicine. The first part of the period will be concerned with general principles and techniques of X-ray examination and diagnosis. “Specialty Radiology” will relate to special studies used, study of specific organ systems (Pulmonary, Cardiovascular, Gastrointestinal, Nervous System, Genitourinary, Skeletal) or to the special areas of Nuclear Medicine and Radiation Therapy.

Surgery


MED 625. SURGERY CLERKSHIP (20)
PR: Admission to College of Medicine. Students actively participate in patient care on the Surgical Services. They are an integral part of the surgical team and are required to accomplish supervised clinical work-up, participate in performance of surgical procedures and in patient follow-up. Students attend conferences and seminars on a regularly scheduled basis during the Clerkship. Educational direction and patient care supervision are provided by the faculty of the Department of Surgery.

MED 751. GENERAL SURGERY ELECTIVE (20)
PR: Enrolled in College of Medicine. In-depth clinical experience with the management of surgical disease.

MED 752. GENERAL SURGERY PRECEPTORSHIP (11)

MED 753. RENAL TRANSPLANTATION ELECTIVE (20)

MED 754. ANESTHESIOLOGY ELECTIVE (11)
PR: Enrolled in College of Medicine. In-depth clinical experience in anesthesiology.

MED 755. NEUROSURGICAL PRECEPTORSHIP (11)

MED 756. ORTHOPEDIC PRECEPTORSHIP (11)
PR: Enrolled in College of Medicine. Clinical preceptorship.

MED 757. OTOLARYNGOLOGY ELECTIVE (11)
PR: Enrolled in College of Medicine. In-depth clinical experience with the management of patients on the otolaryngological service.

MED 758. OTOLARYNGOLOGY PRECEPTORSHIP (10)
PR: Enrolled in College of Medicine. Clinical preceptorship in otolaryngology.

MED 759. PLASTIC SURGERY PRECEPTORSHIP (11)

MED 760. THORACIC SURGERY ELECTIVE (20)
PR: Enrolled in College of Medicine. In-depth experience with the management of cardio-thoracic patients.
### MODERN LANGUAGES

**Acting Chairman:** J. A. Parrish; **Professors:** C. W. Capsas, A. R. Lopes, E. F. McLean, V. I. Milani, E. J. Neugard, R. A. Stelzmann; **Associate Professors:** R. A. Cherry, E. G. Glenisson, W. H. Grothmann, C. de la Menardiere, C. E. Scruggs, A. J. Sparks, J. C. Tatum; **Assistant Professors:** M. Arzybushev, C. J. Cano, W. Hampton, W. O. Price, G. C. Pukatzki; **Instructors:** M. R. Braun, D. Ierardo, J. Jochimek, A. Seminario.

#### General Modern Languages (MOL)

**UPPER LEVEL COURSES**

**MOL 383. GENERAL MODERN LANGUAGE I (1-4)**
A general-purpose course that may be used for transfer of credit, credit by examination and similar matters; may also be used for formal courses in less-commonly taught languages or in professional translation.

**MOL 384. GENERAL MODERN LANGUAGE II (1-4)**
A general-purpose course that may be used for transfer of credit, credit by examination and similar matters; may also be used for formal courses in less-commonly taught language or for workshops in professional interpreting.

**FOR SENIORS AND GRADUATE STUDENTS**

**MOL 585. DIRECTED STUDY (1-3)**
PR: MOL 483 or equivalent.

#### Arabic (ARA)

**UPPER LEVEL COURSES**

**ARA 390. MODERN ARABIC I (1-4)**
PR: None. An intensive study of the basic grammar, syntax, pronunciation and development of reading and oral skills.

**ARA 391. MODERN ARABIC II (1-4)**
PR: ARA 390.

#### French (FRE)

**LOWER LEVEL COURSES**

**FRE 101. BEGINNING FRENCH I (5)**
(Formerly CBS 111.)

**FRE 102. BEGINNING FRENCH II (5)**
PR: FRE 101. (Formerly CBS 112.)

**FRE 103. PHONETICS AND DICTION (2)**
Laboratory drill. May be repeated and may be taken concurrently with FRE 101 and FRE 102.

**FRE 199. FRENCH FOR READING (3)**
PR: CI. Designed to provide a reading ability in French that will support research in other disciplines.

**FRE 201. INTERMEDIATE FRENCH I (4)**
PR: FRE 102. (Formerly CBS 211.)

**FRE 202. INTERMEDIATE FRENCH II (4)**
PR: FRE 102. (Formerly CBS 212.)

**FRE 203. BEGINNING CONVERSATION (3)**
PR: FRE 102.

**UPPER LEVEL COURSES**

**FRE 301. CONTROLLED COMPOSITION (4)**

**FRE 302. ADVANCED CONVERSATION (3)**
PR: FRE 203 or equivalent. Free conversation based upon the current French idiom.

**FRE 305. INTRODUCTION TO FRENCH LITERATURE (4)**

**FRE 310. FRENCH CLASSICS IN TRANSLATION (4)**
Moliere, Voltaire, Balzac, Stendhal, Flaubert, Zola and others.

**FRE 311. CONTEMPORARY FRENCH LITERATURE IN TRANSLATION (4)**
Proust, Gide, Sarrie, Camus, Anouilh, Ionesco, Beckett and others.

**FRE 401. EXPOSITORY WRITING (4)**
PR: FRE 301.

**FRE 403. INTENSIVE SPOKEN FRENCH (2)**
PR: FRE 303.

**FRE 405. SURVEY OF FRENCH LITERATURE (4)**
PR: FRE 305. Earliest monuments through 18th Century Enlightenment.

**FRE 406. SURVEY OF FRENCH LITERATURE (4)**
PR: FRE 305. Romanticism to present.

**FRE 410. FRENCH CIVILIZATION (4)**
PR: 305 or equivalent. France's contribution to world culture and civilization. (In English.)

**FOR SENIORS AND GRADUATE STUDENTS**

**FRE 501. EARLY RENAISSANCE LITERATURE (4)**
PR: FRE 405. Emphasis on Rabelais and his contemporaries.

**FRE 502. LATER RENAISSANCE LITERATURE (4)**
PR: FRE 405. Emphasis on Montaigne and the Pleide.

**FRE 516. MODERN USAGE (4)**
PR: FRE 401. The various components of style together with practical training.

**FRE 521. CLASSICAL PROSE AND POETRY (4)**
PR: FRE 405. Emphasis on Malherbe, La Fontaine, Boileau, Descartes, and Pascal.

**FRE 522. CLASSICAL DRAMA (4)**
PR: FRE 405. Corneille, Moliere, and Racine.

**FRE 531. 18TH CENTURY LITERATURE (4)**
PR: FRE 405. The classical tradition and the new currents of thought 1715-50.

**FRE 532. PRE-ROMANTICISM (4)**
PR: FRE 405.

**FRE 541. ROMANTICISM (4)**
PR: FRE 406.

**FRE 542. REALISM (4)**
PR: FRE 406.

**FRE 543. NATURALISM AND SYMBOLISM (4)**
PR: FRE 406.

**FRE 551. 20TH CENTURY LITERATURE TO 1939 (4)**
PR: FRE 406.

**FRE 552. 20TH CENTURY LITERATURE 1939-PRESENT (4)**
PR: FRE 406.

**FRE 583. SELECTED TOPICS (1-4)**
PR: Senior or graduate standing. CI.

**FRE 585. DIRECTED STUDY (1-4)**
PR: Senior or graduate standing; approval of Department.

**FOR GRADUATE STUDENTS ONLY**

**FRE 601. OLD FRENCH (4)**
PR: FRE 516. Note: Required of M.A. candidates.

**FRE 612. MEDIEVAL LITERATURE (4)**
PR: Graduate standing.
GER 544. REALISM (4)
GER 543.
GER 535. THE ENLIGHTENMENT (4)
GER 531.
GER 521.
GER 516.
GER 513.
GER 311 .
GER 305.
GER 303.
GER 301. CONTROLLED COMPOSITION (4)
PR: GER 401.
GER 552. 20th CENTURY LITERATURE TO 1945 (4)
PR: GER 406.
GER 553. 20th CENTURY LITERATURE 1945-PRESENT (4)
PR: GER 406.
GER 583. SELECTED TOPICS (1-4)
PR: Senior or graduate standing. CI.
GER 585. DIRECTED STUDY (1-4)
PR: Senior or graduate standing; approval of Department.

FOR GRADUATE STUDENTS ONLY
GER 601. MIDDLE HIGH GERMAN (4)
PR: GER 513.
GER 631. FAUST II (4)
PR: GER 521.
GER 691. GRADUATE SEMINAR (1-4)
Topics vary. May be repeated.

Greek (GRE)

UPPER LEVEL COURSES
GRE 390. MODERN GREEK I (1-4)
An intensive study of the basic grammar, syntax, pronunciation and development of reading and oral skills.
GRE 391. MODERN GREEK II (1-4)
PR: GRE 390.

Hebrew (HEB)

UPPER LEVEL COURSES
HEB 390. MODERN HEBREW I (1-4)
An intensive study of the basic grammar, syntax, pronunciation and development of reading and oral skills.
HEB 391. MODERN HEBREW II (14)
PR: HEB 390.

Italian (ITA)

UPPER LEVEL COURSES
ITA 101. BEGINNING ITALIAN I (5)
(Formerly CBS 123.)
ITA 102. BEGINNING ITALIAN II (5)
PR: ITA 101. (Formerly CBS 124.)
ITA 103. PHONETICS AND DICTION (2)
Laboratory drill. May be taken concurrently with ITA 101 and ITA 102. May be repeated.
ITA 201. INTERMEDIATE ITALIAN I (4)
PR: ITA 102. (Formerly CBS 223.)
ITA 203. BEGINNING CONVERSATION (3)
PR: ITA 102.

FOR SENIORS AND GRADUATE STUDENTS
ITA 513. HISTORY OF THE ITALIAN LANGUAGE (4)
PR: ITA 401.
ITA 516. MODERN USAGE (4)
PR: ITA 401. The various components of style together with practical training.
ITA 521. FAUST I (4)
PR: ITA 405.
ITA 531. GOETHE (4)
PR: ITA 405.
ITA 532. SCHILLER (4)
PR: ITA 405.
ITA 535. THE ENLIGHTENMENT (4)
PR: ITA 405.
ITA 543. ROMANTICISM (4)
PR: ITA 406.
ITA 544. REALISM (4)
PR: ITA 406.
ITA 545. SURVEY OF ITALIAN LITERATURE (4)
PR: ITA 305. Earlier monuments to 18th century Classicism.
ITALIAN CIVILIZATION (4)
Italy's contribution to world culture and civilization. (In English.)

ITALIA 585. DIRECTED STUDY (1-4)
PR: ITA 405.

ITALIAN CIVILIZATION (4)
Italy's contribution to world culture and civilization. (In English.)

ITALIA 512. DANTE (4)

ITALIA 583. SELECTED TOPICS (1-4)
PR: Senior or graduate standing. CI.

ITALIA 585. DIRECTED STUDY (1-4)
PR: Senior or graduate standing; approval of Department.

Portuguese (POR)

UPPER LEVEL COURSES

POR 315. BRAZILIAN LITERATURE IN TRANSLATION (4)
Machado de Assis, Ramos, Amado, Guimaraes Rosa and others.

POR 326. BEGINNING ACCELERATED PORTUGUESE (4)
PR: Two years of another Romance Language or Latin.

POR 327. INTERMEDIATE ACCELERATED PORTUGUESE (4)
PR: POR 326.

POR 401. EXPOSITORY WRITING (4)
PR: POR 327.

POR 405. SURVEY OF PORTUGUESE LITERATURE (4)
PR: POR 327.

FOR SENIORS AND GRADUATE STUDENTS

POR 585. DIRECTED STUDY (1-4)
PR: POR 327; approval of Department.

Roman (ROM)

UPPER LEVEL COURSES

ROM 517. ROMANCE PHILOLOGY (4)
PR: Senior or graduate standing.

ROM 518. MEDIEVAL AND EARLY ROMANCE LITERATURE (4)
PR: ROM 517.

FOR GRADUATE STUDENTS ONLY

ROM 685. DIRECTED STUDY (1-4)
PR: Graduate Standing. CI.

ROM 689. BIBLIOGRAPHY (2)
PR: Graduate standing. Research methods. Includes familiarity with major journals and bibliographies, and a practicum. Note: Required of all M.A. candidates. (S/U only.)

Russian (RUS)

UPPER LEVEL COURSES

RUS 303. ADVANCED CONVERSATION (3)
PR: RUS 203. Free conversation based upon the current Russian idiom.

RUS 305. INTRODUCTION TO RUSSIAN LITERATURE (4)

RUS 310. RUSSIAN CLASSICS IN TRANSLATION (4)
Pushkin, Turgenev, Tolstoy, Dostoyevsky and others.

RUS 311. SOVIET LITERATURE IN TRANSLATION (4)
Gorky, Chekhov, Pasternak, Solzhenistsyn and others.

RUS 401. EXPOSITORY WRITING (4)
PR: RUS 301.

RUS 405. SURVEY OF RUSSIAN LITERATURE (4)
PR: RUS 305. Earliest monuments to Classicism.

RUS 406. SURVEY OF RUSSIAN LITERATURE (4)
PR: RUS 305. Romanticism to present.

RUS 410. SLAVIC CIVILIZATION (4)
Slavic contribution to world culture and civilization. (In English.)

FOR SENIORS AND GRADUATE STUDENTS

RUS 553. DOSTOYEVSKY (4)
PR: RUS 405.

RUS 583. SELECTED TOPICS (1-4)
PR: Senior or graduate standing. CI.

RUS 585. DIRECTED STUDY (1-4)
PR: Senior or graduate standing; approval of Department.

Spanish

UPPER LEVEL COURSES

SPA 101. BEGINNING SPANISH I (5)
(Formerly CBS 120.)

SPA 102. BEGINNING SPANISH II (5)
PR: SPA 101. (Formerly CBS 121)

SPA 103. PHONETICS AND DICTION (2)
Laboratory drill. May be taken concurrently with SPA 101 or SPA 102.

SPA 201. INTERMEDIATE SPANISH I (4)
PR: SPA 102. (Formerly CBS 220)

SPA 202. INTERMEDIATE SPANISH II (4)
PR: SPA 102. (Formerly CBS 221)

SPA 203. BEGINNING CONVERSATION (3)
PR: SPA 102.

UPPER LEVEL COURSES

SPA 301. CONTROLLED COMPOSITION (4)

SPA 303. ADVANCED CONVERSATION (3)
PR: SPA 203 or equivalent. Free conversation based upon the current Spanish idiom.

SPA 305. INTRODUCTION TO HISPANIC LITERATURE (4)

SPA 310. SPANISH CLASSICS IN TRANSLATION (4)
The Cid, The Celestina, Cervantes, Quevedo, Perez Galdos, and others.

SPA 311. CONTEMPORARY SPANISH LITERATURE IN TRANSLATION (4)
Pio Baroja, Unamuno, Valle-Inclan, Sender, Jimenez, and others.

SPA 313. SPANISH AMERICAN LITERATURE IN TRANSLATION (4)
Dario, Mistral, Guiraldes, Azuela, Borges, Asturias, and others.

SPA 401. EXPOSITORY WRITING (4)
PR: SPA 301.

SPA 403. INTENSIVE SPOKEN SPANISH (2)
PR: SPA 303.

SPA 405. SURVEY OF SPANISH LITERATURE (4)
PR: SPA 305. Earliest monuments to 18th Century Neo-Classicism.

SPA 406. SURVEY OF SPANISH LITERATURE (4)
PR: SPA 305. Romanticism to the present.
SPA 410. HISPANIC CIVILIZATION (4)
PR: 305 or Equivalent. Hispanic contributions to world
culture and civilization.

FOR SENIORS AND GRADUATE STUDENTS

SPA 516. MODERN USAGE (4)
PR: SPA 401.

SPA 524. GOLDEN AGE DRAMA (4)
PR: SPA 405. Lope de Vega, Alarcon, Tirso, Calderon, and
others.

SPA 526. THE QUIXOTE (4)
PR: SPA 405.

SPA 540. ROMANTICISM (4)
PR: SPA 406.

SPA 542. 19th CENTURY REALISM (4)
PR: SPA 406.

SPA 546. THE GENERATION OF 1898 (4)
PR: SPA 406.

SPA 552. 20th CENTURY LITERATURE 1936-PRESENT (4)
PR: SPA 406.

MUSIC (MUS)

Acting Chairman: V. S. Jennings; Professors: J. Abram, E. S.
Anderson, L. D. Austin, G. A. Johnson, E. Preedor, A. J.
Watkins; Associate Professors: N. R. Cooke, L. A. Golding, J.
M. Reynolds, A. M. Woodbury; Assistant Professors: A.
Hawkings, D. D. Hill, H. K. Jones, J. K. Keister, J. E. Lewis,
P. S. Lockwood, D. J. Mizelle, J. L. Smith, N. S. Stevens, R.
J. Summer, E. A. Wrancher; Instructor: J. M. Ryon; Interim
Instructor: A. V. Summer; Visiting Lecturers: D. R. Gannett,
A. Y. Monroe; Adjunct Lecturers: A. Hopper, M. S. Marzuki.

LOWER LEVEL COURSES

MUS 101. RUDIMENTS OF MUSIC (3)
Open only to non-music majors; development of skills in
hearing and performing music and in basic notation.

MUS 102. MUSIC THEORY-LITERATURE SUPPLEMENT (2)
PR: CI. May be required of music majors upon examination,
for supplemental study coordinated with MUS 201, 202, 203;
may be repeated for credit for a maximum of 6 hours.

MUS 201, 202, 203. MUSIC THEORY-LITERATURE (3,3,3)
PR: CI. Required of music majors; development of skills in
sightseeing and aural and visual analysis of examples from
each historical periods of music literature.

MUS 204. APPLIED MUSIC (3)
PR: CI. Required of all applied music majors; open to a
limited number of non-music majors by audition only. Private
and class instruction in string, woodwind, brass, and
percussion instruments, voice and piano. May be repeated
for credit.

Sec. 001 Violin
002 Viola
003 Violoncello
004 Double Bass
005 Flute
006 Oboe
007 Clarinet

Sec. 008 Saxophone
009 Bassoon

MUS 205. INTRODUCTION TO ELECTRONIC MUSIC (3)
History and repertory of electronic music; standard sound
studio techniques; basic electronics as applied in electronic
sound synthesis; mathematics for music composition and
electronic music.

MUS 206. CLASS PIANO (2)
PR: CI. Class in elementary piano and music fundamentals
designed for students with limited keyboard experience.
Primary emphasis is placed on sight-reading, accompanying,
transposition, harmonization, basic technique, and appro­
riate literature.

Sec. 001 non-music majors
002 non-music majors
003 music major level I
004 music major level II
005 music major level II
006 non-music major level II
007 music major proficiency level III
008 music major proficiency level III
009 non-music major level III
010 music major level IV
011 non-music major level IV

MUS 207. SECONDARY APPLIED MUSIC (1)
PR: CI. One half-hour private lesson per week for music students wishing to gain proficiency in an
area other than their applied performance major and for a
limited number of non-music majors who have had prior
musical training. Course is open by audition only.

Sec. 001 Violin
002 Viola
003 Violoncello
004 Double Bass
005 Flute
006 Oboe
007 Clarinet
008 Saxophone
009 Bassoon

MUS 208. COMPOSITION (3)
PR: CI. Required of music majors with an area emphasis of
Composition; class instruction in original composition; may
be repeated for credit.

UPPER LEVEL COURSES

MUS 301, 302, 303. MUSIC THEORY-LITERATURE (3,3,3)
PR: MUS 203. Required of music majors; continuation of
MUS 201-203.

MUS 304. APPLIED MUSIC (3)
PR: Necessary competency at MUS 204 level determined by
faculty jury examination. Required of all applied music
majors. Private and class instruction in string, woodwind,
brass, and percussion instruments, voice and piano. May be
repeated for credit four quarters only.

Sec. 001 Violin
002 Viola
003 Violoncello
004 Double Bass
PR: MUS 205 and Cl. Composition for tape medium with analog synthesizers; use of sound recording studio; repertory of analog music synthesis; technical basis of analog systems design and construction.

MUS 308. COMPOSITION (3)
PR: MUS 203 and MUS 205 and Cl. Class instruction in original composition. Required of composition majors. May be repeated for credit four quarters only.

MUS 309, 310, 311. CONTEMPORARY TECHNIQUES OF COMPOSITION (3,3,3)
PR: Cl. Instruction in the use of major Twentieth-Century compositional techniques; tonal, unordered set, and serial composition and the use of indeterminacy in composition and performance.

MUS 312. IMPROVISATION (1)
PR: MUS 203 and Cl. A course of study designed to acquaint the student with basic improvisational techniques; emphasis on performance. May be repeated for credit.
Sec. 001 Fundamental Techniques
002 Jazz Techniques

MUS 371. ISSUES IN MUSIC (2)
Open only to non-music majors; lectures and live performances by artist faculty of significant works from the literature for the piano; analysis and illustration in performance of the abstract and aesthetic elements in music which vitally concern the artist-performer. (S/U only)

MUS 372-373. THE ENJOYMENT OF MUSIC (3,3)
Open only to non-music majors; a study in the art of music and its materials, designed to develop an understanding of basic principles of music and a technique for listening to music; Section 001 of MUS 372 is for students who are majoring in dance, theatre arts, and visual arts.

MUS 374. MAJOR PERFORMING ORGANIZATIONS (1)
PR: Cl. Open to all university students with the necessary proficiency in their performing media; study and performance of music for large combinations of voices, string, woodwind, brass, or percussion instruments; may be repeated for credit.
Sec. 001 Repertory Orchestra/String Group
002 Repertory Orchestra/Wind Group
003 Repertory Chorus
004 Opera Workshop
005 Choral Union
006 University Band
007 Wind Ensemble
008 University Community Chorus

MUS 375. CHAMBER MUSIC ENSEMBLES (1)
PR: Cl. Open to all university students with the necessary proficiency in their performance media; study and performance of music for small combinations of voices, string, woodwind, brass, or percussion instruments, and piano; may be repeated for credit.
Sec. 001 Chamber Singers
002 Jazz Laboratory Band
003 Brass Choir
004 Brass Quintet
005 Woodwind Quintet
006 Piano Ensemble
007 String Quartet
008 Horn Quartet
009 Clarinet Choir
010 Percussion Ensemble
011 Marimba Ensemble
012 Flute Choir
013 New Music Ensemble
014 Madrigal Singers
015 Gospel Choir
016 Electronic Arts Ensemble

MUS 376. HISTORY OF POPULAR MUSIC (2)
Popular music in the U.S. from 1820 to the present. Units on the big band era, country and western, jazz, black music, and the rock scene beginning in 1955. May be used for University General Distribution Requirement by the non-major, and may be used to satisfy part of the 9 hours in-College Requirement for Fine Arts majors in Art, Dance, and Theatre.

MUS 401, 402, 403. MUSIC HISTORY-LITERATURE (2,2,2)
PR: Cl. Required of music majors; a survey of the historical development of musical styles and of the music representative of those styles.

MUS 404. APPLIED MUSIC (3)
PR: Necessary competency at MUS 304 level determined by faculty jury examination. Required of all applied music majors. Private and class instruction in string, woodwind, brass, and percussion instruments, voice, and piano. May be repeated for credit four quarters only.
Sec. 001 Violin Sec. 10 French horn
002 Viola 011 Trumpet
003 Violoncello 012 Trombone/Baritone
004 Double Bass 013 Tuba
005 Flute 014 Percussion
006 Oboe 015-021 Voice
007 Clarinet 022-025 Piano
008 Saxophone 026 Harp
009 Bassoon

MUS 405, 406, 407. ELECTRONIC MUSIC — DIGITAL SYNTHESIS (3,3,3)
PR: MUS 205 and Cl. Computer assisted composition for conventional instruments; composition for tape medium with computer controlled analog synthesizers; direct digital synthesis; digital systems design and construction.

MUS 408. COMPOSITION (3)
PR: Necessary competency at MUS 308 level determined by faculty jury examination. Required of music majors with an area emphasis of composition; private instruction in original composition; may be repeated for credit four quarters.

MUS 453. MUSIC SENIOR SEMINAR (3)
PR: Cl. To aid majors to understand, appraise and perfect their own art through critical and aesthetic judgments of their colleagues. (S/U only.)

MUS 481. DIRECTED STUDY (1-6)
PR: CC. Independent studies in the various areas of music; course of study and credits must be assigned prior to registration; may be repeated.

FOR SENIORS AND GRADUATE STUDENTS

MUS 504. APPLIED MUSIC (3)
PR: Necessary competency at MUS 404 level determined by faculty jury examination. Required of all applied music majors. Private and class instruction in string, woodwind, brass, and percussion instruments, voice and piano. Must be repeated for credit for a minimum of 9 hours for majors.
Sec. 001 Violin Sec. 010 French Horn
002 Viola 011 Trumpet
003 Violoncello 012 Trombone/Baritone
004 Double Bass 013 Tuba
005 Flute 014 Percussion
006 Oboe 015-021 Voice
007 Clarinet 022-025 Piano
008 Saxophone 026 Harp
009 Bassoon

MUS 505, 506, 507. ELECTRONIC MUSIC — REAL-TIME PERFORMANCE (3,3,3)
PR: MUS 307 and 407 or equivalent. Composition for analog and digital equipment for real-time performance applications; sound synthesis, interfacing electronics with conventional instruments, in-performance-directed composition, and design and construction of electronic composing/performing...
MUS 508. COMPOSITION (3)
PR: Necessary competency at MUS 408 level determined by faculty jury examination. Required of music majors with an area emphasis of Composition; private instruction in original composition. Must be repeated for credit for a minimum of 9 hours for majors.

MUS 509. SEMINAR IN NEW MUSICAL SYSTEMS (3)
PR: CI. Experimental sound sources and ensemble groupings; creation of new instruments; unfamiliar sonic materials and unique social contexts for music. May be repeated for credit.

MUS 510, 511. ORCHESTRATION (3,3)
PR: CI. Intensive study and practice in scoring music for various combinations of instruments including symphony orchestra, band, and smaller ensembles of string, woodwind, brass, and percussion instruments.

MUS 512. MUSIC STUDIO PEDAGOGY (3)
PR: CI. May be elected by undergraduate music majors; emphasis on the business management of the music studio, the musical responsibilities of the studio teacher, the techniques of private instruction. May be repeated for credit for a maximum of 6 hours for the same section.
Sec. 001 Strings
002 Winds & Percussion
003 Voice
004 Piano

MUS 561. MASTER CLASSES (2)
PR: CI. Study and performance of selected literature with special emphasis on style, form and techniques; especially designed for teachers, piano majors, and talented secondary school students.
Sec. 001 Piano
002 Voice
003 Strings

MUS 562. MUSIC WORKSHOPS (2)
PR: CI. Intensive study in the specialized areas indicated below; open to teachers, University students, and secondary students; credit available to qualified students.
Sec. 001 Band
002 Chamber Music
003 Chorus
004 Orchestra
005 Strings

MUS 581. DIRECTED STUDY (1-6)
PR: CC. Independent studies in the various areas of music; course of study and credits must be assigned prior to registration; may be repeated.

FOR GRADUATE STUDENTS ONLY

MUS 601, 602, 603. CRITICAL ANALYSIS OF MUSIC REPERTORY (4,4,4)
PR: CI. Required of music theory majors; study of the development of musical styles in western civilization from Antiquity to the present; includes analysis and performance of representative works.

MUS 604. APPLIED MUSIC (2-4)
PR: Necessary competency determined by faculty jury audition. Required of all applied music majors. Private and class instruction.
Sec. 012 Strings secondary Sec. 042 Percussion secondary
014 Strings 044 Percussion
022 Woodwinds secondary 052 Voice secondary
024 Woodwinds 054 Voice
032 Brass secondary 062 Piano secondary
034 Brass 064 Piano

MUS 605, 606, 607. ELECTRONIC MUSIC—ANALOG/DIGITAL SYSTEMS RESEARCH (4,4,4)
PR: CI. State-of-the-art compositional and performance applications; new concepts of electronic music synthesis; documentation and critical analysis of new repertory.

MUS 608. SEMINAR IN COMPOSITION (4)
PR: CI. Composition of music for any media; discussion of problems presented by the most current ideas in composition; evaluation of new music in seminar context. May be repeated for credit.

MUS 609, 610. MUSICAL ACOUSTICS (4,4)
PR: CI. Required of music theory majors; study of the nature and transmission of sound, the hearing process, tuning and temperament; includes principles of electronic sound reproducers and basic concepts of architectural acoustics.

MUS 611, 612, 613. KEYBOARD REPERTORY (3,3,3)
PR: CI. A study of style, history and performance practice in keyboard repertory including masterworks of all periods.

MUS 614, 615, 616. SONG LITERATURE (3,3,3)
PR: CI. Solo song literature from the 17th century through the contemporary with emphasis on German lieder, French songs, and contemporary English and American songs; special emphasis on performance.

MUS 617. SOLO VOCAL LITERATURE IN ORATORIO (4)
PR: CI. A survey of literature for the solo voice in oratorio from the 17th century to the present. Includes allied forms such as solo voice in cantatas and orchestra music.

MUS 618. SYMPHONIC LITERATURE (5)
PR: CI. A chronological study of the development of orchestral music; analysis and study of major works from a stylistic and biographical perspective.

MUS 619, 620. OPERA LITERATURE (4,4)
PR: CI. A chronological study of the development of opera from 1600 to the present; emphasis on the technical, stylistic, and performance aspects of opera.

MUS 621. TWENTIETH CENTURY MUSIC LITERATURE (5)
PR: CI. A study of the compositional techniques of composers from Debussy to the present; emphasis on counterpoint, harmonic structure, tonality, atonality, polytonality, texture, and serial technique.

MUS 622, 623, 624. CHORAL LITERATURE AND CONDUCTING (6,6,6)
PR: CI. Combination of seminar, classroom and laboratory types of experiences designed to provide depth in stylistic study of choral music literature and performance.

MUS 625. SEMINAR IN CONDUCTING (3)
PR: CI. Intensive study of conducting techniques with emphasis on interpretation of music scores and application in laboratory sessions.
Sec. 001 Choral
Sec. 002 Instrumental

MUS 626, 627, 628. TEACHING OF MUSIC THEORY (4,4,4)
PR: CI. Comparative study of teaching techniques, procedures, and materials used in teaching the individual student in performance.

MUS 629. STUDIO TEACHING SEMINAR (3)
PR: Graduate standing in performance and CI; emphasis on techniques used in teaching the individual student in performance.

MUS 674. MAJOR ENSEMBLE PERFORMANCE (1)
PR: CI. Open to all university students with the necessary proficiency in their performing media; study and performance of music for large combinations of voices, string, woodwind, brass, or percussion instruments; may be repeated for credit.
Sec. 001 Repertory Orchestra/String Group
002 Repertory Orchestra/Wind Group
003 Repertory Chorus
004 Opera Workshop
005 Choral Union
006 University Band
007 Wind Ensemble
008 University Community Chorus

MUS 675 CHAMBER ENSEMBLE PERFORMANCE (1)
PR: CI. Open to all university graduate students with the necessary proficiency in their performing media; study and performance of music for small combinations of voices, string, woodwind, brass, or percussion instruments, and piano; may be repeated for credit.
MUS 681. DIRECTED STUDY (1-9)
PR: CC. Independent graduate studies in the various areas of music; course of study and credits must be assigned prior to registration; may be repeated.

MUS 691. GRADUATE SEMINAR (2)
PR: CC. May be repeated to a maximum of six credits.

MUS 698. GRADUATE RECITAL (3)
PR: CC.

MUS 699. GRADUATE THESES (3)
PR: CC. May be repeated to a maximum of nine credits.

NATURAL SCIENCES (NAS)

UPPER LEVEL COURSES

NAS 409. SCIENCE AND HUMAN LIFE I (4)
The role of science in society. The manner in which science is organized, how it operates, its harmonious and conflicting relationships with other fields of knowledge. (For non-science majors.) (Formerly CBS 409.)

Dean: G. R. MacDonald; Associate Professors: F. Carbonell, J. Sasmor; Assistant Professors: M. Boostrom, N. Entrekin, J. Fanning, S. Fletcher, J. Rackow; Instructors: H. Guiss, B. Mauger.

UPPER LEVEL COURSES

NUR 300. COMMUNITY HEALTH RESOURCES (3)
PR: Admission to nursing major or permission of faculty. Study of health resources in the community including voluntary and official health agencies. Consideration will be given to preventive and maintenance services as well as to hospitals and other institutional components of medical care. Also, will consider the roles, responsibilities, and relationships of personnel in the various health occupations with whom nurses work. Instruction will be multidisciplinary with seminars and selected field work experience.

NUR 301. HUMAN ANATOMY (3)
PR: BIO 201-202-203 (or equivalents). A course in basic human anatomy including cellular and organ system relationships as a foundation for normal and abnormal function. Lec.-lab.

NUR 302. NUTRITION (3)
PR: BIO 201-202-203 and CHM 211-212-213 (or equivalents). The study of normal and therapeutic nutrition for all age groups from infancy through senescence. Considers the effects of cultural, religious, and socioeconomic factors in defining and modifying food patterns of individuals and groups.

NUR 303. NURSING PROCESS I (3)
PR: Admission to nursing major. An overview of the development of nursing and trends which will influence future practice. Attention will be directed to emerging roles and responsibilities of professional nurses in providing health services to individuals and families and relationships of nurses to clients and other health care personnel. Lec.-discussion sessions and related extra-class activities.

NUR 304. HUMAN PHYSIOLOGY (5)
PR: BIO 201, 202, 203 and CHM 211, 212, 213 (or equivalents). Basic functional features of the normal human body considered on a systematic basis. General content includes the cell and functional organization of the body, the function of the body systems, and limited attention to deviations from normal and application to nursing practice. Lec.-lab.

NUR 305. NURSING PROCESS II (3)
PR: NUR 303. Restricted to nursing majors. An introduction to the nursing process with emphasis on the initial phase of assessment of the health status of individuals seeking care in ambulatory settings. Opportunities are provided for continuing development of group process and interviewing skills as tools in the assessment process in nursing. Learning experiences include the application of biopsychosocial concepts and the utilization of selected psychomotor skills in nursing intervention with non-hospitalized individuals.

NUR 306. SEMINAR IN NURSING I (2)
PR: Preceding courses required for the nursing major or permission of faculty. This seminar provides opportunities for students to correlate various learning experiences, to exchange experiences and raise questions for group and faculty exploration. It serves as a vehicle for introducing nursing audit and peer review of nursing practice and as a means of dealing with the human problems characteristic of nursing practice. Issues, trends, legal aspects, management, and leadership principles will be considered within the framework of internal and external forces which structure nursing and determine its role in society.

NUR 309. SEMINAR IN NURSING II (2)
PR: Preceding courses required for the nursing major or permission of faculty. Description same as NUR 306 Seminar in Nursing I.

NUR 402. SEMINAR IN NURSING III (2)
PR: Preceding courses required for the nursing major or permission of faculty. Description same as NUR 306 Seminar in Nursing I.

NUR 406. SEMINAR IN NURSING IV (2)
PR: Preceding courses required for the nursing major or permission of faculty. Description same as NUR 306 Seminar in Nursing I.

NUR 409. SEMINAR IN NURSING V (2)
PR: Preceding courses required for the nursing major or permission of faculty. Description same as NUR 306 Seminar in Nursing I.

OFF-CAMPUS TERM (OCT)

Director: D. K. Lupton.

UPPER LEVEL COURSES
The following courses are provided for students admitted in the Off-Campus Term Program to work on one of the types of projects indicated.

OCT 401. COMMUNITY INTERACTION (3-5)
A field course for students in the OCT Program utilizing the
community as a learning laboratory to develop sensitivity to the problems of our society.

OCT 410. OFF CAMPUS TERM SOCIAL ACTION PROJECT (1-2)
(S/U only.)
OCT 411. OFF CAMPUS TERM INDEPENDENT STUDY (1-2)
(S/U only.)

PHILOSOPHY (PHI)

Chairman: J. A. Gould; Professor: C. H. Chen; Associate Professor: W. H. Truitt; Assistant Professors: A. Burk, P. A. Carpenter, S. Kriinsky, B. Silver, R. Taylor, R. Weatherford.

LOWER LEVEL COURSES

PHI 111. GREAT PHILOSOPHERS OF THE WESTERN WORLD (2)
Lectures and discussions of the great philosophers since Plato, focusing on particular problems.

PHI 112. PHILOSOPHIC CONTROVERSIES (2)
A discussion of central controversies in philosophy such as the nature of love, violence, freedom, truth, morality, etc.

PHI 113. PRACTICAL LOGIC (2)
Elementary theory and application of logical fallacies, deductive and inductive logic. Not for majors.

PHI 301. BASIC PHILOSOPHY I: GOD AND REALITY (4)
An introduction to the major philosophical problems in religion, metaphysics, and the philosophy of mind.

PHI 303. LOGIC (5)
Language analysis and classical and modern formal logic, including the logic of classes and propositions, and discussion of philosophical issues.

PHI 304. SCIENTIFIC METHOD (4)
Probability, inductive inference, the hypothetico-deductive method, experimentation, and selected topics in the philosophy of science.

PHI 311. BASIC PHILOSOPHY II: VALUE AND SOCIETY (4)
An introduction to the major philosophical problems in ethics, aesthetics, and social political philosophy.

PHI 317. BASIC PHILOSOPHY III: KNOWLEDGE AND SCIENCE (4)
An introduction to the major philosophical problems in methodology, epistemology, and the philosophy of science.

PHI 321. ETHICS (4)
An examination of the writing of the philosophers: Plato, Aristotle, Kant, Sartre, etc., about moral problems and principles.

PHI 333. ANCIENT AND MEDIEVAL PHILOSOPHY (4)
A survey of philosophy from Thales through the medieval writers.

PHI 334. RENAISSANCE AND MODERN PHILOSOPHY (4)
A survey of philosophy from the Renaissance through Kant.

PHI 335. RECENT PHILOSOPHY (4)
A survey of philosophy from Kant through nineteenth century philosophy.

PHI 377. SOCIAL PHILOSOPHY (4)
An analysis of rival theories of social order and their philosophical foundations.

PHI 381. DIRECTED STUDY (1-5)
PR: CI. Individual study directed by a faculty member. Approval slip from instructor required.

PHI 383. SELECTED TOPICS (1-5)
PR: CI. Selected topics according to the needs of the student. Approval slip from instructor required.

PHI 405. CONTEMPORARY PHILOSOPHY (4)
PR: 12 hours or CI. Selected schools of twentieth century thought such as idealism, positivism, pragmatism, realism, and existentialism.

PHI 406. ANALYTICAL PHILOSOPHY (4)
PR: 12 hours, PHI 303. A study of the method devoted to clarifying philosophical problems through analysis of the language in which these problems are stated.

PHI 407. EXISTENTIALISM (4)
PR: 12 hours or CI. A study of the religious and atheistic existentialists and the bearing of their views on religion, ethics, metaphysics, and theory of knowledge.

PHI 408. CURRENT PHILOSOPHICAL MATERIALISM (4)
PR: CI. A critical study of historical, dialectical, and scientific materialism and its importance in physical science, social science, theory of history, theory of knowledge, and metaphysics.

PHI 409. CLASSICAL CHINESE PHILOSOPHY (4)
PR: PHI 301 or 311 or 317. A critical examination of the major classical Chinese philosophers from the sixth century through the third century B.C.

PHI 410. CONTEMPORARY CHINESE PHILOSOPHY (4)
PR: PHI 301 or 311 or 317. A critical examination of the works of Lin Piao, Hu-Shih, Mao Tse-Tung, Sun Yet-Sen, Chiang Kai-Shek, Lin Yu-Tang and other selected materials.

PHI 411. PHILOSOPHY OF RELIGION (4)
Analysis of religious experience and activity and examination of principal religious ideas in light of modern philosophy.

PHI 412. OFF CAMPUS TERM INTERNATIONAL PROGRAM (1-2)
(S/U only.)

PHI 414. OFF CAMPUS TERM SPECIAL PROJECT (1-2)
(S/U only.)

PHI 415. PLATO (4)
PR: 8 hours of Philosophy or CI. The examination of Plato will include the dialogues Protagoras, Gorgias, Meno, Republic, etc.

PHI 416. ARISTOTLE (4)
PR: 8 hours of Philosophy or CI. Study of Aristotle's philosophy.

PHI 422. AESTHETICS (4)
A study of traditional and contemporary aesthetic theories with emphasis on creative process, the nature of the art work, the aesthetic response, expressiveness, form and content as well as art and morality. (Formerly PHI 522.)

PHI 425. KANT (4)
PR: 8 hours of Philosophy or CI. Lectures and discussions of Kant's philosophy, especially The Critique of Pure Reason.

PHI 453. THEORY OF KNOWLEDGE (4)
PR: 8 hours of Philosophy, PHI 317, or CI. An examination of human knowledge, its scope and limits, and an evaluation of evidence, criteria of truth, the nature of belief, conditions for meaningfulness, theories of perception, and a study of memory and sense perception in the four major fields of nature, history, personal experience, and the a priori.

PHI 461. ANCIENT AND MEDIEVAL POLITICAL PHILOSOPHY (3)
A survey of political philosophy from 6 B.C. until 1600 A.D., including an examination of the ethical, metaphysical, and epistemological bases of these philosophies.

PHI 463. MODERN POLITICAL PHILOSOPHY (3)
A survey of political philosophy from 1600 A.D. until 1900 A.D., including an examination of the ethical, metaphysical, and epistemological bases of these philosophies.
PHI 465. CONTEMPORARY POLITICAL PHILOSOPHY (3)
A survey of political philosophy in the twentieth century, including an examination of the ethical, metaphysical, and epistemological implications of technocracy.

PHI 481. DIRECTED STUDY (1-5)
PR: CI. Individual study directed by a faculty member. Approval slip from instructor required.

PHI 483. SELECTED TOPICS (1-5)
PR: CI. Selected topics according to the needs of the student. Approval slip from instructor required.

FOR SENIORS AND GRADUATE STUDENTS

PHI 507. PHILOSOPHY OF NATURAL SCIENCE (4)
PR: 8 hours or CI. The function of the course is to investigate (1) problems in the methodology of natural science such as the constructing and testing of hypotheses, confirmation and falsification of theories, explanations and the role of laws and models, (2) philosophical implications of the theories of natural science, especially in the areas of space, time, and matter.

PHI 508. PHILOSOPHY OF THE SOCIAL SCIENCES (4)
PR: 8 hours or CI. Philosphic issues arising in the social sciences: value assumptions, laws and theories, models, etc.

PHI 509. SYMBOLIC LOGIC (4)
PR: PHI 303 or CI. Mathematical treatment of formal logic, including methods of proof, quantification, the logic of relations, and an introduction to properties of deductive systems.

PHI 511. PHILOSOPHY OF LAW (4)
PR: 8 hours or CI. The nature and function of law, relations between law, morality, and metaphysics, logic of legal reasoning, analysis of fundamental concepts and institutions.

PHI 521. CONTEMPORARY CONTROVERSIES IN PHILOSOPHY OF RELIGION (4)
PR: PHI 411 or CI. A survey of contemporary philosophical problems in religion such as demythologizing, falsification, and the meaning and justification of key concepts, e.g., God, immortality, faith, etc.

PHI 531. PHILOSOPHY OF LANGUAGE (4)
PR: 8 hours of Philosophy, major in linguistics, or CI. An examination of semantical, syntactical, and functional theories of language with special attention given to the problems of meaning, linguistic reference, syntactical form, and the relations between scientific languages and ordinary linguistic usage.

PHI 543. PHILOSOPHY OF HISTORY (4)
PR: 8 hours of philosophy, major in history, or CI. A systematic study of historical theories and of the methods of historical explanation. An examination of classical theories from Vico through Herder, Hegel, Marx down to Spengler and Toynbee, etc.

PHI 571. SEMINAR IN EPistemology I (3)
PR: Major in philosophy or psychology and CI. This course may be taken more than once for credit with CI and departmental approval.

PHI 572. SEMINAR IN EPistemology II (3)
PR: Major in philosophy or social science and CI. This course may be taken more than once for credit with CI and departmental approval.

PHI 573. SEMINAR IN METAPHYSICS I (3)
PR: Major in philosophy or CI. Cosmology. This course may be taken more than once for credit with CI and departmental approval.

PHI 574. SEMINAR IN METAPHYSICS II (3)
PR: Major in philosophy or CI. A consideration of the theory of reality. This course may be taken more than once for credit with CI and departmental approval.

PHI 575. SEMINAR IN CONTEMPORARY ETHICS (3)
PR: CI. A study of the central figures and doctrines in Contemporary Ethics. This course may be taken more than once for credit with CI and departmental approval.

PHI 581. DIRECTED STUDY (1-5)
PR: CI. Individual study directed by a faculty member. Approval slip from instructor required.

PHI 585. RESEARCH (1-5)
PR: CI. Individual research supervised by a faculty member. Approval slip from instructor required.

PHI 591. SEMINAR IN THE HISTORY OF PHILOSOPHY (3)
PR: CI. A study of one or more of the central figures or movements in the history of philosophy. This course may be taken more than once for credit with CI and departmental approval.

FOR GRADUATE STUDENTS ONLY

PHI 607. STUDIES IN THE PHILOSOPHY OF SCIENCE (4)
PR: Graduate standing or CI. A study of the nature and status of physical theories, some basic problems associated with scientific methodology, and the philosophical implications of modern science. This course may be taken more than once for credit with CI and departmental approval.

PHI 609. STUDIES IN LOGIC (4)
PR: Graduate standing or CI. Foundations and basic problems of logic. This course may be taken more than once for credit with CI and departmental approval.

PHI 611. STUDIES IN THE PHILOSOPHY OF LAW (4)
PR: Graduate standing or CI. A study of the metaphysical, ethical and epistemological bases of law. This course may be taken more than once for credit with CI and departmental approval.

PHI 615. STUDIES IN MAJOR PHILOSOPHICAL SYSTEMS (4)
PR: Graduate standing or CI. A detailed study of a metaphysical movement. This course may be taken more than once for credit with CI and departmental approval.

PHI 621. STUDIES IN PHILOSOPHY OF RELIGION (4)
PR: Graduate standing or CI. An analysis of fundamental religious concepts in terms of contemporary philosophy. This course may be taken more than once for credit with CI and departmental approval.

PHI 622. STUDIES IN AESTHETICS (4)
PR: Graduate standing or CI. An advanced inquiry into the special problems of aesthetics: value, perception, communication, technique, context. This course may be taken more than once for credit with CI and departmental approval.

PHI 631. STUDIES IN THE THEORY OF MEANING (4)
PR: Graduate standing or CI. Theory of meaning in relation to theory of truth, reference, modality, and analyticity; with bearings on problems in epistemology, metaphysics, and value. This course may be taken more than once for credit with CI and departmental approval.

PHI 634. STUDIES IN PHILOSOPHY OF HISTORY (4)
PR: Graduate standing or CI. The analysis of language and logic of historical explanation, historical idealism, historical materialism, positivism, and historical sociology. This course may be taken more than once for credit with CI and departmental approval.

PHI 677. STUDIES IN THE THEORY OF VALUE (4)
PR: Graduate standing or CI. An analysis and critique of traditional and contemporary theories of value, emphasizing those systems which deal with aesthetic, moral, social, economic, and political values. This course may be taken more than once for credit with CI and departmental approval.

PHI 679. STUDIES IN POLITICAL PHILOSOPHY (4)
PR: Graduate standing or CI. An examination of the main political philosophies. This course may be taken more than once for credit with CI and departmental approval.

PHI 680. STUDIES IN SOCIAL PHILOSOPHY (4)
PR: Graduate standing or CI. A detailed study of the philosophical theories of society, class societies (Capitalism), advanced technocracy (all types). This course may be taken more than once for credit with CI and departmental approval.
PHI 681. DIRECTED STUDY (1-5)
PR: Graduate standing and CI. Individual study directed by a faculty member. Approval slip from instructor required.

PHI 683. SELECTED TOPICS (1-5)
PR: Graduate standing and CI. Selected topics according to the needs of the student. Approval slip from instructor required.

PHI 691. GRADUATE SEMINAR (4)
PR: Graduate standing. A seminar in the history of philosophy. The instructor will determine the subject matter.

PHI 699. THESIS (5)
PR: Graduate standing. Supervision of the writing of the M.A. thesis.

PHYSICAL EDUCATION-ELECTIVE (PEB)

PEB 232. SWIMMING II (2)
PR: PEB 132 or equivalent. Development of the essential skills and knowledge necessary for enjoying swimming. Emphasis on personal safety. (S/U only.)

PEB 236. LIFE SAVING (2)
PR: PEB 232 or equivalent. Knowledges and skills necessary for saving one's self or others in the event of aquatic emergency. (S/U only.)

PEB 238. SKIN & SCUBA DIVING (2)
PR: PEB 232 or equivalent. Development of the essential skills and knowledge necessary for enjoying the sport of Skin & Scuba Diving. Correct utilization and care of equipment; emphasis on personal safety. (S/U only.)

PEB 240. SYNCHRONIZED SWIMMING (2)
Introductory experiences in synchronized swimming. Emphasis on essential skills; music interpretation; and choreography. (S/U only.)

PEB 250. HANDBALL-PADDLEBALL (2)
Development and refinement of the skills and strategies of Handball and Paddleball with opportunity for competition and tournament play. (S/U only.)

PEB 252. WEIGHT TRAINING (2)
Knowledges and techniques necessary for increasing muscle function. Assessment of status and development of a personal program. (S/U only.)

PEB 254. WRESTLING (2)
Progressive experiences in the sport of Wrestling. Fundamenta l skills, strategy, information, and participation. (S/U only.)

PEB 270. AEROBICS (2)
Introduction to the knowledges and techniques necessary for increasing cardiorespiratory efficiency. Assessment of status and development of a personal program. (S/U only.)

PEB 276. WEIGHT CONTROL (2)
Introduction to the knowledges and techniques necessary for effecting a change in body composition. Assessment of status and development of a personal program. (S/U only.)

PEB 290. HUMAN KINESIOLOGY I (2)
An introduction to the structure and function of the skeletal and neuromuscular systems in reference to their support of vigorous human movement. (S/U only.)

PEB 291. HUMAN KINESIOLOGY II (2)
PR: PEB 290. An introduction to the mechanical principles which govern human movement. (S/U only.)

PEB 364. WATER SAFETY INSTRUCTION (2)
PR: PEB 236. Examination of the various swimming strokes leading to identification of appropriate methods and techniques for instructing others. ARC certification offered. (S/U only.)

PHYSICAL SCIENCES (PHS)

LOWER LEVEL COURSES

PHS 208. MAN THINKS ABOUT HIS PHYSICAL UNIVERSE (4)
Science is viewed as a creative, intellectual activity. Special emphasis is given to observations, their interpretation, and the development of conceptual models. Topics such as man's conception of his place in the physical universe, the natural motions of objects, the Newtonian Revolution, energy, and

PHS 209. THE ECOLOGICAL-ENVIRONMENTAL IMPACT OF GEO-CHEMICAL PHENOMENA (4)
The content covers concepts, principles and "Big Ideas" of the geological and chemical processes and their relationship to the crustal changes on the earth. Particular emphasis is
given to the effect of these changes as applied to the local environment and life within the area. No credit for science or mathematics majors. Qtr. I, II, III, IV.

PHS 210. EXPLORATIONS IN PHYSICAL SCIENCE (4)
(Refer to departmental course offerings for additional information.) This course is offered in several variants, each with a section number that lists its relation to the department making the offering. No credit for science or mathematics majors. Qtr. I, II, III, IV.

Sec. 002 (Chemistry) Recent Advances in Chemistry, or Controversial Issues in Science, or Great Experiments in Science.

Sec. 004 (Physics) Aerospace and Man. Man's interaction with aerospace is explored. Included are basic principles of flight, general aviation, the space program and its relation to flying and gliding, and basic rocketry.

Wave Motion and Sound. Basic ideas are explored, including the nature of sound, sources of sound, hearing, noise pollution, and unusual uses of sound. Two or three laboratory exercises will be done.

Readings in Physical Science. A study of ideas, historical and philosophical, which relate the physical sciences to contemporary problems and their solutions.

PHYSICS (PHY)

(See also the sections entitled Physical Sciences and Natural Sciences)


LOWER LEVEL COURSES

PHY 201-202. GENERAL PHYSICS AND LABORATORY (4:1)
First quarter of 3-quarter sequence of general physics (mechanics, heat, electricity, wave motion, optics, atomic and nuclear physics) and laboratory for science students. Must be taken concurrently. Qtr. I, II, III, IV.

PHY 203-204. GENERAL PHYSICS AND LABORATORY (4:1)

PHY 205-206. GENERAL PHYSICS AND LABORATORY (4:1)

PHY 271. ENERGY AND HUMANITY (4)
A non-technical survey of energy forms, sources, present and projected needs, uses and abuses in modern civilization. (No credit for Physics majors.) Qtr. I, II, III, IV.

UPPER LEVEL COURSES

PHY 301-302. GENERAL PHYSICS AND LABORATORY (3:1)
CR: MTH 302. First quarter of 3-quarter sequence of general physics (mechanics, wave motion, sound, thermodynamics, geometrical and physical optics, electricity and magnetism) and laboratory for physics majors and engineering students. Must be taken concurrently. Qtr. I, II, III, IV.

PHY 303-304. GENERAL PHYSICS AND LABORATORY (3:1)

PHY 305-306. GENERAL PHYSICS AND LABORATORY (3:1)

PHY 307. MECHANICS I (3)

PHY 309. ELECTRICITY AND MAGNETISM I (4)
PR: MTH 305. Electromagnetic circuits; resistance, capacitance, inductance, direct- and alternating-current circuits, thermoelectricity and instrumentation. Laboratory. First quarter of sequence PHY 309-508-509. Qtr. II.

PHY 311. PROBLEMS IN GENERAL PHYSICS I (1)
CR: PHY 301. First quarter of three quarter sequence of general physics problems. A course designed to allow those interested students to investigate problems not covered in the general physics course. Qtr. I, II, III, IV.

PHY 312. PROBLEMS IN GENERAL PHYSICS II (1)

PHY 313. PROBLEMS IN GENERAL PHYSICS III (1)
CR: PHY 305. Third quarter of sequence PHY 311-312-313. Qtr. I, II, III, IV.

PHY 315. MATHEMATICAL ANALYSIS OF PROBLEMS IN MECHANICS AND ELECTRICITY (3)
PR: One year of non-calculus general physics. CR: MTH 305. Designed for students who have not had the general physics sequence using calculus. Review of mechanics and electricity emphasizing problems which involve the use of calculus. Qtr. I, II, III.

PHY 332. MODERN PHYSICS (4)

PHY 331. OPTICS (4)
PR: PHY 305 or PHY 315. CR: MTH 304. Reflection, refraction, dispersion, interference, diffraction, polarization and laboratory. Qtr. II.

PHY 341. INTERMEDIATE LABORATORY (2)
CR: PHY 205 or 305 or equivalent. Experiments in modern physics, including the area of atomic, nuclear, solid state and wave phenomena. Qtr. I, III.

PHY 371. CONTEMPORARY PHYSICS (5)
PR: Junior standing. A qualitative, non-mathematical investigation of physics, emphasizing its influence on life today. (No credit for physics or mathematics majors.) Qtr. I, II, III, IV.

PHY 405. STATISTICAL PHYSICS I (3)
PR: MTH 305 and either PR: PHY 305 or CR: PHY 315. Statistical approach to thermodynamics and kinetic theory and introduction to statistical mechanics. First quarter of the sequence PHY 405-505. Qtr. I.

PHY 407. MECHANICS II (3)
PR: PHY 307 and MTH 401. Continuation of PHY 307. Motion of a group of particles, coupled oscillators, normal modes, dynamics of rigid bodies, Lagrange's and Hamilton's equations, principle of least action. Qtr. II.

PHY 415. FUNDAMENTAL ACOUSTICS (4)

PHY 421. SOLID STATE PHYSICS I (4)
PR: PHY 323 and MTH 401. Crystal structure, x-ray and electron diffraction, mechanical and thermal properties of
solids, electrical and magnetic properties of metals, band theory of metals, insulators and semiconductors. First quarter of sequence PHY 421-521. Qtr. I.

PHY 437. QUANTUM MECHANICS I (3)
R: PHY 407, MTH 401 or CI. Wave-particle duality, uncertainty principle, Schrodinger’s equation, postulates, angular momentum, and central forces. First quarter of sequence PHY 437-537. Qtr. II.

PHY 441. ADVANCED LABORATORY (2)
PR: PHY 341. Experimental work primarily related to nuclear physics. Emphasis on modern physical experimental techniques employing some of the new types of equipment. Qtr. I, III.

PHY 470. ACOUSTICS FOR COMMUNICOCUGOLOGY (4)
PR: none. Non-mathematical study of general wave motion and associated phenomena. Acoustic resonance and response of the ear. Introduction to harmonic analysis of complex waveforms with application to testing with pure tones and various types of waves. Acoustic instrumentation. (No credit for physics or mathematics majors.) Qtr. I, II.

PHY 481. UNDERGRADUATE RESEARCH (1-6)
PR: Senior or advanced junior standing and CC. Individual experimental work under supervision of instructor. (S/U only.) Qtr. I, II, III, IV.

PHY 491. PHYSICS SEMINAR (1)
PR: Senior or advanced junior standing or CC. May be repeated once. (S/U only.) Qtr. I, II, III, IV.

FOR SENIORS AND GRADUATE STUDENTS

PHY 501. NUCLEAR PHYSICS (4)
PR: PHY 437 or CI. Systematics of stable nuclides, nuclear forces, nuclear models, reactions, radiation, and nuclear instrumentation. Qtr. I.

PHY 505. STATISTICAL PHYSICS II (3)
PR: PHY 405. Continuation of the sequence PHY 405-505. Qtr. II.

PHY 507. MECHANICS III (3)
PR: PHY 407. Continuation PHY 407. Elastic media, the wave equation, transverse and longitudinal wave motion, the diffusion equation, boundary value problems and Fourier series, Fourier integral, fluid dynamics. Qtr. III.

PHY 508. ELECTRICITY AND MAGNETISM II (3)

PHY 509. ELECTRICITY AND MAGNETISM III (3)

PHY 517. PLASMA PHYSICS I (4)
PR: PHY 509 or CI. Introduction to Boltzmann, magnetohydrodynamic and orbit approaches to plasmas, Longitudinal and electromagnetic waves in plasmas. Collisions and radiation. Instabilities. Qtr. IV.

PHY 521. SOLID STATE PHYSICS II (3)

PHY 522. ELECTRONICS FOR RESEARCH (4)
PR: General Physics or CI. Direct and alternating current circuits, transients, rectification, amplification, feedback, pulse circuits, and integrated circuits, laboratory. (No credit for physics or mathematics majors.) Qtr. I, III.

PHY 523. ELECTRONICS (4)
PR: PHY 409 and PHY 341. Vacuum and gas-discharge tubes, semiconductors, transistors, electronic circuit analysis and laboratory. Qtr. II.

PHY 537. QUANTUM MECHANICS II (3)
PR: PHY 437 or CI. Matrix mechanics, approximation methods, transformations, scattering and identical particles. Qtr. III.

PHY 541. METHODS OF THEORETICAL PHYSICS (3)
PR: MTH 401 or CI. Applications of mathematical techniques to classical and modern physics. Vector spaces including Hilbert space and Dirac notation, elements of vector and tensor analysis, matrices, group representations, eigenvalue problems, and variational calculus. Qtr. I.

PHY 542. METHODS OF THEORETICAL PHYSICS II (3)
PR: MTH 401 or CI. Applications of mathematical techniques to classical and modern physics. Elements of complex analysis including conformal mapping and calculus of residues, Fourier analysis, and transform calculus. Qtr. II.

PHY 543. METHODS OF THEORETICAL PHYSICS III (3)
PR: MTH 401 or CI. Applications of mathematical techniques to classical and modern physics. Orthogonal and special functions, integral equations, Green’s functions, methods of data analysis, and approximation techniques. Qtr. III.

PHY 571. MECHANICS AND HEAT — FINE ARTS (4)
PR: None. Principles of the mechanics and thermal behavior of solids, liquids, and gases, with descriptions of applications to appropriate art forms and techniques. (No credit for physics or mathematics majors.) Qtr. I.

PHY 572. ELECTRICITY AND SOUND — FINE ARTS (4)
PR: None. Principles of electricity, magnetism, electronics, and sound with descriptions of applications to appropriate art forms and techniques. Laboratory. (No credit for physics or mathematics majors.) Qtr. II.

PHY 573. OPTICS — FINE ARTS (4)
PR: None. Principles of optics, with descriptions of applications to appropriate art forms and techniques. Laboratory. (No credit for physics or mathematics majors.) Qtr. III.

PHY 583. SELECTED TOPICS IN PHYSICS (1-6)
PR: Senior or advanced standing and CC. Each topic is a course in directed study under the supervision of a faculty member. Among the courses contemplated are Physics of Waves, Space Physics, Elementary Particle Physics, Relativity, Nuclear Structure.

FOR GRADUATE STUDENTS ONLY

PHY 601. ATOMIC AND MOLECULAR SPECTRA (4)
PR: PHY 437 or CI. Quantitative study of atomic and molecular structure and spectra. Qtr. IV.

PHY 605. STATISTICAL MECHANICS (4)
PR: PHY 505 or CI. Kinetic theory, configuration and phase space. Boltzmann theorem, Liouville theorem, ensemble theory, quantum statistics. Qtr. III.

PHY 607. CLASSICAL MECHANICS I (3)
PR: PHY 541 or CI. Dynamics of particles and systems of particles, Lagrange’s equations, central forces, rigid body dynamics. First quarter of sequence PHY 607-608. Qtr. II.

PHY 608. CLASSICAL MECHANICS II (3)
PR: PHY 607 or CI. Hamilton’s equations, canonical transformations, Poisson brackets, small oscillations, Hamilton-Jacobi theory, continuous systems. Qtr. III.

PHY 609. CLASSICAL MECHANICS III (3)
PR: PHY 608 or CI. Advanced topics in mechanics of current interest. Offered on demand.

PHY 617. PLASMA PHYSICS II (4)
PR: PHY 517, or CI. An analytical study of the various types of wave phenomena in plasmas describable by the continuum equations, the Boltzmann-Vlasov equation or the Boltzmann equation. Qtr. I.

PHY 621. SOLID STATE PHYSICS III (3)
PR: PHY 521 or CI. Advanced course on Solid State Physics covering material of current interest. Qtr. III.

PHY 631. ELECTROMAGNETIC THEORY I (3)

PHY 632. ELECTROMAGNETIC THEORY II (3)
PR: PHY 631 or CI. Electromagnetic waves, wave guides and
resonant cavities, diffraction, relativistic-particle kinematics and dynamics, plasmas and magnetohydrodynamics. Qtr. II.

**PHY 633. ELECTROMAGNETIC THEORY III (3)**

PR: PHY 632 or CI. Scattering, radiation, multipole fields, radiation damping, and self-fields. Qtr. III.

**PHY 637. QUANTUM MECHANICS III (3)**

PR: PHY 537 or CI. Dirac equation, quantized fields, collision theory, symmetry and invariance. Qtr. I.

**PHY 641. EXPERIMENTAL PHYSICS (2)**

PR: Graduate standing. Laboratory techniques frequently required in experimental research. Includes manipulation of glass, production and measurement of vacua, production and measurement of thin films, and use of various machine tools. Qtr. I.

**PHY 651. PHYSICAL APPLICATIONS OF GROUP THEORY (4)**

PR: PHY 542 or CI. Introduction to the theory of Lie Groups and Lie Algebras; applications to atomic and molecular physics, solid state physics, nuclear physics, classical physics and elementary particle physics. (Offered alternate years.)

**PHY 657. THEORY OF RELATIVITY (4)**

PR: PHY 541 or CI. The special and general theory of relativity, including the gravitational field equations, applica-

**POLITICAL SCIENCE (POL)**

**POL 199. INTRODUCTION TO POLITICAL SCIENCE (4)**

A survey of the basic concepts in government and politics, theories and methods of political science and the American political system as well as materials.

**POL 201. AMERICAN NATIONAL GOVERNMENT (4)**

Basic principles and procedures of the American governmental system with emphasis on current issues and trends.

**POL 203. STATE AND LOCAL GOVERNMENT (4)**

Analysis of the structure and function of state and local governments, of the social and political influences that shape them, and of the dynamics of their administrative processes.

**UPPER LEVEL COURSES**

**POL 311. COMPARATIVE POLITICS (4)**

Analysis of political systems using the concepts and methods of comparative politics. Studies of selected countries will be included.

**POL 331. INTERNATIONAL RELATIONS (4)**

Contemporary international affairs, including analysis of politics among nations; control of national foreign policies, sovereignty, nationalism and diplomacy; technology, public opinion and war in international relations.

**POL 333. INTERNATIONAL ORGANIZATION (4)**

The problems of achieving peace through existing international structures, both within and outside the United Nations. The background, achievement and organizational problems of these agencies.

**POL 338. CONTEMPORARY AMERICAN FOREIGN POLICY (4)**

Analysis of the development and scope of United States foreign policy focusing upon our aims, decision-making, application of policies, and alternatives for specified problem areas in foreign affairs.

**POL 341. POLITICAL PARTIES (4)**

PR: POL 201 or CI. The development, structure, operation and significance of political parties in the American system of government.

**POL 343. EMPIRICAL POLITICAL ANALYSIS (4)**

An introduction to the conduct of empirical political inquiry and to research methods. Techniques of data generation, collection, and analysis will be emphasized. Laboratory exercises required.

**POL 345. PRIVATE GROUPS AND PUBLIC POLICY (4)**

Role of non-party groups in the American society and their impact on public policy; growth of interest groups, internal politics, and formation of public policy.

**POL 347. CONTEMPORARY SOUTHERN POLITICS (4)**

Comparative study of selected political patterns and trends in the eleven southern states since 1950. Analysis of such topics as massive resistance, the civil rights movement, black political participation, factional division within the Democratic Party and the growth of presidential and gubernatorial Republicanism.

**POL 351. INTRODUCTION TO PUBLIC ADMINISTRATION (4)**

PR: Upper level standing. An examination of the administrative principles and processes by which public policies are implemented in a democratic society.

**POL 405. POLITICS OF THE SOVIET UNION (4)**

Development of the Soviet political system since the Revolution. Theory and practice of Communism in the contemporary Soviet Union.

**POL 410. POLITICAL SYSTEMS OF SOUTHEAST ASIA (4)**

PR: Upper level standing. Comparative analysis of political systems and practices in Southeast Asian countries with emphasis on the nature of nationalism, political development and revolutionary processes in the region.

**POL 415. MILITARY POWER IN INTERNATIONAL POLITICS (4)**

PR: POL 331. Upper Level Standing or CI. A study of the role of military power affecting war and peace in modern international politics. Among the issues covered are, limited war, nuclear deterrence, balance of power, conventional war, guerrilla warfare, disarmament and nuclear proliferation.

**POL 421. GOVERNMENT AND POLITICS OF THE FAR EAST (4)**

Development of political ideas and institutions of Japan and China with emphasis on 20th century issues.

**POL 425. POLITICS OF LATIN AMERICA (4)**

Comparative analysis of political systems of Latin America.
with emphasis on modernization, the role of the military, revolutionary processes, and inter-American relations.

POL 428. POLITICS OF AFRICA (4)
Development and growth of emerging African political systems and their relations with each other and with states outside of Africa.

POL 431-432. CONSTITUTIONAL LAW (4,4)

POL 434. JUDICIAL POLITICS (4)
Consideration of selected theories of judicial decision-making. Examination and application of social science methodology to the study of court systems. PR: POL 431 or POL 432.

POL 436. INTERNATIONAL LAW AND DIPLOMACY (4)
Contemporary international norms, agreements and negotiations. Their influence on, and response to, a changing international system.

POL 438. COMPARATIVE FOREIGN POLICY (4)
Comparative study of foreign policy behavior of nations. Analysis of formulation and objectives of foreign policies.

POL 441. THE AMERICAN PRESIDENCY (4)
The presidency as an institution of American democracy; constitutional status and powers, administrative responsibilities, legislative and political leadership, decision-making process.

POL 443. POLITICAL BEHAVIOR (4)
PR: Upper level standing or CI. Economic, psychological and social dimensions of political behavior; political participation, leadership and elites; political attitudes; voting behavior and decision-making processes.

POL 453. URBAN GOVERNMENT (4)
An introduction to the theory of urbanism, formal and informal structures that govern urban areas, new patterns and policy emphasis of urban government.

POL 454. URBAN POLITICS (4)
PR: Upper level standing. POL 203 or equivalent. An examination of the political processes and systems in urban and suburban communities in America.

POL 455. THE AMERICAN LEGISLATIVE PROCESS (4)
Intensive analysis of the nature of the legislative process in the United States; organization, procedure, leadership, relations with other governmental agencies, group tactics, decision-making process in the formation of policy.

POL 457. PROBLEMS OF PUBLIC FISCAL ADMINISTRATION (4)
PR: POL 351 or CI. Analysis of problems in the growth and development of public budgets with emphasis on principal techniques and theories of fiscal administration.

POL 461. CLASSICAL POLITICAL IDEAS (4)
PR: POL 199 or CI. Basic political ideas from the works of Plato, Aristotle, Cicero, St. Augustine, St. Thomas Aquinas and other leading Greek, Roman, and Medieval-Christian political philosophers.

POL 462. CLASSICAL POLITICAL IDEAS (4)
PR: POL 199 or CI. Basic political ideas from the works of Machiavelli, Bodin, Hobbes, Locke, Montesquieu, Rousseau, Burke, Bentham and other leading modern political philosophers.

POL 463. AMERICAN POLITICAL THOUGHT (4)
PR: Upper level standing. American political thought from the Colonial period to the present with emphasis on recent contributions.

POL 464. MODERN POLITICAL THOUGHT (4)
PR: Upper level standing. Basic political ideas from the works of 19th and 20th century political philosophers.

POL 481. INDIVIDUAL RESEARCH (1-8)
PR: 3.0 average in Political Science and CC. Investigation of some aspect of political science culminating in the preparation of an original research paper.

POL 491. SENIOR SEMINAR (4)
PR: Senior standing. Designed to give the student an opportunity to examine and apply various concepts and methods in the field of political science to some integrated problem area.

FOR SENIORS AND GRADUATE STUDENTS

POL 520. ADMINISTRATION OF URBAN AFFAIRS (4)
An analysis of the role of the administrator at the municipal level stressing the division of functions, policy formation, alternative governmental structures and their effect on administrative processes.

POL 525. PROBLEMS OF PUBLIC PERSONNEL ADMINISTRATION (4)
An analysis of recruitment, testing, training, employee and human relations in the public service.

POL 527. COMPARATIVE PUBLIC ADMINISTRATION (4)
Comparison of certain aspects of public administrative systems of various governments, emphasizing such writers as Siffin, Hadari, Appleby, Hu, Simon and Riggs.

POL 530. LEGAL AND REGULATORY PROCESSES (4)
Systematic study of the political-judicial factors in the regulatory process of administrative agencies.

POL 550. METHODOLOGICAL AND CONCEPTUAL PROBLEMS IN COMPARATIVE AND INTERNATIONAL POLITICS (4)
Examination of problems and concepts in the study of comparative and international politics, emphasizing theoretical and empirical relations and relative advantages of different levels and units of analysis. May be repeated for credit.

POL 561. POLITICS OF THE DEVELOPING AREAS (4)
An analysis of the ideologies, governmental structures, and political processes of selected nations of the non-Western world.

POL 571. FIELD WORK (4)
PR: 3.0 average in Political Science and CI. Application of research models now employed in governmental agencies; including developing a structured research proposal. Designed to give the student practical experience in the administrative and political processes.

FOR GRADUATE STUDENTS ONLY

POL 600. SCOPE AND METHODS OF POLITICAL SCIENCE (4)
Advanced study of the scope and methodologies of political science, including their applications to different research areas.

POL 620. URBAN POLICY ANALYSIS (4)
Systematic examination of the organizational and administrative characteristics of planning, program development and reporting activities conducted at local levels by various state, regional and federal agencies.

POL 623. URBAN FINANCIAL ADMINISTRATION (4)
Examination of organizational structure and administrative processes of urban fiscal agencies, sources of revenue, expenditures and indebtedness, and current problems in budgeting.

POL 625. PROBLEMS IN URBAN POLITICS (4)
Analysis in depth of pressure group behavior and its role in municipal policy formulation, including the study of community power approaches advanced by Rossi, Sofen, Kamrner, Martin and others.

POL 627. ADMINISTRATIVE BEHAVIOR AND PUBLIC POLICY FORMATION (4)
Analysis of the formal, informal and societal characteristics of public bureaucracies and their impact on public policy.

POL 640. POLITICAL SOCIALIZATION (4)
Seminar in selected phases of the political socialization process.
PSY 643. CONTEMPORARY POLITICAL IDEAS AND BEHAVIOR (4)
Study of certain phases of political philosophy and theories of modern political analysis.

POL 645. SEMINAR IN STATE POLITICS (4)
Analysis of selected topics in American state politics. May be repeated for credit as topics vary.

POL 650. SEMINAR IN POLITICAL REVOLUTION AND CHANGE (4)
Analysis of selected contemporary problems relating to political revolution and change.

POL 662. SEMINAR IN COMPARATIVE POLITICS (4)
Comparative analysis of political systems in terms of processes, institutions, and behavior. May be repeated for credit.

POL 665. SEMINAR IN INTERNATIONAL ORGANIZATIONS AND ADMINISTRATION (4)
Analysis of various phases of international organizations and their administrative systems.

POL 667. SEMINAR IN INTERNATIONAL RELATIONS (4)
Investigation of selected phases of international relations in world politics. May be repeated for credit as topics vary.

POL 670. SEMINAR IN AMERICAN GOVERNMENT AND POLITICS (4)
Analysis of selected current problems in American government and politics. May be repeated for credit as topics vary.

PORTUGUESE (POR)—see Modern Languages

PSYCHOLOGY (PSY)


LOWER LEVEL COURSES

PSY 201. INTRODUCTION TO PSYCHOLOGY (5)
A survey of major topics in psychology (learning, perception, thinking, intelligence, etc.), and an introduction to methods used in psychological investigation. Lecture and discussion, taken concurrently.

UPPER LEVEL COURSES

PSY 311-312. RESEARCH METHODS IN PSYCHOLOGY (4,1)
PR: PSY 201 and SS1 301. Scientific research methods and their applications for psychology. Topics include experimental planning, control procedures, and interpretive principles. Lecture plus two-hour lab. Must be taken concurrently.

PSY 313. APPLIED PSYCHOLOGY (4)
The application of psychological principles and the functions of psychologists in education, government, industry, and clinical practice. Not for major credit.

PSY 335. PSYCHOLOGY OF ADJUSTMENT (4)
Genetic, organic and learned factors involved in the processes of personal adjustment: applications of mental health principles to everyday living. Not for major credit.

PSY 341. CHILD PSYCHOLOGY (4)
Developmental and psychosocial aspects of childhood, including hereditary, maturational, psychological, and social determinants of child behavior. Not for major credit.

PSY 371. CONTEMPORARY PROBLEMS IN PSYCHOLOGY (4)
Selected topics from all areas of psychology designed to give the undergraduate nonmajor an opportunity to become acquainted with psychological concepts relevant to contemporary problems in our society. Not for major credit. (Formerly PSY 401.)

PSY 402. PSYCHOLOGY OF LEARNING (4)
PR: PSY 201, SS1 301, PSY 311-312. Survey of methods, empirical findings and theoretical interpretations in conditioning and instrumental learning. Lec.-lab.

PSY 403. DEVELOPMENTAL PSYCHOLOGY (4)
PR: PSY 201, SS1 301, PSY 311-312. Survey of methods, empirical findings and theoretical interpretations in the study of human and animal development.

PSY 404. SOCIAL PSYCHOLOGY (4)
PR: PSY 201, SS1 301, PSY 311-312. Survey of methods, empirical findings and theoretical interpretations in the study of an individual's behavior as it is affected by others.

PSY 405. NEUROPSYCHOLOGY (4)

PSY 411. EXPERIMENTAL DESIGN AND ANALYSIS (4)
PR: PSY 201, SS1 301, PSY 311-312. Detailed coverage of those research designs and statistical techniques having the greatest utility for research problems in psychology. Emphasis on topics from analysis of variance.

PSY 415. SYSTEMATIC PSYCHOLOGY (4)
PR: PSY 201, SS1 301, PSY 311-312. The historical roots of modern psychological theories, investigation of the various schools of psychology such as behaviorism, Gestalt psychology, psychoanalysis, and phenomenological psychology.

PSY 421. MOTIVATION (4)
PR: PSY 201, SS1 301, PSY 311-312, 402. An examination of human and animal motivations from both physiological and psychological viewpoints.

PSY 425. COMPARATIVE PSYCHOLOGY (4)
PR: PSY 201, SS1 301, PSY 311-312, 402, 405. The study of the evolution of behavior, similarities and differences in capacities for environmental adjustment and for behavioral organization among the important types of living beings from plants and unicellular organisms to the primates including man.

PSY 432. INDUSTRIAL PSYCHOLOGY (4)
PR: PSY 201, SS1 301, PSY 311-312. Application of psychological principles to industry. Topics include: selection and placement, testing, criterion development, performance appraisal, training, motivation, job attitudes and satisfaction, supervision, decision-making, organizational structure and theory, accidents and safety, human engineering.
PSY 436. PSYCHOLOGICAL ASSESSMENT (4)
PR: PSY 201, SSI 301, PSY 311-312. A consideration of the instruments for intellectual achievement, and personality assessment including their applications, development, and potential abuses. Students may not receive credit for both PSY 436 and EDF 303, Introduction to Measurement and Evaluation.

PSY 441. HUMAN MEMORY (4)
PR: PSY 201, SSI 301, PSY 311-312. Survey of methods, empirical findings, and theoretical interpretations of human learning and retention, including concept learning, information processing, and verbal learning. Lec.-lab.

PSY 445. PERCEPTION (4)
PR: PSY 201, SSI 301, PSY 311-312. How man perceives his environment. Topics include sensory bases of perception, physical correlates of perceptual phenomena, and the effects of individual and social factors on perception. Primary emphasis on vision and audition. Lec.-lab.

PSY 450. PSYCHOLOGY OF WOMEN (4)
(Also Listed as WSP 401.)

PSY 451. HUMAN SEXUAL BEHAVIOR (4)
(Also Listed as WSP 405.)

PSY 452. PERSONALITY (4)
PR: PSY 201, SSI 301, PSY 311-312. Methods and findings of personality theories and an evaluation of constitutional, biosocial, and psychological determinants of personality.

PSY 455. PSYCHOPATHOLOGY (4)
PR: PSY 201, SSI 301, PSY 311-312. Descriptions, theoretical explanations, research evidence and treatment of maladaptive behavior.

PSY 481. SELECTED TOPICS: RESEARCH (1-4)
PR: Upper division standing and Cl. The student plans and conducts an individual research project under the supervision of a psychology faculty member. May be repeated with a maximum of eight hours credit.

PSY 485. SELECTED TOPICS: READING (1-4)
PR: Upper division standing and Cl. A reading program of topics in psychology is conducted under the supervision of a psychology faculty member. May be repeated with a maximum of eight hours credit.

PSY 491. SELECTED TOPICS: SEMINAR (4)
PR: Upper division standing and Cl. Graduate-type seminar designed to provide the advanced undergraduate student with the opportunity to interact with the faculty and other students for the purpose of developing an in-depth understanding of a selected sub-area within psychology. May be repeated with a maximum of eight hours credit.

PSY 492. HONORS SEMINAR (4)
PR: Admission to honors program in psychology and Cl. Graduate-type seminar designed to provide the honors student with an opportunity to present, discuss, and defend his own research and to explore in depth topics in several areas of psychology. May be repeated with a maximum of twelve hours credit.

PSY 493. HONORS THESIS (4)
PR: Admission to honors program in psychology and Cl. The student under supervision of a faculty member will formalize, conduct, analyze, and report in writing a research project in psychology.

FOR GRADUATE STUDENTS ONLY

PSY 609. MOTIVATION AND EMOTION (5)
PR: Cl. A detailed examination of human motivation and emotion from both the physiological and psychological viewpoints. M.A. core course.

PSY 612. PERSONALITY (5)
PR: Admission to M.A. program in psychology or Cl. Analysis of traditional and current theory and research in the area of personality. M.A. core course.

PSY 613. BEHAVIORAL DISORDERS OF CHILDREN (5)
PR: Cl. Causative factors in behavior deviations common to children and adolescents. Thorough study of selected childhood mental disorders and a survey of ameliorative techniques for treating childhood behavior difficulties. Students may not receive credit for both PSY 613 and EDS 531, Behavior Disorders in the Schools.

PSY 614. PSYCHOPATHOLOGY (5)
PR: Admission to M.A. program in psychology or Cl. Exploration of current approaches to the understanding of pathological behavior and implications for theories of personality. A survey of treatment methods is included. M.A. core course.

PSY 616. PSYCHOLOGICAL ASSESSMENT (5)
PR: Cl. Courses cover theory, research, and applications of psychological assessment in areas such as interviewing, intellectual and cognitive functioning, neuropsychodiagnosis, and personality testing. May be repeated for credit with different subject matter.

PSY 620. SUPERVISED RESEARCH (1-15)
PR: Cl. The student works in close collaboration with a faculty member in designing, conducting, and interpreting experiments. May be repeated for credit. (S/U only)

PSY 621. APPLICATIONS OF LEARNING PRINCIPLES & PROCEDURES (5)
PR: Prior course in learning, or Cl. Application of various learning principles and procedures to problems in specialized settings. Co-listed Rehabilitation Counseling. (REH 621.)

PSY 631. RESEARCH METHODS AND MEASUREMENT (5)
PR: Admission to graduate degree program in psychology or Cl. Courses designed to cover research methods and strategies and their application to psychology. Topics include logic and purpose of experimentation in psychology, measurement theory, design and analysis of experiments, probability, statistical inference, analysis of variance, correlational methods, interpretation of experimental findings. M.A. core course. May be repeated for credit with different subject matter.

PSY 634. PHYSIOLOGICAL PSYCHOLOGY (5)
PR: Admission to M.A. program in psychology or Cl. Neural and physiological foundations of behavior. Structure and function of the central nervous system and autonomic nervous system. Physiological basis of learning, motivation in sub-humans and humans. M.A. core course.

PSY 635. DEVELOPMENTAL PSYCHOLOGY (5)
PR: Admission to M.A. program in psychology or Cl. Detailed study of the development of human and animal behavior aimed toward an understanding of ontogenetic contributions to later behaviors. Effects of early experience on later behavior. M.A. core course.

PSY 636. LEARNING (5)
PR: Admission to M.A. program in psychology or Cl. Habituation, sensitization, classical and instrumental conditioning, generalization, discrimination, trial and error learning, problem solving. M.A. core course.

PSY 638. PERCEPTION (5)
PR: Admission to M.A. program in psychology or Cl. Current data and theory of perceptual processes. Consideration of physiological and psychological variables in perception, and applications of information theory and signal detection theory. M.A. core course.

PSY 639. SOCIAL PSYCHOLOGY (5)
PR: Admission to M.A. program in psychology or Cl. Overview of theory and research in social psychology. Attitudes, values, group processes, leadership, conformity, social learning and motivation. M.A. core course.

PSY 641. HUMAN MEMORY (5)
PR: Admission to M.A. program in psychology or Cl. Review of methods, findings and theoretical interpretations associated with the study of acquisition and retention of information. M.A. core course.

PSY 642. INDUSTRIAL PSYCHOLOGY (5)
PR: Admission to M.A. program in psychology or Cl. An introduction to the major areas of Industrial-Organizational
Psychology including the topics of selection and placement, training, criterion development and performance appraisal, job satisfaction and motivation, and organizational theory and structure. M.A., core course.

PSY 665. TOPICS IN CLINICAL-COMMUNITY PSYCHOLOGY (5)
PR: CI. Courses on topics such as humanistic psychology, community psychology, and clinical neuropsychology. May be repeated for credit with different subject matter.

PSY 670. TOPICS IN EXPERIMENTAL PSYCHOLOGY (5)
PR: CI. Courses on topics such as operant behavior, electrophysiological methods, psychophysiology, and memory. May be repeated for credit with different subject matter.

PSY 675. TOPICS IN SOCIAL-ORGANIZATIONAL PSYCHOLOGY (5)
PR: CI. Courses on topics such as experimental social psychology, organizational psychology, attitudes, and group processes. May be repeated for credit with different subject matter.

PSY 676. TOPICS IN INDUSTRIAL-ORGANIZATIONAL PSYCHOLOGY (5)
PR: CI. Courses on topics such as industrial psychology, testing in industry, human factors psychology, and training in industry. May be repeated for credit with different subject matter.

PSY 682. PRACTICUM IN PSYCHOLOGY (1-15)
PR: CI. Supervised training in community and university settings in the application of psychology. May be repeated for credit.

PSY 699. THESIS (1-15)
PR: Admission to graduate degree program in psychology and CI. A study in depth of a problem in psychology approved by a thesis committee. May be repeated for credit. (S/U only)

PSY 764. PSYCHOTHERAPY AND BEHAVIOR CHANGE (5)
PR: Admission to graduate degree program in psychology and CI. Courses to cover the theoretical, empirical, and applied foundations of various systems of psychotherapy. Traditional relationship therapy, client-centered approaches, operant techniques, group psychotherapy, and other varieties of therapeutic intervention. May be repeated for credit with different subject matter.

PSY 770. GRADUATE SEMINAR IN CLINICAL-COMMUNITY PSYCHOLOGY (5)
PR: CI. Seminars on topics such as psychopathology, community psychology, clinical issues, personality, and developmental psychology. May be repeated for credit with different subject matter.

PSY 775. GRADUATE SEMINAR IN EXPERIMENTAL PSYCHOLOGY (5)
PR: CI. Seminars on topics such as learning, perception, physiological psychology, cognitive processes, and quantitative methods. May be repeated for credit with different subject matter.

PSY 780. GRADUATE SEMINAR IN SOCIAL-ORGANIZATIONAL PSYCHOLOGY (5)
PR: CI. Seminars on topics such as social psychology, scientific communication, and decision making. May be repeated for credit with different subject matter.

PSY 781. GRADUATE SEMINAR IN INDUSTRIAL-ORGANIZATIONAL PSYCHOLOGY (5)
PR: CI. Seminars on topics such as industrial psychology, evaluation of performance in industry, and human factors. May be repeated for credit with different subject matter.

PSY 790. SEMINAR IN ETHICS AND PROFESSIONAL PROBLEMS (5)
PR: Second year in Ph.D. program in psychology or CI. Ethical issues and professional problems in the practice of psychology.

PSY 799. DISSERTATION (1-15)
PR: Admission to Ph.D. program in psychology and CI. A study in depth of a problem in psychology approved by a dissertation committee. May be repeated for credit. (S/U only)

REHABILITATION COUNSELING (REH)


FOR SENIORS AND GRADUATE STUDENTS

REH 501. REHABILITATION: CONCEPTS AND THEORETICAL ISSUES (5)
A look at the historical origin, development, and current understanding of the philosophy of rehabilitation. The rehabilitation process is viewed as an integration of concepts and procedures from the medical, social-psychological, and legal disciplines.

REH 503. INTERPERSONAL ASPECTS OF REHABILITATION COUNSELING I (5)
PR: CI. Focuses on the effective utilization of one's self in the various counseling and coordinating relationships of the rehabilitation process. An introduction to encounter, body awareness, Gestalt counseling techniques, and related approaches.

REH 505. MEDICAL ASPECTS OF DISABILITY (5)
Study of medical information needed by the counselor in integrating medical services into the total rehabilitation process from referral to placement. Examines the effect of a client's physical condition on various areas of adjustment. Includes appraisal of physical capacities in terms of functional limitations and individual differences.

REH 507. SEMINAR IN PRINCIPLES AND PRACTICES OF REHABILITATION COUNSELING I (4)
PR: CI. Procedures appropriate in meeting the needs of handicapped individuals in the rehabilitation process. Must be taken concurrently with REH 508. (S/U only)

REH 508. PRACTICUM I (2)
PR: CI. Supervised observation experience and participation in counseling services in various rehabilitation agencies. Must be taken concurrently with REH 507. (S/U only)

REH 509. DIRECTED STUDIES (2-5)
PR: CI. Study in rehabilitation counseling area under the direct supervision of a faculty member. May be repeated for a maximum of 10 hours credit.

FOR GRADUATE STUDENTS ONLY

REH 602. INTERPERSONAL ASPECTS OF REHABILITATION COUNSELING II (5)

REH 603. PSYCHO-SOCIAL DISABILITY IN REHABILITATION COUNSELING (5)
PR: REH 502. Personal, social, and vocational consequences of emotional and social disabilities.

REH 604. RESEARCH METHODOLOGY IN REHABILITATION (5)
PR: CI. The aim of this course is to help students evaluate and utilize available research studies as well as to develop their own research skills. An individual research project is required.

REH 606. VOCATIONAL PLACEMENT AND ADJUSTMENT OF THE DISABLED (5)
A study of occupations, vocational theories, pre-placement counseling, vocational placement techniques, follow-up pro-
c edures, and the psycho-social aspects of work as they pertain to rehabilitating disabled and disadvantaged persons.

REH 607. SELECTED TOPICS IN REHABILITATION (2-5)
PR: Cl. Designed to give the student an opportunity to study in depth some concept, procedure, or body of data in the rehabilitation field. May be repeated for a maximum of 10 hours credit.

REH 608. EVALUATION IN THE REHABILITATION PROCESS (5)
PR: REH 502. Examine the evaluation procedure from the point of view of providing reliable and valid information for use in the counseling process. (Formerly REH 506.)

REH 609. SEMINAR IN REHABILITATION COUNSELING (5)
PR: Cl. Seminar in selected issues and problems in rehabilitation counseling. Subject and scope to be determined by instructor. May be repeated for credit with different content.

REH 610. SEMINAR IN PRINCIPLES AND PRACTICES OF REHABILITATION COUNSELING II (4)
PR: REH 507 and 508. Continuation of REH 507. Must be taken concurrently with REH 611. (S/U only.)

REH 611. PRACTICUM II (2)
PR: REH 507 and 508. Continuation of REH 508. Must be taken concurrently with REH 610. (S/U only.)

REH 612. GROUP WORK IN REHABILITATION COUNSELING (5)
PR: Cl. Examination of group processes as applicable to rehabilitation counseling.

REH 613. ADVANCED GROUP WORK IN REHABILITATION COUNSELING (5)
PR: Cl. Extension of REH 612 with emphasis on field work.

REH 620. INTERNSHIP IN REHABILITATION (15)
PR: REH 610 and 611. Student placement in an approved intern setting for a minimum of 400 hours of supervised experience. (S/U only.)

REH 621. APPLICATIONS OF LEARNING PRINCIPLES AND PROCEDURES (5)
PR: Prior course in Learning or Cl. Application of various learning principles and procedures to problems in specialized settings. Co-listed with Psychology (PSY 621).

RELIGIOUS STUDIES (REL)

REL 300. INTRODUCTION TO RELIGION (4)
An introduction to the critical study of the Hebrew Scriptures against the background of the ancient Near East, with attention to the history and religion of the Hebrew people. REL 310 and REL 410 may not both be credited toward the major.

REL 315. INTRODUCTION TO THE NEW TESTAMENT (4)
An introduction to the critical study of the New Testament in context of Christian beginnings in the first century A.D. REL 315 and 415 may not both be credited toward the major.

REL 316. NEW TESTAMENT GREEK I (4)

REL 317. NEW TESTAMENT GREEK II (4)

REL 325. HISTORY OF JUDAISM (4)
The historical development of Judaism and Jewish concepts from biblical times to the modern era with emphasis on the formative years from the Prophets to the close of the Talmud.

REL 326. MODERN JUDAISM (3)
A study of Jewish life in the West since 1789, emphasizing Jewish beliefs, practices and institutions.

REL 327. HISTORY OF CHRISTIANITY I (4)
The historical development of Christianity, its ideas and institutions, from the first century to the sixteenth century.

REL 328. HISTORY OF CHRISTIANITY II (4)
The historical development of Christianity, its ideas and institutions from the work of John Wycliff to the rise of "religious modernism" in the 19th century.

REL 329. RELIGION IN AMERICA (4)
To examine the movement from state church to pluralism in American religious institutions; the religious results of non-Protestant immigration; the Jewish factor; the effect of home missions and social concern programs upon American life; political entanglements and the concept of church/state separation.

REL 330. BLACK RELIGIOUS EXPERIENCE IN AMERICA (4)
A course designed to stimulate interest in the religious history, experience, and thinking of American Blacks.

REL 331. THE BLACK CHURCH (4)
A critical examination of the Black Church will be made in this course. The significance of religious development and the present condition of Black religious institutions and their relationships to modern movements will be examined. Denominational, interdenominational, and international causals will also be examined for their particular religious, political, economic, social, and ideological significance.

REL 340. LAND OF THE BIBLE (4)
A survey of the natural features, historical forces, and cultural movements of the Holy Land that shaped its peculiar role in history with respect to the ancient Hebrews. Particular attention will be paid to the period from the Hebrew Conquest to the time of Jesus.

REL 341. BIBLICAL ARCHAEOLOGY (4)
An examination in depth of the archaeological data relating to the background and content of the Bible, including ancient customs. Biblical sites and cities, Biblical history, and material culture of the Biblical period. Special attention will also be given to excavation methods and interpretation of archaeological evidence.

REL 350. WORLD RELIGIONS — EASTERN (5)
An introduction to and a comparison of the ideas, the literature, the institutions of the major religions of the Eastern World, especially Buddhism (Theravada, Mahayana, Zen), Hinduism, Jainism, Taoism, Confucianism, Shinto.

REL 351. WORLD RELIGIONS — WESTERN (5)
An introduction to and a comparison of the ideas, the literature, the institutions of the major religions of the Western (Near Eastern origin) World — Judaism, Zoroas-
trianism, Christianity, and Islam. And a general comparison of Western religious ideas with Eastern religious ideas.

REL 360. DIALOGUES IN RELIGION (4)
A course designed to place students in dialogic encounter various aspects of contemporary religious beliefs and practices for the purpose of enabling students to hear and participate in discussions concerning the claims and procedures of existing religious traditions.

REL 370. CONTEMPORARY RELIGIOUS THOUGHT (4)
An examination of the central ideas of recent theological thinkers; such men as Barth, Brunner, Bultmann, Bonhoeffer, Rahner, Tillich, Cox, Alitser, Buber, Niebuhr.

REL 383. SELECTED TOPICS (1-5)
PR: Cl. Course contents depend on students' needs.

REL 385. DIRECTED READINGS (1-5)
PR: Cl. Individual guidance in concentrated reading on a selected topic.

REL 400. COMPARATIVE MYSTICISM (4)
A course designed to acquaint the student with the nature of mystical experience, and some of the varieties of mystical experience recorded in the writings of the mystics.

REL 401. RELIGIOUS BEHAVIOR AND INSTITUTIONS (4)
PR: One course in Sociology or Social Psychology or Cl. The sources of religious social thought, an understanding of the historical evolution of religious thought about society, and an analytical grasp of the way in which religious insights and values relate to human societal life are the three main objectives of this course.

REL 402. DYNAMICS OF RELIGION (4)
PR: One Psychology course or Cl. This course is designed to enhance the student's understanding of human existence by investigating the interrelationships between human dynamics and religion.

REL 403. JESUS' LIFE AND TEACHINGS (4)
PR: Cl. An examination of the various historical studies made in the quest of identifying Jesus as an historical figure. The concern is to make a reasonable assessment of who Jesus was and what he was saying to the Jews in Palestine at the beginning of the common era.

REL 410. OLD TESTAMENT STUDIES I (Torah) (4)
An examination of the Pentateuch or Torah from the point of view of its literary development, internal traditions, historical background, Law, covenant theology, and Hebrew religion.

REL 411. OLD TESTAMENT STUDIES II (Prophets) (4)
PR: REL 410 or REL 315 or Cl. An investigation of the Prophetic literature of the Hebrew Scriptures including the emergence of mantic prophecy in Elijah and Elisha, classical prophecy in Jeremiah, Micah, Amos, and Isaiah, the later twelve prophets, and the role of Samuel and the Book of Kings.

REL 412. OLD TESTAMENT STUDIES III (Writings) (4)
PR: REL 410 or REL 315 or Cl. An exploration of the poetic and historical writings in the Hebrew canon including the Psalms, Wisdom Literature, Job and the problem of evil, the Five Scrolls. Daniel and apocalypticism, and the religious views of the Chronicler.

REL 413. DEAD SEA SCROLLS (4)
PR: Cl. A survey and study of the literature of the Dead Sea Scrolls in English translation. Examination of the literary, historical, and archaeological evidence for the identification of the Qumran people with the Essenes. Possible connections with the New Testament and early Christian theology.

REL 415. NEW TESTAMENT STUDIES (Gospels) (4)

REL 416. NEW TESTAMENT STUDIES II (Pauline Letters) (4)
An investigation of earliest Christianity in its Jewish and Gentile forms, the historical Paul, his proclamation, and his letters as preserved in the New Testament.

REL 417. NEW TESTAMENT STUDIES III (Later Letters and Revelation) (4)
An examination of the emergence of institutional Christianity in the New Testament, particularly in churchly theology, the Pastoral Epistles, the catholic Epistles, the letters of James and John, and finally Christian apocalypticism in the book of Revelation (Apocalypse).

REL 481. UNDERGRADUATE RESEARCH (1-5)
PR: Junior standing and Cl. Individual investigations with faculty supervision.

REL 483. SELECTED TOPICS (1-5)
PR: Junior standing and Cl. Course contents depend on students' needs.

REL 491. SEMINAR IN RELIGION (4)
A course designed for persons, especially Religious Studies majors, whose prior religious studies have prepared them for a cooperative creative and/or research effort in the area of religion.

FOR SENIORS AND GRADUATE STUDENTS
REL 583. SELECTED TOPICS (1-5)
PR: Senior standing and Cl. Course contents depend on students' needs.

RUSSIAN (RUS)—see Modern Languages

SENIOR SEMINAR (CBS)

CBS 401. SENIOR SEMINAR (3)
Contemporary issues affecting social and personal values. Visiting lecturers, readings and discussions interrelating the behavioral, natural, and social sciences and the humanities. Designed to focus the university education upon contemporary problems. (S/U only.)

SOCIAL SCIENCES (INTERDISCIPLINARY) (SSI)

LOWER LEVEL COURSES
SSI 100. WORLD PERSPECTIVE (4)
Application of the interdisciplinary approach to the study of the international system, major world regions and problems.

SSI 201, 202. BEHAVIORAL SCIENCE (4,4)
Draws on information from behavioral sciences (human biology, psychology, anthropology, sociology, and
philosophy) to demonstrate how human behavior develops and means by which personal, social, and ethical problems are dealt with. Students desiring to pursue their interest in behavioral science may also take SSI 383 (formerly CBS 203) in which selected topics are studied in depth. (Formerly CBS 201, 202.)

**UPPER LEVEL COURSES**

SSI 300. AMERICA'S ROLE IN THE WORLD (4)
Application of the interdisciplinary approach to the study of America's relations with other nations through analysis of political, socio-economic, cultural, and military problems, conflicting national interests and the formulation of foreign policy and its implementation. Upper level standing or CI.

SSI 301. SOCIAL SCIENCE STATISTICS (4)
Topics selected from the following: measures of central tendency and variability probability and the normal curve, correlations, curve fitting, scale and index number theory, polling, interview and survey techniques, content analysis. Students who successfully complete this course may not also receive credit for either ECN 231 Business and Economic Statistics I or MTH 345 Introductory Statistics.

SSI 311. COMMUNICATION (4)
Topics selected from the following: the language of structure, general semantics, communication networks, language and social perception, diffusion of information, communication and social gamesmanship, Aesopian language and Nu-Think in politics, normative language of clinical psychology, communication and pseudo events, non-verbal communication.

SSI 315. PUBLIC OPINION AND PRESSURE MECHANISM (4)
The content and formation of public opinion, properties of opinions and attitudes, and the principles and mechanisms of their formation and change.

SSI 321. HUMAN RELATIONS AND PRODUCTIVITY (4)
Topics to be selected from the following: the relation of science, technology, resources, energy, and population change to social, economic, cultural and political change; social implications of research findings from the social, behavioral and management sciences.

SSI 325. PSYCHOLOGY AND THE SOCIAL ORDER (4)
Topics to be selected from the following: the quest for personal identity in modern mass society, the problems of mass culture and mass education, the problems of alienation and anomie in the 20th century, psychological factors in political and industrial conflict, man versus the machine in modern life.

**Area Studies**
The following five courses (SSI 339, 341, 343, 345 and 347), dealing with one or more countries of a given region, will select and emphasize subject matter from the following topics: its history, its people and their cultures, its social psychology and national characteristics, its resources, its economic and industrial characteristics, its literature, religion and dominant values, its political framework and outlook, its social structure, and its current problems.

Each course may be repeated when countries of concentration vary, but the same country may not be repeated for credit.

SSI 339. EUROPE (4)
SSI 341. LATIN AMERICA (4)
SSI 343. ASIA (4)
SSI 345. AFRICA (4)
SSI 347. THE MIDDLE EAST (4)
SSI 361. COMMUNISM IN THE MODERN WORLD (4)
An interdisciplinary approach to the nature of Communism, its philosophic bases, its anti-religious bias, its economic, social and political theories and practices, the arts and sciences under Communist ideology, its conduct of foreign affairs and associated programs and techniques. Emphasis will be on Soviet and Chinese Communism.

SSI 383. SELECTED TOPICS IN THE SOCIAL SCIENCES (2-5)
Course content depends on student demand and instructors' interest. Topics will have clear interdisciplinary nature. Course may be repeated as topics vary, but the same topic may not be repeated. (Formerly CBS 203.)

SSI 395. OVERSEAS STUDY (1-9)
A program of individual or group research in a foreign country. Selection of the student, his preparation for the study, and subsequent evaluation to be supervised by a faculty committee. (Formerly CBS 395.)

SSI 403-404. THE UNIVERSE OF MAN (3,3)
A search for the universals of human life today; the nature of man, the world community, human needs and values, available instruments of science and technology, and the limiting facts and forces. (Formerly CBS 403, 404.)

SSI 405-406-407. BEHAVIORAL SCIENCE (3,3,3)
A comprehensive analysis and evaluation of man's behavior. Emphasis on understanding of mechanisms involved in individual and social behavior, along with consideration of social and ethical problems related to means for controlling behavior. Laboratory experience will be provided on special research topics. (Formerly CBS 405, 406, 407.)

SSI 411. SOCIAL ISSUES OF OUR TIME (4)
Topics to be selected from the following: automation and cybernation and the social problems they generate; special problems of a technological civilization; the implications of changing social patterns of Western culture and opportunities for social re-construction.

SSI 413. LEISURE IN SOCIETY (4)
Facts and trends of changing leisure-time patterns in the USA and other countries; various conceptualizations of leisure; relationships of non-work time to work attitudes, personality, family, community, sub-cultures, religion, value systems, social class, and the functions of government.

SSI 415. THE CITY AND MAN (4)
Topics to be selected from the following: the city and its ill's; proposed new types of community formation; planning and community; the social ecology of the city; conventional versus innovative approaches to the problems of the community.

SSI 421. SPORT IN SOCIETY (4)
An examination of the broad issues concerning sport in both a historical and contemporary perspective. Sport will be viewed in relation to social institutions, economic considerations, mass media, and the sport group as a micro-social system.

SSI 449. 450. THE EMERGING NATIONS (4,4)
PR: Upper division standing or CI. CI required to take SSI 450 out of sequence. This course examines the processes and problems involved when an underdeveloped country seeks to develop a modern industrial civilization.

SSI 481. DIRECTED RESEARCH (1-4)
PR: CI plus upper division standing. May be repeated. To provide advanced students with interdisciplinary research experience in areas of specific interest.

SSI 485. DIRECTED READINGS (1-4)
PR: CI plus upper division standing. May be repeated. To provide advanced students with intensive reading of interdisciplinary nature in areas of specific interest.

SSI 491. SENIOR SEMINAR (4)
PR: Senior standing and CI. To provide an integrating seminar experience for International Studies' majors.

FOR SENIORS AND GRADUATE STUDENTS

SSI 503. CONTEMPORARY AMERICAN CULTURE (4)
A social analysis of the leading characteristics, ideals, and values of American life. An effort will be made to deal with a variety of contexts in which American cultural themes, standards and practices receive expression.

SSI 505. SOCIAL VALUES AND SOCIAL ORDER (4)
Topics to be selected from the following: the value-patterns
of modern societies; social bases for a world order; the aims and functions of social planning; international transformation created by science and technology.

**SSI 522. LEISURE THEORY (4)**

PR: SSI 413 or CI. The exposition of an interdisciplinary theoretical model by which to relate specific leisure activities or experiences to broad social change; summaries of current and historical research; in the U.S.A. and other nations; term papers by students based on individual interests.

**SSI 523. LEISURE PLANNING: COMMUNITY AND STATE (4)**

An examination of the social, political and economic forces which relate to the policy formulation and program implementation of leisure agencies at the local and larger levels.

**SSI 525. LEISURE POLICY (4)**

PR: SSI 522 or CI. General issues relating to trends in leisure, and their application to such fields as management, labor, government, gerontology, education, mass media, urban planning, recreation, and counseling; students will prepare term papers to explore one area in detail.

**SOCIETY (SOC)**


**LOWER LEVEL COURSES**

**SOC 181. CONTEMPORARY SOCIAL PROBLEMS (4)**

Application of sociological concepts and principles to the description and analysis of major social problems of modern societies. Does not count for sociology major credit. (Formerly SOC 261.)

**SOC 201. INTRODUCTION TO SOCIOLOGY (4)**

Nature and application of sociological concepts, theories and methods; analysis of societies, associations and groups; social processes and social change.

**SOC 251, MARRIAGE (4)**

Study of pre-marital and marital relations. Social, cultural and personal factors related to success and failure in mate selection and marriage. Does not count for sociology major credit.

**UPPER LEVEL COURSES**

**SOC 301, INTRODUCTION TO SOCIAL WELFARE (4)**

PR: SOC 201 or CI. The historical and contemporary development of organized social services and institutions to meet human needs.

**SOC 315. FOUNDATIONS OF THEORY (4)**

PR: SOC 201 or CI. Consideration of selected theories in sociology and procedures of systematic theory construction.

**SOC 321. SOCIAL INVESTIGATION (4)**

PR: SOC 201, SSI 301. Methods and techniques of social research. Design of sociological studies, collection of data, and interpretation of results.

**SOC 331, SOCIAL PSYCHOLOGY (4)**

PR: PSY 201 or SOC 201. Behavior of the individual human being as affected by social and cultural influences of modern society.

**SOC 341. SOCIAL ORGANIZATION (4)**

PR: SOC 201 or CI. Social organization in the broadest sense, including institutions and associations, as well as variations in role and status.

**SOC 345. SOCIAL STRATIFICATION (4)**

PR: SOC 201 or CI. Social status and social stratification, social class as a factor in behavior, social mobility.

**SSI 583. SELECTED TOPICS (1-4)**

PR: CI plus senior standing or graduate status. May be repeated. To provide advanced students with interdisciplinary study of selected topics.

**FOR GRADUATE STUDENTS ONLY**

**SSI 601. SOCIAL PATHOLOGY (4)**

An examination of the variety of social criticism which has been leveled at Western society and of some of the defenses which have been made in its behalf. Materials will be chosen from several of the social sciences.

**SSI 681. DIRECTED RESEARCH (1-4)**

PR: CI and graduate standing. May be repeated. To provide graduate students with interdisciplinary research experience in areas of specific interest.

**SSI 685. DIRECTED READINGS (1-4)**

PR: CI and graduate standing. May be repeated. To provide graduate students with an intensive reading of interdisciplinary nature in areas of specific interest.

**SOC 351. THE FAMILY (4)**

PR: SOC 201 or CI. Principles of family organization, social adjustment and control. Maturation, socialization and stability of the family.

**SOC 371. RACIAL AND ETHNIC RELATIONS (4)**

PR: SOC 201 or CI. Comparative study of interracial relations, social tensions, attitudes, and modes of adjustment in various areas of the world.

**SOC 373. SOCIOLOGY OF RELIGION (4)**

PR: SOC 201 or CI. Types, sources, and functions of religious behavior. Religious behavior in relation to other aspects of personality and culture.

**SOC 401. SOCIETY IN TRANSITION (4)**

PR: Upper level standing. An analysis of the forces for change in contemporary society, utilizing a sociological perspective. Does not count for sociology major credit.

**SOC 433. COLLECTIVE BEHAVIOR (4)**

PR: SOC 201 or CI: upper division standing. Study of the development of group and mass behavior — crowds, social movements. (Formerly SOC 533.)

**SOC 447. SOCIOLOGICAL IMPLICATIONS OF INDUSTRIALIZATION (4)**

PR: SOC 201 or CI. Socio-cultural elements which define and accompany the process of industrialization as observed in mature industrial nations.

**SOC 449. POLITICAL SOCIOLOGY (4)**

PR: SOC 201 or CI. An examination of the social factors that affect government, politics, and political behavior.

**SOC 453. SOCIOLOGY OF THE ARTS (4)**

PR: SOC 201 or CI: upper division standing. The creation, distribution and use of arts from a sociological perspective; the social roles involved. (Formerly SOC 553.)

**SOC 461. CRIMINOLOGY (4)**

PR: SOC 201 or CI; upper division standing. Etiology of criminal behavior; law enforcement, crime in the United States: penology and prevention. (Formerly SOC 561.)

**SOC 463. JUVENILE DELINQUENCY (4)**

PR: SOC 201 or CI; upper division standing. Theories of delinquency, patterns of delinquent behavior, methods of control and treatment. (Formerly SOC 563.)

**SOC 481. INDIVIDUAL RESEARCH (1-4)**

PR: Four courses in sociology, including SOC 321, upper division standing or CI. Content dependent upon interests and competence of the student. Does not count for sociology major credit.
SOC 491. SENIOR SEMINAR (4)
For seniors majoring in sociology or other social sciences. Major issues in sociology, stressing theory and research.

FOR SENIORS AND GRADUATE STUDENTS
SOC 505. COMMUNITY WELFARE RESOURCES (4)
PR: SOC 301 or CI; upper division standing. Emphasis upon voluntary programs and their development, planning, and coordination. Does not count for sociology major credit.

SOC 531. SOCIAL INTERACTION (4)
PR: SOC 331, or CI; upper division standing. Interpersonal influence, complex behavior, role, conflict, and social situational factors.

SOC 535. SOCIOLOGY OF SMALL GROUPS (4)
PR: SOC 201 or CI; upper division standing. Theory of small group structure, mechanics of interaction, observation of small groups.

SOC 541. SOCIAL CHANGE (4)
PR: SOC 201 or CI; upper division standing. Major theories of social and cultural change, and mechanisms of change in various societies.

SOC 543. URBAN SOCIOLOGY (4)
PR: SOC 201 or CI; upper division standing. The social structure of the community in modern industrial societies. Analysis of community change.

SOC 571. POPULATION (4)
PR: SOC 201 or CI; upper division standing. Sociological determinants of fertility, mortality, and migration; theories of population change.

SOC 575. INDUSTRIAL SOCIOLOGY (4)
PR: SOC 201 or CI; upper division standing. Interaction, communication and authority in economic organizations; the factory as a social system.

SOC 583. TOPICS IN SOCIOLOGY (4)
PR: 16 quarter hours in Sociology and prior consent of instructor. May be repeated for credit. See class schedule for content.

FOR GRADUATE STUDENTS ONLY
SOC 611. CONTEMPORARY SOCIOLOGICAL THEORY (4)
PR: Undergraduate course in sociological theory or CI. Emphasizes logical and conceptual dimensions of theory and theory construction.

SOC 621. METHODS OF RESEARCH (4)
PR: Course in Social Investigation or CI. Logic and practice of research; problems of observation and data collection, data processing, and evaluation.

SOC 623. SOCIOLOGICAL STATISTICS (5)
PR: SSI 301 or CI. Logic and application of parametric and nonparametric statistical analysis for sociological data.

SOC 631. SOCIAL PSYCHOLOGY SEMINAR (4)
PR: Course in Social Psychology or CI. Stresses contemporary developments in social psychological theory and empirical research.

SOC 641. COMMUNITY ANALYSIS (4)
PR: Course in Urban Sociology or CI. Theories of community and community organization. Methods of community study; problems of urban areas.

SOC 643. COMPLEX ORGANIZATIONS (4)
PR: Course in Social Organization or CI. Organizational theory, bureaucratic models, authority, power legitimation, and types of formal organization.

SOC 651. FAMILY ANALYSIS (4)
PR: Course in Family or CI. Theory of interpersonal relations and interaction in the modern family. Analysis of functions and roles.

SOC 661. DEVIANCE & CONTROL (4)
PR: Course in criminology or juvenile delinquency or CI. Theories of control and deviance with research application in problem areas.

SOC 681. GRADUATE RESEARCH (1-4)
PR: CI. Content and method dependent upon interest and competence of student.

SOC 683. SPECIAL TOPICS-SOCIOLOGY (4)
PR: CI. Content varies according to interests of students and instructor. May be repeated for credit.

SOC 691. THESIS AND THESIS SEMINAR (5)
PR: Equivalent of 16 quarter hours in the student’s graduate program, SOC 611, 621, 623.

SOC 692. THESIS AND THESIS SEMINAR (5)
PR: Equivalent of 16 quarter hours in the student’s graduate program, SOC 611, 621, 623. May be taken concurrently with SOC 691.

SPANISH (SPA)—see Modern Languages

SPE 201. FUNDAMENTALS OF SPEECH COMMUNICATION (5)
The nature and basic principles of speech; emphasis on improving speaking and listening skills common to all forms or oral communication through a variety of experiences in public discourse.

SPE 203. SPEECH IMPROVEMENT AND PHONETICS (5)
Designed to improve vocal quality and expressiveness, articulation, and pronunciation, and to give instruction and practice in using the International Phonetic Alphabet for speech improvement.

LOWER LEVEL COURSES
SPE 103. SPEECH COMMUNICATION FOR FOREIGN STUDENTS I (5)
A special course for students learning English as a second language. Intensive study and drill in American English pronunciation and listening comprehension. May be taken in conjunction with ENG 100 — English for Foreign Students.

SPE 104. SPEECH COMMUNICATION FOR FOREIGN STUDENTS II (5)
PR: SPE 103 or CI. Intensive study and drill in American English pronunciation and listening comprehension. Emphasis on diction and speaking skills.

SPE 311. INTRODUCTION TO SPEECH SCIENCE (5)
PR: SPE 203 or CI. Communication models are broken down and each portion analyzed. Emphasis on quantifiable parameters of effective speaking.

SPE 320. ISSUES AND INTERPRETATION (2)
The study of literature through analyses of printed textual
materials and of the visual-aural textual performance of them. May be repeated.

SPE 321. FUNDAMENTALS OF ORAL READING (5)
PR: SPE 201 or 203. Designed to develop proficiency in the understanding and oral communication of literary and other written materials.

SPE 322. ORAL INTERPRETATION PERFORMANCE (2)
PR: SPE 321 or CI. The study, rehearsal, and performance of literature for Readers Theatre and Chamber Theatre productions. May be repeated (maximum total 6 hours).

SPE 360. CURRENT ISSUES AND RHETORIC (2)
An analysis of significant current speakers and issues. May be repeated.

SPE 361. GROUP COMMUNICATION (5)
PR: SPE 201 or CI. A survey of theory and experimental research in group communication. Group discussions and communication exercises to increase awareness of the dynamics of human communication in the small group setting.

SPE 362. TECHNICAL COMMUNICATION (5)
Investigation and application of methodology and effective technical communication for effective oral presentation of technical reports.

SPE 363. PUBLIC SPEAKING (5)
PR: SPE 201 or CI. Study of selected public addresses as aids in speaking extemporaneously and from manuscript. The relationship between public speaking and public policy formulation.

SPE 365. ARGUMENTATION AND DEBATE (5)

SPE 366. FORENSICS (2)
PR: SPE 365 or CI. The study, library research and investigation, and practice in forensics. Application of the principles of rhetoric to the current debate and discussion topics. May be repeated (maximum of 6 hours.).

SPE 367. FORMS OF PUBLIC ADDRESS (5)
PR: SPE 363 or 365. An advanced course emphasizing arrangement and style in informative, persuasive and ceremonial public address.

SPE 368. RHETORIC OF CONFRONTATION (4)
PR: Sophomore standing. The study of rhetorical strategies and tactics of agitation and control in confrontation situations.

SPE 369. PARLIAMENTARY SPEAKING (3)
Principles of parliamentary procedure and practice in conducting and participating in meetings governed by parliamentary rules.

SPE 370. SPEECH COMMUNICATION THEORY (5)
PR: SPE 201 or CI. The study of source, message, and receiver variables in human communication; communication settings; descriptive and predictive models of communication; speech communication as a process.

SPE 381. UNDERGRADUATE RESEARCH (1-5)
PR: Junior standing and CI. Individual investigations and faculty supervision.

SPE 383. SELECTED TOPICS (1-5)
PR: Junior standing and CI.

SPE 385. DIRECTED READINGS (1-5)
PR: Junior standing and CI.

SPE 451. UNDERGRADUATE RESEARCH (1-5)
PR: Senior standing and CI. Individual investigations with faculty supervision.

SPE 483. SELECTED TOPICS (1-5)
PR: Senior standing and CI.

SPE 485. DIRECTED READINGS (1-5)
PR: Senior standing and CI.

SPE 491. SENIOR SEMINAR IN SPEECH COMMUNICATION (5)
PR: Senior standing, Speech Communication major. Exploration of selected topics of current significance to the several areas of speech communication through group discussion and research.

SPE 501. SPEECH BEHAVIOR AND PROCESSES (5)
PR: Upperclass standing. Study of the theories of the simple and complex acoustical phenomenon of speech; intensive analysis of the stimulus-feedback variables of speech.

SPE 503. APPLIED PHONETIC TRANSCRIPTION (5)

SPE 511. EXPERIMENTAL PHONETICS (5)
PR: SPE 203 or CI. Intensified training in auditory discrimination of the sounds of American English. Detailed use of research findings, instruments and methodologies in the laboratory study of normal speech. Development of phonetic skills of discrimination and reproduction of speech sounds.

SPE 521. ORAL INTERPRETATION OF DRAMATIC LITERATURE (5)
PR: SPE 321 or CI. Critical appreciation and Oral Interpretation of special textual materials which are inherently dramatic in nature and poetry, narrative prose, drama, biography, and history.

SPE 522. ORAL INTERPRETATION OF POETRY (5)
PR: SPE 321 or CI. Critical appreciation of lyric and narrative poetry and communication of that appreciation to audience. Study of poetic theory and prosodic techniques.

SPE 523. LITERARY ADAPTATION AND ORAL INTERPRETATION (5)
PR: SPE 521. Practice in composition and adaptation of literary materials for oral presentation; an investigation of the more advanced problems in oral interpretation as in Choral Speaking and Chamber Theatre.

SPE 524. ORAL INTERPRETATION OF DRAMATIC LITERATURE II (5)
PR: SPE 521. A study of selected pre-modern dramas with special emphasis on problems of interpretation for oral performance.

SPE 525. ORAL INTERPRETATION OF CHILDREN'S LITERATURE (5)
PR: SPE 321 or CI. A study of the theories and practice in the oral interpretation of poetry and narrative fiction for children with special emphasis on classical and modern literature.

SPE 526. ORAL INTERPRETATION OF BIBLICAL LITERATURE (5)
PR: SPE 321 or CI. A critical interpretation and oral presentation of selected Books of the Old and New Testaments.

SPE 561. THEORY AND RESEARCH IN SMALL-GROUP COMMUNICATION (5)
PR: SPE 361. Advanced study of theories and research in communicative interaction in group discussion and conference.

SPE 565. HISTORY AND CRITICISM OF PUBLIC ADDRESS (5)
PR: SPE 363 or CI. The principles of rhetorical criticism applied to selected great speeches of Western Civilization.

SPE 567. PERSUASION (5)

SPE 581. RESEARCH (1-5)
PR: Senior or graduate standing and CI.

SPE 583. SELECTED TOPICS (1-5)
PR: Senior or graduate standing and CI.

SPE 585. DIRECTED READINGS (1-5)
PR: Senior or graduate standing and CI.
SPE 593. LANGUAGE AND SPEECH FOR CHILDREN (5)
PR: SPE 203 or CI. A diagnostic study of language development; the analysis of speech behavior and oral language needs of children; techniques of speech improvement for children.

FOR GRADUATE STUDENTS ONLY
SPE 603. ADVANCED PHONETICS (5)
PR: SPE 503 or equivalent. Intensified training in close phonetic transcription. Work on dialects, intonation, distinctive feature theory and acoustic phonetics.
SPE 611. COMMUNICATION: ANALYSIS AND MEASUREMENT (5)
A study of selected modes of communication. Includes analysis of communication symbology, and presents the theory and application of selected instruments for measuring and producing speech.
SPE 612. SEMINAR IN SPEECH SCIENCE (5)
PR: SPE 511. To provide graduate students with an opportunity to interact with faculty and other students for the purpose of developing an in-depth understanding of a selected sub-area of Speech Science.
SPE 621. HISTORY AND THEORIES OF ORAL INTERPRETATION (5)
A study of the history, critical writings, uses, and developments of the art of oral interpretation, with analysis of the principles and practices.
SPE 661. CLASSICAL RHETORIC (5)
Greek and Roman theory and practice; emphasis on Aristotle, Plato, Cicero, and Quintilian, selected other readings.
SPE 662. MODERN RHETORICAL THEORY (5)
Studies of Eighteenth and Nineteenth Century theorists and the historical and cultural forces influencing them; relationship to contemporary theory and practice.

SPE 664. THEORIES OF Rhetorical CRITICISM (5)
The study of theoretical perspectives in rhetorical criticism. The application of criticism to selected rhetorical situations.
SPE 665. HISTORY AND CRITICISM OF AMERICAN PUBLIC ADDRESS (5)
Criticism of selected speeches and speakers of American public address, studied against a background of political, social, and intellectual issues.
SPE 666. THEORIES OF ARGUMENT (5)
An examination of argumentative theory through the medium of selected reading in the works of major theorists past and present. In addition, selected examples from the argumentative persuasion of each historical period will be examined and analyzed for the purpose of correlating theory with practice.
SPE 667. CONTEMPORARY RHETORICAL THEORY (5)
Studies in Speech and language; Speech as symbol, theories of meaning, the relation of language, thought, and action.
SPE 668. EXPERIMENTAL RESEARCH IN ORAL COMMUNICATION (5)
Critical examination of research design, procedures, and reporting of experimental studies in small group communication and persuasive discourse.
SPE 681. GRADUATE RESEARCH (1-5)
Directed study in special projects. Recommended only when material cannot be studied in scheduled courses.
SPE 683. SELECTED TOPICS IN SPEECH (1-5)
SPE 685. DIRECTED READINGS (1-5)
SPE 691. GRADUATE SEMINAR IN ORAL COMMUNICATION (5)
SPE 694. SUPERVISED COLLEGE SPEECH INSTRUCTION (3)
PR: Graduate standing and CI. Instruction and experience in teaching the University's basic Speech Communication courses. Credit not applicable toward the graduate degree in Speech Communication. May be repeated.

SPEECH PATHOLOGY & AUDIOLOGY—see Communicology

THEATRE ARTS (TAR)


LOWER LEVEL COURSES
TAR 201. THEATRE FUNDAMENTALS (2)
An introduction to the means and materials of theatre, the nature of theatre forms, the concepts of Total Theatre, and the basic issues in American theatre today. This course is open to non-majors and theatre majors should take this course concurrently with their first registration in the group of courses TAR 211, 212, 213. Required of all theatre majors.
TAR 211, 212, 213. THEATRE LABORATORY I, II, III (4,4,4)
A seminar-laboratory-workshop in movement, voice, design, and theatre technology. All three quarters of this course, together with TAR 201, are required of all theatre majors. The courses may be taken in any order, but all three must be completed before the student may proceed to the next level of theatre study. TAR 201 must be taken concurrently with the first course registered for in this group. Open to non-majors. Non-majors may terminate their enrollment in this group at the end of any quarter. Required of all theatre majors.

UPPER LEVEL COURSES
TAR 303. MODERN THEATRE PRACTICE (5)
Initial readings and exercises in theatre; play analysis, performance, and technical theatre for non-theatre majors.

TAR 311. WORKSHOP FOR TEXT ANALYSIS (4)
PR: Completion of the four 200-level courses. The techniques of textual and script analysis related to the composition of performance. Required of all theatre majors. May be taken by non-majors with CI.
TAR 312. SPECIAL SKILLS IN MOVEMENT (4)
PR: Completion of the four 200-level courses. Stage violence, circus and acrobatic techniques and other special techniques of movement.
TAR 314. VOICE PREPARATION FOR THE ACTOR (4)
PR: Completion of the four 200-level courses. A laboratory in corrective speech and voice production for the actor.
TAR 321. MEANS OF VISUAL EXPRESSION (4)
PR: Completion of the four 200-level courses. The study of presentation techniques for visual design and technology as applied to the development of visual dynamics. Required of all theatre majors. Open to non-majors with CI.
TAR 339. THEATRE HISTORY (4)
A survey of significant periods in world theatre. Required of all theatre majors. Open to non-majors.
TAR 352. PERFORMANCE (2)
The study, rehearsal, and performance of major theatrical works. Open to all University students by audition on a credit or non-credit basis. May be repeated. Additional appropriate credit may be earned with TAR 481 or TAR 581.
TAR 361. INTRODUCTION TO PUPPETRY (4)
PR: Completion of all four 200-level courses. Open to non-majors with CI. Principles and methods of puppetry with
an historical survey of major forms and practical problems with laboratory production.

TAR 362. PUPPETRY PRODUCTION (4)
PR: TAR 361. Open to non-majors with Cl. The creation, building and rehearsal of plays for puppet theatre in preparation for performance. It is strongly urged that members of this class enroll in puppetry performance in the quarter immediately following.

TAR 363. PUPPETRY PERFORMANCE (4)
PR: TAR 362. Open to non-majors with Cl. Experience in the production and presentation of a play for the puppet theatre. Follows directly from the course in puppetry production and must be taken the quarter immediately following that course.

TAR 365. THEATRE FOR CHILDREN (4)
PR: TAR 365. Experience in the production and presentation of a play for children. Follows directly from the course in THEATRE FOR CHILDREN and must be taken in the quarter immediately following that course.

TAR 367. INFORMAL THEATRE WITH CHILDREN (4)
PR: Cl. Open to non-majors. Theories and techniques of informal theatre with children. Focus is on the creative development of the child through improvised theatre.

TAR 410. ACTING I (4)
PR: TAR 311 and audition. Basic scene study. Special problems in movement and speech to be integrated with character development, rehearsal techniques, and performance composition. Required of all theatre majors with a performance concentration.

TAR 411. ACTING II (4)
PR: TAR 410 and audition. Intermediate scene study. Special attention given to dialects and period movement. Required of all theatre majors with a performance concentration.

TAR 421. HISTORY OF ARCHITECTURE (2)
PR: Completion of second year requirements for the theatre major and portfolio or Cl. Required of all theatre majors with a design and technology concentration. A survey of architectural history with specific emphasis on architectural proportion, construction and style.

TAR 422. HISTORY OF DECOR (2)
PR: Completion of second year requirements for the theatre major and portfolio or Cl. Required of all theatre majors with a design and technology concentration. A survey of decorative motif and decor and their stylistic concepts.

TAR 423. HISTORY OF CLOTHING (2)
PR: Completion of second year requirements for the theatre major and portfolio or Cl. Required of all theatre majors with a design and technology concentration. A survey of clothing and dress from Ancient Egypt to the 20th Century with emphasis on cultural and social influences.

TAR 424. TECHNOLOGY — CONSTRUCTION: FABRIC (2)
PR: Completion of second year requirements for the theatre major and portfolio or Cl. A practical course in costume construction and application.

TAR 425. TECHNOLOGY — ELECTRONICS/OPTICS (2)
PR: Completion of second year requirements for the theatre major and portfolio or Cl. A practical course dealing with the mechanics of electronics and optics.

TAR 427. DRAWING — DRAFTING FOR THE STAGE (2)
PR: Completion of second year requirements for the theatre major and portfolio or Cl. A practical course in drafting for the stage.

TAR 428. DRAWING — ARCHITECTURAL (2)
PR: Completion of second year requirements for the theatre major and portfolio or Cl. A course in rendering the inanimate form.

TAR 429. TECHNOLOGY — CONSTRUCTION: SCENIC (2)
PR: Completion of second year requirements for the theatre major and portfolio or Cl. A practical course in scene construction and application.

TAR 430. DRAMA — SPECIAL TOPICS (4)
PR: TAR 339 or Cl. A course in the function of the script for the active theatre artist treating materials of a single playwright.

TAR 431. THE COMEDY OF THE CLASSIC AND NEO-CLASSIC STAGE (4)
PR: TAR 339 or Cl. A course in the function of the script for the active theatre artist treating materials from the Ancient Greeks through the Restoration, giving some attention to later reflections.

TAR 434. AMERICAN THEATRE (4)
PR: TAR 339 or Cl. A course in the function of the script for the active theatre artist treating materials in the American theatre from the beginnings to the present.

TAR 437. THE DRAMA OF THE 19TH AND 20TH CENTURY STAGE (4)
PR: TAR 339 or Cl. A course in the function of the script for the active theatre artist treating materials from the 19th and 20th Centuries.

TAR 443, 444, 445. WRITING FOR THE THEATRE I, II, III (4, 4, 4)
PR: Completion of the first two years as a theatre major and Cl. An elective sequence in writing for the theatre, starting with explorations of theatre as a medium, exercises in theatre form and techniques and progressing to an advanced workshop in plays and other styles of theatre pieces.

TAR 454. LABORATORY WORKSHOP IN PERFORMANCE (4)
PR: TAR 311 and Cl. Special workshop in advanced techniques based upon individual problems and needs.

TAR 455. PROBLEMS IN MUSIC THEATRE (4)
PR: TAR 311. Special problems in acting as applied to the musical theatre.

TAR 481. DIRECTED STUDIES (1-6)
PR: CC: Independent studies in the various areas of Theatre. Course of study and credits must be assigned prior to registration.

TAR 491, 492, 493. DIRECTING I, II, III (4, 4, 4)
PR: Completion of the first two years as a theatre major and Cl. An elective sequence in directing. A workshop course in which the student first encounters the basic tasks of the director by preparing and directing one or two scenes and then progresses to more complex scene work in a variety of styles and finally proceeds to the short play or theatre piece.

FOR SENIORS AND GRADUATE STUDENTS

TAR 503. THEATRE ORIGINS (6)
PR: Completion of the first three years as a theatre major and Cl. Required of all theatre majors. An analysis of the development of theatre out of myth, ritual and liturgy. Emphasis will be placed on what subsequent attempts to understand the resulting phenomena can teach us about the nature of our art.

TAR 511. ACTING IV (4)
PR: Completion of all required 400-level performance courses and audition. A workshop in the classic repertory. Advanced scene study. Required of all theatre majors with a performance concentration.

TAR 512. SENIOR SEMINAR-WORKSHOP (4)
PR: TAR 511. Audition and cold reading techniques.
TAR 513. SENIOR WORKSHOP FOR ACTORS (4)
PR: TAR 511 and audition. A coaching workshop in individual problems.

TAR 514. ACTING V (4)
PR: TAR 512 or 513. The aesthetics of acting. The various theories of the art. Required of all theatre majors with a performance concentration.

TAR 521, 522, 523. DESIGN I, II, III (4,4,4)
PR: Completion of all required 400-level technology and design courses and portfolio. The aesthetic and practical applications of the elements of design for theatre presentation.

TAR 524, 525, 526. TECHNICAL MANAGEMENT I, II, III (4,4,4)
PR: Completion of all required 400-level technology and design courses. A study of the technical operation and organization for the theatre technologist. Advanced problems in techniques and organization.

TAR 527. SCENE PAINTING (2)
PR: Completion of all required 400-level technology and design courses. A practical course in the painting of stage scenery — media and application.

TAR 528. PATTERN DRAFTING (2)
PR: Completion of all required 400-level technology and design courses. A practical course in the drafting of workable patterns for costuming the actor.

TAR 529. SPECIAL PROJECTS (2)
PR: Completion of all required 400-level technology and design courses. An individually designed course of study tailored for the student’s advanced work in technology and design.

TAR 552. ADVANCED PERFORMANCE (1)
PR: TAR 352 or CI. The study, rehearsal, and performance of major theatrical works. Admission by audition. May be repeated. Additional appropriate credit may be earned with TAR 481 or TAR 581.

TAR 553. THEATRE STUDIES SEMINAR (4)
PR: TAR 503. A seminar in the nature of the synthesized theatre object. Required of all majors.

TAR 571. STAGE MANAGEMENT (4)
PR: Completion of a 400-level concentration in theatre. A practical course in the working and organizational function of the stage manager in theatre, dance, opera, and other live performance situations.

TAR 573. THEATRE MANAGEMENT (2)
PR: Completion of a 400-level concentration in theatre. The study of management relations for the theatre, including all fields of management from box office to publicity.

TAR 581. DIRECTED STUDIES (1-9)
PR: CC. Independent studies in the various areas of Theatre. Course of study and credits must be assigned prior to registration.

WOMEN’S STUDIES PROGRAM (WSP)

Director: J. H. Williams; Assistant Professor: J. O. Ochshorn; Instructor: M. Ferrandino

LOWER LEVEL COURSES

WSP 201. INTRODUCTION TO WOMEN’S STUDIES (4)
A survey of the major issues relevant to the female experience: psychological, sociological, and anthropological perspectives. Interdisciplinary faculty.

UPPER LEVEL COURSES

WSP 309, 310, 311. IMAGE OF WOMEN IN WESTERN CIVILIZATION (4,4,4)
PR: WSP 201 or CI. Interdisciplinary and comparative study of women in Western civilization, with particular emphasis on the historical sources and evolution of anti-feminist attitudes in selected societies. WSP 309: Pre-Biblical period through the Middle Ages. WSP 310: Renaissance through the eighteenth century. WSP 311: Nineteenth and twentieth centuries.

WSP 315. CONTEMPORARY WOMAN IN THE UNITED STATES (4)

WSP 321. WOMEN IN CROSS-CULTURAL PERSPECTIVE (4)
PR: WSP 201, ANT 201, or CI. Roles of women in selected cultures, with emphasis on Third World and primitive societies. Examples from least to most differentiated cultures. Influence of family models, kinship systems, economic patterns, political structure, and belief systems. (Also offered as ANT 431.)

WSP 329. WOMEN AND SOCIAL CHANGE (4)
PR: WSP 201 or CI. The history of the feminist movement in the U.S. and Britain. Women in the rank-and-file of reform in America, including abolitionism, the settlement house movement, labor unions, political revolution in Western society, and Third World liberation. Sources and issues of the women’s liberation movement.

WSP 401. PSYCHOLOGY OF WOMEN (4)
PR: WSP 201 or CI. An examination of theories of female personality. Concepts of personality theory regarding sex differences, differential socialization, and sex-typed behavior. Particular attention to research on achievement motivation, cognitive, perceptual, and motor performance differences, and to developmental tasks of women in our society. (Also offered as PSY 451.)

WSP 405. HUMAN SEXUAL BEHAVIOR (4)
The dynamics of human sexuality including biological, constitutional, cultural, and psychological aspects. Exploration of the range of sexual behavior across groups. Sources of beliefs and attitudes about sex, especially female sexuality, current status. Interdisciplinary faculty. (Also offered as PSY 451.)

WSP 483. SELECTED TOPICS (4)
PR: WSP 201 or CI. Study in special areas such as Women and the Law, The Aging Woman, Women and the Professions, Women in the Arts. (Also offered as ENG 378 and ENG 379.)

WSP 491. SEMINAR IN WOMEN’S STUDIES (4)
PR: WSP 201, WSP 301, or CI. In-depth study of research in one or more areas of topical interest to students and staff. Research involvement by students required.

ZOLOGY (ZOO)—see Biology
ADMINISTRATION OF STATE UNIVERSITIES

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Julius F. Parker, Jr. (1977)
Tallahassee

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Miami

Robert B. Mautz, Chancellor
Tallahassee

*Term Expires

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Council Chairman ............................... John C. Briggs
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Director, Bachelor of Independent Studies Program .................. Kevin E. Kearney

Acting Director, Educational Resources .......... Manny Luoff
Director, Libraries ............................. Mary Lou Harkness
Acting Director, Institutional Research ...... TBA
Acting Director, Academic Planning & Analysis .......................... T. Wayne Keene
Acting Registrar .................................... Douglas MacCulloch

COLLEGE OF BUSINESS ADMINISTRATION

Dean ................................................. Howard S. Dye
Director of Graduate Studies ............... Robert J. Murphy
Coordinator of Advising, Upper Level ... Kenneth W. Davey
Chairmen
Accounting and Business Law ............. Louis C. Jurgensen
Economics ..................................... Thomas D. Curtis
Finance ......................................... James R. Longstreet
Management ..................................... Harold M. Schroeder
Marketing ........................................ David C. Sleeper

COLLEGE OF EDUCATION

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Associate Dean ................................. Philip Pfost
Assistant Dean ..................................... Louis White
Administrative Coordinators
Certification ....................................... Melvin Villeme
Undergraduate Advising ...................... Charles A. Gordon
Student Activities ............................. Loren G. Roberts
Graduate Advising ............................. L. Tom Kars
Off-Campus Courses ......................... Roy Dwyer
Intern Experiences ............................. Calvert J. Craig
Coordination of Continuous Experience Program: Leadore DuBois
Twelve County Consortium: William P. Dannenberg
Upward Bound: Richard F. Pride
International Education: E. Christian Anderson
Leadership Training Program (USOE): B. O. Smith

**Department Coordinators**

Department A, C: John Follman
Department B: Richard Loveless
Department D: William Benjamin
Department E: William Bott

**Program Directors**

Art Education: Hayden Bryant
Educational Leadership: Russell Wiley
Elementary Education: Edward Uprichard
Exceptional Child: G. Orville Johnson
Guidance, Reading, and School Psychology: Donald Neville
Health/Physical Education: H. Hoffman
Music Education: Virginia Bridges
Secondary Education: Donald Lantz
Vocational/Technical: R. Toothman

**College of Engineering**

Dean: Edgar W. Kopp
Assistant Dean: Rudolf E. Henning
Chairmen
- Electrical and Electronics Systems: Merle R. Donaldson
- Energy Conversion and Mechanical Design: Linus A. Scott
- Structures, Materials and Fluids: John E. Griffith
- Systems Engineering: Robert J. Wimmer

Program Coordinators
- Engineering Science: Rudolf E. Henning
- Engineering Technology: Charles E. Payne
- Computer Science: Harvey Glass
- Applied Mathematics: Louis F. Doty

**College of Fine Arts**

Dean: Donald J. Saff
Assistant Dean: John W. Coker
Coordinator of Advising and Graduate Studies: C. Wesley Houk
Chairmen
- Art: George Pappas
- Dance: William G. Hug
- Music (Acting): Vance Jennings
- Theatre: Herbert L. Shore
- Acting Director, Florida Center for the Arts: John W. Coker

**College of Language and Literature**

Dean: Philip M. Rice
Assistant to the Dean: Joyce R. Wallace
Coordinator of Advising: Catherine Sanders
Chairmen
- Classics and Ancient Studies: Albert M. Gessman
- English: John R. Clark
- Humanities: Daniel Rutenberg
- Mass Communications: Emery L. Sasser
- Modern Languages (Acting): James A. Parrish
- Philosophy: James A. Gould
- Speech Communication (Acting): John I. Sisco

Directors
- American Studies Program: Henry M. Robertson
- History of Ideas Program: John B. Camp
- Liberal Studies Program: Catherine Sanders
- Linguistics Program: Roger W. Cole
- Religious Studies Program: William C. Tremmel

**College of Natural Sciences**

Dean: James D. Ray, Jr.
Assistant to the Dean and Director of Advising: Walter E. Williams

Chairmen
- Astronomy: Heinrich K. Eichhorn von Wurmb
- Biology: Howard J. Arnett
- Chemistry: P. Calvin Maybury
- Geology: Richard A. Davis, Jr.
- Marine Science: Frank T. Manheim
- Mathematics (Acting): Frederic J. Zerla
- Physics: Norman L. Oleson

Director, Astronomical Observatory: Edward J. Deviney
Director, Botanical Gardens: Derek G. Burch
Director, Herbarium: Robert W. Long

**College of Social and Behavioral Sciences**

Dean: Travis J. Northcutt, Jr.
Associate Dean: Gilbert Kushner
Coordinator of Advising: Robert O. Turner

Chairmen
- Anthropology: Gilbert Kushner
- Communicology: Stewart W. Kinde
- Economics (Acting): Howard S. Dye
- Geography: John W. Stafford
- History: Roger R. Trask
- Interdisciplinary Social Sciences: Mark T. Orr
- Political Science: Lewis Bowman
- Psychology: James W. Anker
- Sociology: Roy G. Francis

Directors
- Afro-American Studies Program: Festus U. Ohagbulum
- Aging Studies Program: Albert J. E. Wilson
- Criminal Justice Program: Mitchell Silverman
- International Studies Program: Mark T. Orr
- Leisure Studies Program: Max Kaplan
- Off-Campus Term Program: Keith Lupton
- Rehabilitation Counseling Program: Calvin M. Pinkard
- Women's Studies Program: Juanita Williams

**Medical Center**

Director: Donald L. Smith
Assistant Director: Hollis G. Boren
Business Manager, Medical Center: John Melendi

**College of Medicine**

Dean: Donald L. Smith
Associate Dean: Hollis G. Boren
Associate Dean for Preclinical Affairs: Charles W. Fishel
Associate Dean for Student Affairs: Jack W. Hickman
Assistant Dean for Admissions: Julian J. Dworinik

Chairmen
- Anatomy: H. N. Schnitzlein
- Internal Medicine: Roy H. Behnke
- Medical Microbiology: Charles W. Fishel
- Obstetrics and Gynecology: James M. Ingram
- Ophthalmology: William C. Edwards
- Pathology: Herschel Sidransky
- Pediatrics: Lewis A. Barness
- Pharmacology: Andor Szentvanyi
- Physiology: Carleton H. Baker
- Psychiatry: William W. TBA
- Radiology (Acting): Arthur Graham
- Surgery: Roger T. Sherman

**College of Nursing**

Dean: Gwendoline MacDonald
FACULTY AND ADMINISTRATIVE STAFF

All members of the University of South Florida faculty and administrative staff, including teaching, research, administrative and professional personnel are listed below in alphabetical order. The listing includes name, current rank and field, first year of continuous appointment to any position in the institution, degrees, and institution and year of terminal degree, as of December 31, 1973. (A semicolon between degrees indicates different institutions.)

ABBREY, WALTER R.............Lecturer (Engineering), 1966
B.S.M.E., Tri-State College, Indiana, 1938

ABRAM, JACQUES..................Professor (Music), 1963
Diploma with Distinction, Juilliard School of Music, 1938

ACHEMBAU, KARL E........Assistant Professor (Psychology), 1968
B.A., Ph.D., University of Florida, 1966

ACKERMAN, DORIS J........Assistant University Librarian (Libraries), 1969
B.A., M.L.S., Rutgers, 1969

ACKERMAN, JOHN R............Professor (Surgery), 1973 (Part time)

ADAMS, CHARLES J, II............Lecturer (Engineering), 1973
B.S., Florida State University, 1973

ADAMS, PATRICIA W............Counselor and Adviser (University Studies: Student Affairs), 1965

AFIELD, WALTER E.............Professor (Psychiatry), 1970
M.A., M.D., Johns Hopkins University, 1960

AHUWALIA, DALJIT S.............Professor (Mathematics), 1972
B.A., M.A.; Ph.D., Indiana University, 1965

AKINS, DANIEL L..............Assistant Professor (Chemistry), 1970
B.S.; Ph.D., University of California, Berkeley, 1968

AKINTOYE, STEPHEN A........Visiting Associate Professor
(Afro-American Studies), 1972
B.A., Ph.D., University of Ibadan, Nigeria, 1966

ALEXANDER, LUella K........Interim Lecturer (Sociology), 1972
B.A., M.A., Ohio State University, 1966

ALLEN, EDMUND E..........Director and Adjunct Professor
(Counseling Center for Human Development; Student Affairs), 1964
B.S.; M.S.; Ed.D., University of Florida, 1964

ALLEN, HAROLD C.............Assistant Professor (Management), 1967
B.A.; M.B.A.; Ph.D., University of Florida, 1969

ALLEN, JAMES L............Associate Professor (Engineering), 1972
B.E.E., M.S.E.E., Ph.D., Georgia Institute of Technology, 1966

ALLEN, RUPH S............Teaching Associate (Education), 1968
Part time
B.A.; M.A., University of South Florida, 1967

ALVAREZ, MARVIN R..........Associate Professor (Biology), 1966
B.S., M.S., Ph.D., University of Florida, 1964

ANDERSON, CELIA L..........Assistant Professor (Education), 1967
A.B., M.S., Florida State University, 1953

ANDERSON, DONALD J...........Director (Program Planning and Analysis), 1967
B.S.; M.A., University of South Florida, 1971

ANDERSON, E. CHRISTIAN........Professor (Education), 1964
B.S., M.A., Ph.D., University of Michigan, 1964

ANDERSON, EVERETT S............Professor (Music), 1963
B.M., M.M., Illinois Wesleyan University, 1937

ANDERSON, JOHN A..........Assistant Professor (Business Management), 1967, St. Petersburg Campus
B.A., M.A., Ph.D., University of Florida, 1973

ANDERSON, LOUIS V...........Associate Professor (Education), 1963
B.A., M.A., Ph.D., George Peabody College, 1966

ANDERSON, MELVIN W.........Professor (SMF-Engineering), 1969
B.S., M.S., Ph.D., Carnegie-Mellon University, 1967, P.E.

ANDERSON, ROBERT L..........Assistant Professor (Marketing), 1971
B.S., M.S.; Ph.D., North Texas State University, 1971

ANGROSINO, MICHAEL V..........Assistant Professor (Anthropology), 1972
B.A.: Ph.D., University of North Carolina, 1972

ANTON, JEAN L.............Counselor to Students and Instructor (Student Affairs), 1970
B.S., M.Ed., Ohio University, 1970

ANTONIO, JAMES F........Associate Professor (Accounting), 1970
B.S., M.S., Ph.D., University of Illinois, 1967, C.P.A.

ARMSTRONG, RONALD W........Instructor (Sociology), 1972, St. Petersburg Campus
B.A.; M.A., University of Oregon, 1970

ARNADE, CHARLES W..........Professor (Interdisciplinary Social Science), 1961
A.B., M.A.; Ph.D., University of Florida, 1955

ARNOTT, HOWARD J...........Chairman and Professor (Biology), 1972
B.A.; M.S.; Ph.D., University of California, 1958

ARTZYBUSHEV, MITZITA........Assistant Professor (Modern Languages), 1960
B.S.; M.A.; Ph.D., Florida State University, 1972

ARTZYBUSHEV, PETER D...............Instructor (Russian and Italian), 1972
B.A.; M.A., Florida State University, 1969

ASH, KARIN S............Counselor to Students and Lecturer (Student Affairs), 1972
B.A.; M.S., University of Bridgeport, 1972

ASHFORD, THEODORE A............Professor (Chemistry), 1960
B.S., M.S., Ph.D., University of Chicago, 1936

AUBEL, JOSEPH L.............Assistant Professor (Physics), 1964
B.S., Ph.D., Michigan State University, 1964

AUSTIN, LARRY D.............Professor (Music), 1972
B.M., M.M., North Texas State University, 1952

AUSTIN, MARTHA L.............Professor (Education), 1963
B.A.; M.Ed.; Ph.D., University of Chicago, 1969

AVENI, ANTHONY F...........Visiting Associate Professor, (Astronomy), 1973
A.B.; Ph.D., University of Arizona, 1963

AZAR, HENRY A..............Professor (Pathology), 1972 (Part time)
B.A., M.D., American University of Beirut, Lebanon, 1952

BARBER, GARETH R............Assistant Professor (Biology), 1972
B.A.; M.S.; Ph.D., University of Texas, 1970

BAILEY, OSCAR W.............Professor (Visual Arts), 1969
B.A.; M.F.A., Ohio University, 1958

BAIRD, RONALD C..........Assistant Professor (Marine Science), 1969, St. Petersburg Campus
B.S.; M.A.; Ph.D., Harvard University, 1969

BAKER, CARLETON H...........Chairman and Professor (Physiology), 1971
B.A.; M.A.; Ph.D., Princeton University, 1955

BALDWIN, DONALD K.........Special Assistant to Vice President and Lecturer (Mass Communications), 1972

BARNARD, JAMES W...........Associate Professor (Education), 1968
B.S., M.Ed., Wayne State University, 1968

BARNARD, JAMES W...........Associate Professor (Education), 1968
A.B.; M.A.; M.S., Ph.D., Yale University, 1963

BARNES, LEWIS A...........Chairman and Professor (Pediatrics), 1972
A.B., M.D., Harvard Medical School, 1944, M.A. Hon.

BARRETT, O'NEILL, JR........Professor (Internal Medicine), 1973 (Part time)
B.S.; M.Sc.; M.D., Louisiana State University, 1953

BARTLETT, ALTON C............Professor (Management), 1967
B.S.; Ph.D., University of Wisconsin, 1964
BLAKE, NORMAN J......Assistant Professor (Marine Science), 1972, St. Petersburg Campus
B.S.; M.S. Ph.D., University of Rhode Island, 1972
BLAU, LILLI R...........University Counseling Psychologist, Lecturer (Counseling Center; Student Affairs), 1967
B.S.; M.S., Pennsylvania State University, 1951
BLAU, THEODORE H..........Interim Professor (Interdisciplinary Social Science), 1971 (Part time)
B.S.; M.S., Ph.D., Pennsylvania State University, 1951
BLOCH, SYLVAN C............Professor (Physics), 1963
B.S., M.S., Ph.D., Florida State University, 1962
BLOOM, SHERMAN.........Associate Professor (Pathology), 1973
B.A., M.D., New York University, College of Medicine, 1960
BLOOMQUIST, ALLEN J......Associate Professor (Psychology), 1971, St. Petersburg Campus
B.S., M.S., Ph.D., University of Wisconsin, 1960
BLount, William R...........Associate Professor (Criminal Justice Program), 1968
B.A.; M.A.; Ph.D., George Peabody College, 1969
BOLER, R. KEITH...........Assistant Professor (Anatomy), 1970
B.A.; M.S.; Ph.D., University of Mississippi, 1966
BOLIVAR, JUAN C...........Associate Professor (Surgery), 1972 (Part time)
B.S.; M.D.; M.D., University of Paris, Sorbonne, 1940
BOND, JOSEPH C., JR...........Associate Professor (Education), 1965
BOOSTROM, MARGARET C...........Assistant Professor (Nursing), 1973
R.N.; B.S.N.; M.N.Ed., University of Pittsburgh, 1966
Boren, Hollis G...........Assistant Director (Medical Center), Associate Dean (College of Medicine), Professor (Medicine), 1973
B.A.; M.D., Baylor University College of Medicine, 1946
BORG, JEAN M..................Lecturer (Education), 1972
B.S.; M.A., University of Illinois, 1962
BOSSERMAN, C. PHILIP.........Professor (Sociology), 1967
A.B., S.T.B., Ph.D., Boston University, 1963
BOSTOW, DARREL E...........Assistant Professor (Education), 1970
B.A.; M.A., Ph.D., Southern Illinois University, 1970
BOTERO, FERNANDO...........Assistant Professor (Medicine), 1973
B.S.; M.D., University of Antioquia Medical School, Medellin, Colombia, 1964
BOTT, WILLIAM K...........Professor and Acting Chairman (Education), 1960
BOWEN, ADA M................University Librarian (Medical Library), 1965
B.A.; M.A., University of South Florida, 1951
BOWERS, JAMES C............Professor (Electrical Engineering), 1965
B.E.; M.S.; Sc.D., Washington University, 1964
BOWERS, LOUIS E............Professor (Education), 1967
B.S.; M.A.; Ph.D., Louisiana State University, 1964
BOWERS, RICHARD T...........Director and Professor (Physical Education: Student Affairs), 1963
B.S., M.S., Ed.D., George Peabody College, 1961
BOWMAN, R. LEWIS............Professor and Chairman (Political Science), 1973
B.A.; Ph.D., University of North Carolina, 1964
BOYD, HERBERT F.............Professor (Education), 1965
B.S.; M.S.; Ph.D., University of Illinois, 1958
BRADLEY, ROBERT V...........Associate University Catalog Librarian (Libraries), 1959
B.A.; M.A., Florida State University, 1957
BRADSHAW, ROBERT D...........Counselor to Students and Lecturer (Student Affairs), 1977
B.A.A., B.F.A., M.S., Miami University, Ohio, 1973
BRADY, HENRY G..............Assistant Professor (Education), 1969
B.S.; M.Ed.; Ph.D., Florida State University, 1969
BRADY, WILLIAM M...........Instructor (Mass Communication), 1963 (Part time)
B.S.; M.S., University of Illinois, 1967
BRAMAN, ROBERT S...........Professor (Chemistry), 1967
B.S.; Ph.D., Northwestern University, 1966
BRUNHILD. GORDON
Burdick, Glenn
Bryant, Haydn C., Jr. ... Assistant Professor—Director
BRUSK.
Buch, Derek G. ... Director, Botanical Gardens, Associate Professor (Biology), 1967
B.S.C., M.S., Ph.D., University of Florida, 1965
Burck, Glenn A. ... Professor (Electrical Engineering), 1965
B.S., M.S., Ph.D., Massachusetts Institute of Technology, 1961

BREMES. HERMAN J. ... Continuing Education Center Administrator, 1964, St. Petersburg Campus
B.S., M.S., Indiana State University, 1964
Brandmeyer, Gerard A. ... Associate Professor (Sociology), 1969
B.S., M.A., Ph.D., University of California, Los Angeles, 1962
Brantley, Betty C. ... Assistant Professor (Education), 1968
B.S.; M.Ed., Ph.D., Florida State University, 1970
Braun, Marilyn R. ... Instructor (Modern Languages), 1970
B.A.; M.A., Purdue University, 1970
Bry, Lloyd J., Jr. ... Lecturer (Fine Arts), 1973
B.A.; M.A., University of North Carolina, 1965
Breit, Frank D. ... Associate Professor (Education), 1968
B.A., M.Ed., Ph.D., University of Texas, 1968
Bridges, Virginia A. ... Associate Professor and Director (Education), 1964
B.M.Ed., M.A., Ph.D., Ohio State University, 1965
Bridges, Winston T., Jr. ... Assistant Professor (Education), 1970, St. Petersburg Campus
Briggs, John C. ... Director and Professor (Graduate Studies; Biology), 1964
B.S., M.A., Ph.D., Stanford University, 1952
Brightwell, J. Richard ... Director (Continuing Education), 1964
B.S., M.A., Ohio State University, 1947
Brightwell, Ruth G. ... Teaching Associate (Education), 1969 (Part-time)
B.S., Ohio State University, 1948
Brissard, Fred D., III ... Systems Coordinator (Regional Data Center), 1970
B.S.E., University of South Florida, 1971
Britton, Jack R. ... Professor (Mathematics), 1967
B.A., Ph.D., University of Colorado, 1936
Broderick, John F. ... Assistant Professor (Linguistics), 1973
B.A.; M.A.; M.S., Ph.D., Georgetown University, 1972
Broer, Lawrence R. ... Associate Professor (English), 1965
B.S., M.A., Ph.D., Bowling Green State University, 1968
Brooker, Harold ... Assistant Professor (Physics), 1964
B.S., M.S., Ph.D., University of Florida, 1962
Brown, Curtis J. ... Counselor and Adviser (Business), 1972
B.S., Florida A & M University, 1963
Brown, Larry N. ... Associate Professor (Biology), 1967
B.S.; M.A., Ph.D., University of Missouri, 1962
Brown, Thad H., III ... Interim Instructor (Finance), 1973
B.A.; M.B.A.; J.D., Cornell University, 1971
Bruce, Rita G. ... Assistant Professor (Education), 1970
B.S., M.S., Ed.D., West Virginia University, 1965
Brunhild, Gordon ... Professor (Economics), 1960
B.S., M.B.A., Ph.D., University of Southern California, 1957
Bruss, James J. ... Director (Information Services), 1973
B.S., Ohio University, 1950
Bryant, Alma G. ... Associate Professor (English), 1972
B.S., M.A., Columbia University, 1965
Bryant, Fred D. ... Director (Medical Center Library), 1971
A.B.; M.S.L.S., Emory University, 1947
Bryant, Hayden C., Jr. ... Assistant Professor-Director (Education), 1967
B.A.; M.A., George Peabody College, 1957
Bullock, John T. ... Associate Professor (Education), 1966
Burch, Derek G. ... Director, Botanical Gardens, Associate Professor (Biology), 1967
B.S., M.S., Ph.D., University of Florida, 1965
Burdick, Glenn A. ... Professor (Electrical Engineering), 1965
B.S., M.S., Ph.D., Massachusetts Institute of Technology, 1961

Burk, Alan C. ... Visiting Assistant Professor (Philosophy), 1973
B.A.; M.A., Ph.D., Brown University, 1973
Burley, W. Wade ... Associate Professor (Education), 1966
B.A.; M.Ed., Ph.D., University of North Carolina, 1970
Burns, Thomas J. ... Associate Professor (Religious Studies), 1969
Burton, Robert H. ... Associate Professor (Economics), 1963
B.B.A., M.B.A., Ph.D., Louisiana State University, 1967
Busha, Charles H. ... Associate Professor (Education), 1973
B.A.; M.I.S.; Ph.D., Indiana University, 1970
Bushell, John J. ... Systems Coordinator (Planning and Analysis), 1960
Busot, J. Carlos ... Associate Professor (Chemical Engineering), 1970
B.S.; M.S., Ph.D., University of Florida, 1970
Busta, Joseph F., Jr. ... Assistant to the President (President’s Office), 1971
B.S.; M.S., University of Tennessee, 1972
Butler, Charles W. ... Director (Physical Plant), 1965
B.A., Lincoln Memorial University, 1942
Butler, K. Nelson ... Associate Professor (Interdisciplinary Social Science), 1968
B.S., M.A., Ed.D., University of Tennessee, 1968
Caflisch, Jacob C., III ... Assistant Professor (Linguistics), 1970
A.B., A.M., Indiana University, 1967
Caldwell, Edward ... Associate Director—Assistant Professor (Testing and Evaluation), 1965
B.S., M.S., Ed.D., Florida State University, 1958
Cameron, William Bruce ... Professor (Sociology), 1964
B.A.; M.A., Ph.D., University of Wisconsin, 1952
Camp, John B. ... Associate Professor (History of Ideas), 1964
B.M., M.M., Ph.D., Florida State University, 1964
Camp, Paul E., Jr. ... Assistant University Librarian (Libraries), 1972
B.A.; M.S.L.S., Florida State University, 1972
Campbell, Leonard J., Jr. ... Assistant Professor (Education), 1972
B.S., M.Ed., Ph.D., Florida State University, 1971
Cano, Carlos J. ... Assistant Professor (Modern Languages), 1970
B.A.; M.A., Ph.D., Indiana University, 1973
Cantin, Salvatore J. ... Assistant Professor (Ophthalmology), 1973 (Part-time)
B.A.; M.A., Johns Hopkins University, 1961
Capps, Cleon W. ... Professor (Modern Languages), 1970
B.A.; M.A., Ph.D., University of New Mexico, 1964
Carbone, F. Fred W. ... Associate Professor (Nursing), 1973
Card, George R. ... Lecturer (Cooperative Education & Placement; Student Affairs), 1970
B.S.; M.A., University of South Florida, 1971
Carker, Kendall ... Assistant Professor (Marine Science), 1969, St. Petersburg Campus
B.S., M.S., Ph.D., Oregon State University, 1970
Carlson, Rebecca L. ... Instructor (Communicology), 1968
B.S., M.S., University of South Florida, 1970
Carlton, Edward O. ... Systems Coordinator (Computer Research Center), 1967
B.S., M.B.A., New York University, 1957
Carmichael, John D. ... Assistant Professor (Marketing), 1967
B.S., M.B.A., Georgia State University, 1965
Carpenter, Peter A. ... Assistant Professor (Philosophy), 1969, St. Petersburg Campus
B.A.; B.Ed., S.T.M., Ph.D., McGill University, 1969
Carr, David R. ... Assistant Professor (History), 1971, St. Petersburg Campus
B.A.; M.A., Ph.D., University of Nebraska, 1971
CARR, JOSEPH A. ......... Associate Curator (Planetarium), 1960
CARR, ROBERT S. ........ Visiting Lecturer (Mass Communications), 1968
CARROLL, DELOS L., JR. .... Assistant Professor (Education), 1969
B.S.; M.Ed.; Ed.D., University of Florida, 1969
CARTER, DAVID A. ....... Instructor (Speech Communication), 1973
B.A.; M.A., University of Akron, 1968
CATERALL, JOHN E. .......... Assistant Professor (Art), 1971
CECCHI, ISABELLE F. ........... Lecturer (English), 1960
C.E.; B.A., Wells College, 1940
CHAMBERS, JAMES A. ......... Associate Professor (Education), 1964
A.B.; M.A.; Ed.D., University of Tennessee, 1963
CHEATHAM, MARY J. ............ Assistant Professor (Physical Education; Student Affairs), 1967
B.A.; M.S., Florida State University, 1967
CHEN, CHUNG HUAN ......... Professor (Philosophy), 1965
B.S., Ph.D., University of Berlin, 1939
CHEN, TSONG-MING .......... Associate Professor (Electrical Engineering), 1972
B.S.; Ph.D., University of Minnesota, 1964
CHERRY, R. ADRIAN ......... Associate Professor (Modern Languages), 1961
B.A., M.A., Ph.D., University of Kentucky, 1960
CHISNELL, ROBERT E. ......... Associate Professor (English), 1967
B.A.; M.A.; Ph.D., Auburn University, 1971
CHRISTENSEN, JAMES A. ....... Instructor (Surgery), 1973 (Part time)
A.B., M.D., Indiana University, 1968
CLAPP, ROGER W., JR. ........ Associate Professor (Physics), 1963
B.S.; M.S.; Ph.D., University of Virginia, 1954
CLARK, JOHN R. ......... Chairman-Professor (English), 1973
B.A.; M.A.; Ph.D., University of Michigan, 1965
CLARK, WILLIAM E. ......... Professor (Mathematics), 1970
B.A.; Ph.D., Tulane University, 1964
CLAYTON, GLENNON E. ....... Director (University Administrative Planning), 1946
B.S.; M.A., University of South Florida, 1973
CLEARY, LYNN P. ............. Assistant Professor (Education), 1970
B.A.; M.S.; Ph.D., Florida State University, 1970
CLEAVEL, FRANK L. ............ Professor (Mathematics), 1960
B.S.; M.S.; Ph.D., Tulane University, 1960
CLEMENT, DAVID E. ......... Chairman and Professor (Psychology), 1965
B.S., Ph.D., Johns Hopkins University, 1963
CLINE, RAFLH ......... Assistant Professor (Education), 1971, St. Petersburg Campus
CLINGMAN, JOY M. ......... Assistant Professor (Psychology), 1970
B.A., M.S., St. Petersburg Campus
B.A., M.S., Ph.D., Florida State University, 1971
CLINTON, PAUL A. ......... Assistant Professor (Arts), 1971
B.A., Oregon State University, 1968
CLONINGER, DALE O. ......... Assistant Professor (Economics), 1965
B.S.; M.B.A.; D.B.A., Florida State University, 1973
CLOSE, JAMES A. ............ Professor (Finance), 1971
A.B.; M.B.A.; Ph.D., University of Michigan, 1944
COHEN, STEPHEN L. ......... Assistant Professor (Psychology), 1971
B.S., M.S.; Ph.D., University of Tennessee, 1971
COKER, JOHN W. ......... Assistant Dean and Lecturer (Florida Center for the Arts), 1969
B.S., M.M., College-Conservatory of Music, Cincinnati, 1965
COLBY, JOAN W. ............ Teaching Associate (Education), 1969
B.S., Eastern Michigan University, 1953
COLE, ROGER W. ......... Associate Professor (Linguistics), 1969
B.A., M.A.; Ph.D., Auburn University, 1968
COLLIER, CLARENCE H. ....... Assistant Professor (Education), 1968
B.S.; M.E., University of Georgia, 1965
COLLIER, TROY L. ......... Assistant to Vice President (Student Affairs), 1971
B.S.; M.L.A., Southern Methodist University, 1971

COLLINS, PASchal J. ......... Assistant Professor (English), 1969
B.S., M.A., University of Denver, 1968
COLLINS, PHILIP D. ......... Assistant Director (Intercollegiate Athletics; Student Affairs), 1973
B.A., University of South Florida, 1973
CONWAY, CHARLES E. ......... Assistant Professor (American Studies), 1970
B.S., Temple University, 1961
COOK, DORIS C. ........... University Reference Librarian (Libraries), 1968, St. Petersburg Campus
B.A.; M.S.L.S., Florida State University, 1966
COOKE, JOHN P. ......... Associate Professor (Economics), 1968
B.S.; M.B.A.; Ph.D., University of Colorado, 1967
COOKE, NELSON R. .......... Associate Professor (Music), 1970
A.M.E.B., A.M.U.S.A. Performers Diploma, Conservatorium of Music, Sidney, Australia, 1937
COOPER, CLARA B. ......... Assistant Professor (Humanities), 1969
B.A., M.A., Ph.D., Florida State University, 1969
COOPER, RUSSELL M. ....... Professor (Interdisciplinary Social Science), 1959
B.A.; M.A., Columbia University, 1934, LL.D.
CORY, JOSEPH G. ......... Professor (Medical Microbiology), 1966
B.S.; Ph.D., Florida State University, 1963
COTTON, LARRY J. ......... Assistant Professor (Education), 1970
B.B.E., M.B.E., University of Florida, 1969
COULTER, PAMELA W. ....... Instructor (Communications), 1971
B.A.; M.A., Ball State University, 1968
COVINGTON, HARRISON W. ....... Professor (Art), 1961

COWDERY, JOHN S. ......... Associate Professor (Surgery), 1973 (Part time)
A.B.; M.D., Temple University School of Medicine, 1943
COWELL, BRUCE C. ......... Assistant Professor (Biology), 1967
B.A., M.A., Ph.D., Cornell University, 1963
COX, ERNEST L., III .... Associate Professor (Art), 1962
B.A.; M.F.A., Cranbrook Academy of Art, 1961
CRAIG, CALVERT J. ......... Associate Professor (Education), 1967
B.S., M.S., University of Illinois, 1951
CRAIG, CHARLES P. ....... Associate Professor (Medicine), 1972 (Part time)
B.A.; M.D., University of Pittsburgh School of Medicine, 1961
CRICKENBERGER, MARGARET E. .... Professor (Education), 1961
B.S.; M.S.; Ed.D., University of Florida, 1970
CRITTENDEN, JERRY ......... Assistant Professor (Communicology), 1971
B.S.; M.A., Ph.D., Michigan State University, 1969
CROFT, JAMES E. ......... Assistant Professor (Education), 1972
B.M.E.; M.A.; D.M.E., University of Oklahoma, 1970
CROUCH, JAMES W. ....... Counselor to Students and Instructor (Student Affairs), 1973
B.A.; M.A., Indiana University, 1971
CSIZMADIA, STEPHEN D. ....... Lecturer (Counseling Center: Student Affairs), 1972
A.D., M.U.V., M.S.W., Boston College, 1957
CUNNINGHAM, WILLIAM K. ....... Associate Professor (Marketing), 1971
B.B.A., M.B.A., Ph.D., University of Texas, 1970
CURRAN, JOHN S. ......... Assistant Professor (Pediatrics), 1972
A.B.; M.D., University of Pennsylvania, 1966
CURREY, CECIL B. ........... Professor (History), 1967
A.B., M.Sc., Ph.D., University of Kansas, 1964
DANO, WILLIAM R. ....... Instructor (Accounting), 1973 (Part time)
B.B.A., University of Florida, 1956
DANENBERG, WILLIAM P. ....... Associate Professor (Education), 1964
A.B.; M.Ed.; Ed.D., University of Tennessee, 1970
DAUGHERTY, GEORGE G. ....... Lecturer (Mass Communications), 1972
B.S., University of Houston, 1958
Davies, Wesley F. — Assistant Professor (Economics), Coordinator of Advising, Upper Level (Business Administration), 1966
B.A.; M.A.; St. Mary's University, 1965
Davis, Darrell L. — Associate Professor (Physiology), 1971
B.S., M.A.; Ph.D., St. Louis University, 1956
Davis, Jefferson, C. JR. — Professor (Chemistry), 1965
B.S., M.S.; Ph.D., University of California, Berkeley, 1959
Davis, Richard A., JR. — Professor and Chairman (Geology), 1973
B.S.; M.A.; Ph.D., University of Illinois, 1964
Davis, Wesley F. — Professor (English), 1960
A.B.; M.A.; Stanford University, 1970
Dawes, Clinton J. — Professor (Biology), 1964
B.S., M.A.; Ph.D., University of California, Los Angeles, 1961
Dean, Stanley R. — Associate Professor (Physics), 1967
B.S.; M.S.; Ph.D., Vanderbilt University, 1967
Deats, Sara M. — Assistant Professor (English), 1970
B.A., M.A.; Ph.D., University of California, Los Angeles, 1970
Deaux, Clyde E., Jr. — Assistant Professor (Finance), 1969
B.S., M.B.A.; Tulane University, 1966
DeBord, Warren A. — Associate Professor (Marketing), 1969
B.S., M.B.A.; Ph.D., University of Illinois, 1969
Deer, Harriet H. — Associate Professor (English), 1966, St. Petersburg Campus
M.A.; University of Minnesota, 1964
Deer, Irving — Professor (English), 1966
B.S., M.A.; Ph.D., University of Minnesota, 1956
Deitger, John C. — Associate Professor (Finance), 1965
B.S., M.B.A.; Western Reserve University, 1965
De Grotte, Joseph A. — Assistant Professor (History), 1967
B.A.; M.S., Ph.D., Syracuse University, 1965
Denker, Martin W. — Acting Chairman and Assistant Professor (Psychiatry), 1972
B.A., M.D., Johns Hopkins University, 1968
Dennis, David M. — Assistant Professor (Accounting), 1972
A.B.; M.B.A.; Ph.D., University of Missouri, 1972, C.P.A.
Dertke, Max C. — Director (University Studies, Student Affairs), Associate Professor (Criminal Justice), 1967
B.A.; Ph.D., University of Miami, Florida, 1968
Devin, James F. — Assistant Professor (SMF-Engineering), 1965
B.S., M.S., University of Illinois, 1960
Deviney, Edward J. JR. — Associate Professor (Astronomy), Director (Astronomical Observatory), 1968
A.B.; Ph.D., University of Pennsylvania, 1968
Dial, David L. — Visiting Lecturer (Mass Communications), 1970 (Part time)
B.A., University of South Florida, 1970
Dickey, Annamary L. — Assistant Professor (Music), 1969
B.S.; M.Ed., Columbia University, 1963, Artist Diploma
Dickey, Earlene — Assistant Professor (Interdisciplinary Social Science), 1965
B.A.E.; M.Ed., University of Florida, 1965
Dickinson, James C. — Assistant Vice President (Academic Affairs), Associate Professor (Education), 1969
A.B., A.M., Ph.D., University of Minnesota, 1964
Dickman, Fred J. — Assistant Professor (Rehabilitation Studies Program), 1970
Dietsch, Linnea S. — Assistant Professor (Art), 1968
A.B.; M.A., Ph.D., University of Delaware, 1972
Dietsch, Richard F. — Associate Professor (English), 1968
A.B.; M.A.; Ph.D., Florida State University, 1965
Dietz, John J. — Interim Instructor (English), 1971
B.A., M.A.; Temple University, 1965
Dilkes, Thomas P. — Associate Professor (History), 1969
B.A., M.A.; Ph.D., State University of Iowa, 1968
Dougherty, Marion T. III. — Interim Assistant Professor (Chemistry), 1973
B.S.; M.S.; Ph.D., University of South Florida, 1973
Donaldson, Merle R. — Chairman and Professor (Electrical and Electronic Systems), 1964
B.B.E.E., M.S.E.E., Ph.D., Georgia Institute of Technology, 1959
Doyt, Louis F. — Professor (Industrial Systems Engineering), 1970
B.S., M.S., Ph.D., University of Cincinnati, 1951
Downey, James M. — Assistant Professor (Physiology), 1972
B.S.; M.S.; Ph.D., University of Illinois, 1971
Downey, Paul M. — Professor (Industrial Systems Engineering), 1966
B.S., M.S., Ph.D., University of Florida, 1956
Downs, Bernard F. — Instructor (Speech Communication), 1970
Doyle, Larry J. — Assistant Professor (Marine Science), 1972, St. Petersburg Campus
B.A.; M.A., Ph.D., University of Southern California, 1973
Draper, Victor J. — Associate Professor (Education), 1968
B.A.; B.Th.; Ph.L.; M.A., Ph.D., University of North Dakota, 1968
Dubois, Leadore D. — Associate Professor (Education), 1964
B.S., M.A., M.S., Northwestern University, 1949
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B.S., M.M., Ph.D., Michigan State University, 1963
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B.S.; Ed.M., Ed.D., University of Illinois, 1950
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B.S., M.A., Ph.D., University of Minnesota, 1967
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B.S., M.S., Springfield College, 1956
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B.M.; M.M., Eastman School of Music, 1968
JONES, W. DENVER ..........Professor (Physics), 1970
B.A., M.A., Ph.D., Vanderbilt University, 1963
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B.A., M.A., University of South Florida, 1970
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B.E.; M.M.; M.A., Ph.D., University of Illinois, 1951
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B.A., University of Denver, 1962
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B.S., M.A., Ph.D., University of Florida, 1960
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B.S., M.A., Columbia University, 1961, Prof. Diploma
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B.N.S., B.E., M.S.I.E., Georgia Institute of Technology, 1947, P.E.
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B.S., M.S., Ph.D., University of Tennessee, 1968
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Muniz, Amado; Instructor (Psychiatry), 1972

B.S.; M.D., Havana University, 1960

Muntzan, Bozidar; Professor (Education), 1966

B.A., M.A.; University of Illinois, 1946

MURPHY, ROBERT J.; Associate Professor and Director (Graduate Studies; Business Administration), 1966

B.A.; M.A.; Ph.D., Fordham University, 1964

Murty, Chalakkonda N.; Research Associate (Pathology), 1972

B.S.; M.S.; Ph.D., University of Sidney, Australia, 1969

Musgrove, Walter J.; Associate Professor (Education), 1964, St. Petersburg Campus

A.B., M.A.; Ed.D., University of Maryland, 1965

Myers, William T.; Lecturer (Finance), 1973 (Part time)

B.S.; M.Ed., University of Georgia, 1965

Naehring, Douglas C. E.; Assistant Professor (Systems Engineering), 1970, St. Petersburg Campus

B.E.; M.Sc., Ohio State University, 1949, P.E.

Nelson, Harvey W.; Assistant Professor (Interdisciplinary Social Science), 1972

B.S.; M.S.; Ph.D., University of South Florida, 1968

Nelson, Menon; Ph.D., George Washington University, 1972

Nelson, Carnot E.; Associate Professor (Psychology), 1971

B.S.; Ph.D., Columbia University, 1966

Nelson, Douglas L.; Associate Professor (Psychology), 1967

B.A.; M.A.; Ph.D., University of Wisconsin, 1967

Nelson, Gid E., Jr.; Professor (Biology), 1960

A.B.; M.S.; Ph.D., University of Florida, 1964

Nelson, Louis R.; Director (Vivarium) and Assistant Professor (Pathology), 1971

B.S.; M.S.; D.V.M., Auburn University, 1955

Nesman, Edgar G.; Associate Professor (Sociology), 1968

B.S., M.S.; Ph.D., University of Florida, 1969

Nesman, Marjorie P.; Teaching Associate (Education), 1969 (Part time)

B.S., Michigan State University, 1952

Ness, Thomas E.; Associate Professor (Marketing), 1971

A.B.; B.S.E.; M.S.I.A., Ph.D., Purdue University, 1968

Neuberger, Hans H.; Visiting Professor (Geography), 1971

D.Sc., Hanseatische University, 1936

Neugard, Edward J.; Professor (Modern Languages), 1964

B.A.; M.A.; Ph.D., University of North Carolina, 1964

Neville, Donald D.; Professor and Director (Education), 1972

B.S., M.Ed.; Ed.D., University of Florida, 1961

Newcomb, Joan I.; Lecturer (Interdisciplinary Social Science), 1966

B.S.; M.A.; Ohio State University, 1964

Newcomb, P. Judson; Associate Professor (Education), 1970

B.A.; M.A.; Ph.D., Northwestern University, 1963

Newfield, Kenneth P.; Associate Professor (Sociology), 1972

A.B.; M.S.; Ph.D., Florence Heller Graduate School, Brandeis University, 1971

Nichols, Eugene J.; University Physician (Student Health Service; Student Affairs), 1973

Ph.B.; M.D., Boston University School of Medicine, 1971

Nichols, Nicholas L.; Assistant Professor (Marketing), 1969

B.A.; M.B.A., University of California, Berkeley, 1964

Nichols, Roger M.; Associate Professor (Education), 1965

A.B.; M.A.; Ph.D., Florida State University, 1965

Nikells, Bradley J.; Assistant Professor (Art), 1970

B.D.; M.A.; Ph.D., University of Indiana, 1966

Nicoli, Gregory R.; Assistant Professor (Physics), 1972

B.S.; Ph.D., Ohio State University, 1971

Niehaus, Harry A.; Assistant Professor (Electrical Engineering), 1967

B.S., M.S., University of St. Louis, 1964

Noer, Rudolf J.; Professor (Surgery), 1970 (Part time)

A.B.; M.D., University of Pennsylvania, 1927

Nord, Heinz J.; Assistant Professor (Internal Medicine), 1973

M.D., University of Frankfurt and Freiburg Medical Schools, 1964

Northcutt, Travis J., Jr.; Professor and Acting Dean (Social and Behavioral Sciences), 1972

B.S., M.S.; Ph.D., M.Ph., University of North Carolina, 1959

Northern, Sarah C.; Counselor and Adviser (Student Affairs), 1973

B.A., University of South Florida, 1971

Ober, Richard L.; Professor (Education), 1969

B.S.; M.A.T.; Ph.D., Ohio State University, 1966

Ochsorn, Judith; Assistant Professor (Interdisciplinary Social Science), 1969

B.A.; M.A., New York University, 1956

Ochsorn, Myron G.; Associate Professor (English), 1963

B.A.; M.A.; Ph.D., University of New Mexico, 1963

O'Donnell, Edward; Assistant Professor (Geology), 1968

B.S.; M.S.; Ph.D., University of Cincinnati, 1967

O'Donnell, Maurice E.; Associate Professor (Political Science), 1966

B.S.; M.S.; Ph.D., University of Wisconsin, 1954

Oeschger, Jack W.; Instructor (Marketing), 1968

B.S.; M.A.; University of South Florida, 1968

Ohaegbulam, Festus U.; Associate Professor and Director (African-American Studies), 1972

B.A.; M.A.; Ph.D., University of Denver, 1967

O'Hara, Robert C.; Professor (Linguistics), 1961

B.A.; M.A., University of Louisville, 1953

Oleson, Norman L.; Chairman and Professor (Physics), 1969

B.S.; M.S.; Ph.D., University of Michigan, 1940
OLINE, LARRY W. .... Associate Professor (SMF-Engineering), 1967
B.A.; B.S.; M.S.; Ph.D., Georgia Institute of Technology, 1968

OLSEN, EUGENE D. ......... Professor (Biochemistry), 1964
B.S.; Ph.D., University of Wisconsin, 1960

OLSON, JOHN A. ............ Assistant Professor (Education), 1970
B.A.; M.A.; Ph.D., University of Oregon, 1970

ORLOSKY, DONALD ........... Professor (Education), 1969
A.B.; M.S., Ed.D., Indiana University, 1969

Orr, Mark T. ............. Associate Professor and Chairman (Interdisciplinary Social Science), 1966
A.B.; Ph.D., University of North Carolina, 1954

ORTWEIN, PHILIP G. ........... Assistant Professor (Physical Education; Student Affairs), 1966
A.B.; M.S., Indiana University, 1948

O'SULLIVAN, PETER B. ....... Associate Professor (Theatre Arts), 1964
B.A.; M.A., University of North Carolina, 1957

OWEN, TERENCE C. .......... Professor (Chemistry), 1964
B.Sc., Ph.D., University of Manchester, England, 1964

OWEN, WILLIAM D. ......... Associate Professor (Music), 1964
B.M.; M.M., North Texas State University, 1960

PACKER, WILLIAM E. ....... Lecturer (Electrical Engineering), 1970
B.S., M.S.E., University of South Florida, 1973

PAGETT, KENNETH L. ....... Interim Instructor (Accounting), 1971
B.A.; M.A.C., University of South Florida, 1973

PAILS, TERRY L. ............. Interim Instructor (Modern Languages), 1973
B.A.; M.A., University of Kansas, 1966

Palm, John W. ............ Instructor (Interdisciplinary Social Science), 1970 (Part time)

Palm, Cecil E. .............. Assistant Professor (Geography), 1969
B.S.; M.A., Georgia University, 1960

Palm, James N. ............. Assistant Professor (English), 1966
B.A.; M.A., University of North Carolina, 1958

Palm, Robert E., Sr. ....... Associate Professor (Education), 1970
B.S., M.S., Ph.D., Florida State University, 1969
B.S., M.S., Ed.D., State University of New York at Buffalo, 1969

Pappas, George ............. Chairman and Professor (Art), 1966
B.S., M.A., Ed.D., Pennsylvania State University, 1957

Paradise, Lois J. .......... Associate Professor (Medical Microbiology), 1973
A.B.; M.S., Ph.D., University of Michigan, 1960

Parroo, Sarah J. ......... Instructor (Accounting), 1971, St. Petersburg Campus
B.A.; M.B.A., University of Florida, 1972, C.P.A.

Parker, John W., Jr. ....... Associate Professor (English), 1963
B.A.; M.A.; Ed.D., University of Kentucky, 1961, Ed.S.

Parker, Keith A. ............ Assistant Professor (History), 1966
B.A.; M.A., Ph.D., University of Maryland, 1965

Parker, Woodrow M. .... University Counseling Psychologist and Lecturer (Counseling Center; Student Affairs), 1971
B.S.; M.S., University of South Florida, 1971

Parr, Dennis H. ............ Associate Professor (SMF-Engineering) 1970
B.S.; M.S., Sc.D., New Mexico State University, 1968, P.E.

Parrado, Adrian A. .... University Counseling Psychologist and Assistant Professor (Counseling Center; Student Affairs), 1969
B.S.; M.A., University of South Florida, 1968

Parrish, James A., Jr. ......... Professor (English), 1960
B.S.; M.A., Ph.D., Florida State University, 1955

Partney, Gerald D. ....... Assistant Professor (Speech Communication), 1970
B.A.; Wake Forest University, 1966

Patouillet, Raymond A. ....... Professor (Education), 1967
A.B.; M.A., Ed.D., Columbia University, 1951

Patterson, Gerald E. ....... Assistant Professor (Education), 1971
B.S.; M.A., Ph.D., Ohio State University, 1970

Patterson, Ronald J. ....... Assistant Professor (Geology), 1973
B.Sc.; Ph.D., Princeton University, 1972

Payne, Charles E. ........... Associate Professor (Engineering Technology), 1965, St. Petersburg Campus
B.I.E.; M.S.E., University of Florida, 1965, P.E.

Pearce, Walter E., Jr. ........ Instructor (Education), 1972
B.A.; M.A., University of South Florida, 1971

Penner, Louis A. ......... Associate Professor (Psychology), 1969
B.A.; M.A.; Ph.D., Michigan State University, 1969

Perez, Louis A., Jr. ....... Assistant Professor (History), 1970
B.A.; M.A.; Ph.D., University of New Mexico, 1970

Persky, David W. .......... Counselor to Students and Lecturer (Student Affairs), 1973
B.A.; M.S., Miami University, Ohio, 1973

Peterson, Donald D. Associate Professor (Education), 1968
B.S.; M.A.; Ph.D., University of Pittsburgh, 1970

Pevnick, Stephen H. ........... Instructor (Fine Arts), 1972
B.A.; M.F.A., Washington University, 1972

Pfoest, Howard P. .......... Associate Dean and Associate Professor (Education), 1967

Phillips, Ernest R. ........... Assistant Professor (Education), 1971
B.A.; M.A.; Ph.D., Purdue University, 1971

Phillips, I. Van Keith .......... Assistant Professor (Theatre Arts), 1969

Pifa, B.A.; M.F.A., University of Texas, 1969, U.S.A.

Pierce, Carmel J. .......... Lecturer and Adviser (Education), 1970 (Part time), St. Petersburg Campus
B.S., University of South Carolina, 1945

Pinkard, Calvin M. ....... Director and Associate Professor (Rehabilitation Counseling Program), 1964
B.A.; B.D.; M.A., University of Florida, 1959

Polson, James B. .......... Assistant Professor (Pharmacology), 1971
B.A.; M.S., Ph.D., University of Missouri, 1968

Pope, James S. ............. Lecturer (Education), 1966
B.A.; M.A., University of South Florida, 1967

Popovich, Helen H. ......... Associate Professor and Assistant to the Chairman (English), 1965
B.A.; M.A.; Ph.D., University of Kansas, 1965

Popovich, James E. .......... Professor (Speech Communication), 1962
B.A.; M.A.; Ph.D., Northwestern University, 1955

Pothoven, Kenneth L. ....... Assistant Professor (Mathematics), 1970
A.B.; M.A.; Sp.A., Ph.D., Western Michigan University, 1969

Powell, Robert W. ........... Associate Professor (Psychology), 1966
B.A.; M.A.; Ph.D., Florida State University, 1966

Power, Fred B. .......... Assistant Professor (Finance), 1964
B.S., M.Ed., University of Florida, 1964

Prather, Sam W. .......... Associate Professor (Physical Education; Student Affairs), 1962
B.S.; M.S., Florida State University, 1953

Preedor, Edward ............ Professor (Music), 1960
B.M.; M.M., Eastman School of Music, 1937

Price, Arthur L. .......... Assistant Professor (Mathematics), 1970
B.S.; M.S., Ph.D., Rensselaer Polytechnic Institute, 1970

Price, William O. ....... Assistant Professor (Modern Languages), 1963
B.A.; M.A., Ph.D., Rutgers University, 1970

Prude, Richard F. .......... Assistant Professor and Director (Education), 1969
B.A.; M.A., Columbia University, 1951

Pritchett, Michael ..... Interim Instructor (Management), 1972
B.A., University of South Florida, 1971

Prince, Fred L. .......... Assistant Professor (Education), 1971
B.S., M.S., Ed.D., University of Houston, 1971
Ross, Jeffrey R. ....... Assistant Professor (Political Science), 1969
B.A.: Ph.D., Johns Hopkins University, 1969
Ross, Bernard E. ........ Professor (SMF-Engineering), 1965
B.S.M.E.: M.S.A.E.: M.S.E.M., Ph.D. University of Florida, 1964, P.E.
Ross, William T. ......... Assistant Professor (English), 1970
B.A.: M.A.: Ph.D., University of Virginia, 1970
Rothwell, Stuart C......... Professor (Geography), 1965
B.A., M.A.: Ph.D., Syracuse University, 1964
Rubin, Steven J. ............ Assistant Professor (English), 1969
Rundus, Dewey J.......... Assistant Professor (Psychology), 1972
B.S.: Ph.D., Stanford University, 1972
Rutenberg, Daniel......... Associate Professor and Chairman (Humanities), 1964
Ryon, James M. ........... Instructor (Music), 1973
B.S.: Yale College, 1973
Saff, Donald J. ............ Dean and Professor (Fine Arts), 1965
Saff, Edward B. ......... Associate Professor (Mathematics), 1969
B.S.: Ph.D., University of Maryland, 1968
Salter, George .......... Assistant Professor (Anatomy), 1972
B.S.: M.S., Ph.D., University of Alabama, 1970
Sanborn, Judith A...... Assistant University Acquisitions Librarian (Libraries), 1970
B.A.: M.A.L.S., University of Michigan, 1970
Sanders, Catherine M.......Lecturer and Coordinator of Advising (Language-Literature), 1970
B.A.: M.A., University of South Florida, 1970
Sanders, Jacqueline D...........Interim Instructor (Accounting), 1973
B.E.D.: M.B.A., Roosevelt University, 1962, C.P.A.
Sanders, Thomas E. ....... Assistant Professor (English), 1968
B.A.: M.A., University of Denver, 1951
Sanderson, Arthur M.........Professor (Mass Communications), 1965
B.A.: M.A.: Ph.D., University of Iowa, 1963
Sandler, Jack .... Associate Professor (Psychology), 1969
B.A., M.S.: Ph.D., Florida State University, 1969
Sankovsky, Raymond J............Professor (Education), 1972
B.S., M.Ed.: Ph.D., University of Pittsburgh, 1970
Sassmor, Jeannette F.... Associate Professor (Nursing), 1973
B.S., M.Ed., Teachers College, Columbia University, 1968
Sasser, Emerick F.……….Professor and Chairman (Mass Communications), 1973
Saxon, Sue V.......... Professor (Aging Studies Program), 1963
B.S., M.S., Ph.D., Florida State University, 1963
Schafer, Harry J., Jr. ............Assistant Professor (Geography), 1969, St. Petersburg Campus
B.S.: M.A., University of Cincinnati, 1963
Schendel, Marlin E ....... Professor (Speech Communication), 1971
B.A.: M.A.: Ph.D., University of Kansas, 1965
Scheuerle, Jane W..........Speech and Hearing Clinician (Counseling Center), Lecturer (Student Affairs), 1971
B.S., B.A.: M.S.: M.A., University of South Florida, 1968
Scheuerle, William H. ..........Assistant Vice President (Academic Affairs), Professor (English), 1964
B.A.: M.A.: Ph.D., Syracuse University, 1964
Schneider, Raymond J.........Associate Professor (Speech Communication), 1968
Schneiter, Stewart W...... Assistant Professor (Chemistry), 1971
B.S., M.S.: Ph.D., Indiana University, 1968
 Schnitzlein, Harold N........Professor and Chairman (Anatomy), 1973
A.B.: M.S., Ph.D., St. Louis University, 1954
Schoen, Robert E....... Research Associate (Physiology), 1973
B.A.: M.A.: Ph.D., University of Texas Medical Branch, 1973
Schroeder, Harold M.......Professor and Chairman (Management), 1973
B.A.: M.A.: Ph.D., Ohio State University, 1954
Schultz, John C.......... Assistant Professor (Theatre Arts), 1971
B.A.: M.A., Michigan State University, 1971
Schwartz, Carole J......... Instructor (Education), 1970
B.A.: M.S., University of Wisconsin, 1969
Schwartz, Julia L...........Associate University Catalog Librarian (Libraries), 1962
B.S.: M.S.L.S., Case Western Reserve University, 1955
Scott, Louis A.........Chairman and Professor (Energy Conversion Engineering), 1964
B.S.M.E.: M.S.E.: Ph.D., Case Institute of Technology, 1960, P.E.
Scott, Richard A........ Assistant Professor (Education), 1972
B.S., M.Ed., Auburn University, 1962
Scruggs, Charles E........ Associate Professor (Modern Languages), 1972
Seligsohn, Harriet C........Associate Director (University Studies; Student Affairs), 1960
B.S.: M.A., University of South Florida, 1969
Selman, James .......... Associate Professor (Education), 1971
B.S., M.S., Ed.D., Florida State University, 1967
Seminar, Lee Anne ....... Instructor (Modern Languages), 1972
A.B.: M.A., University of South Florida, 1969
Senior, Bloncl R. ......... Assistant Professor (Sociology), 1971, St. Petersburg Campus
B.A., M.A.: Ph.D., University of Georgia, 1971
Senzig, Sharon I............Counselor to Students and Lecturer (Student Affairs), 1971
B.S., M.A., Indiana University, 1972
Sepanik, Mary A...........University Reference Librarian (Libraries), 1969
B.S.: M.A.L.S., Rosary College, 1965
Sargent, Jerry E...........Assistant Professor (Electrical Engineering), 1970
B.S.E.E., M.S.E.E., Ph.D., University of Cincinnati, 1970
Seyrer, Raymond J...........Assistant Professor (Ophthalmology), 1973 (Part time)
B.A.: M.A.: M.D., University of Miami, Florida, 1960
Sexton, Irene M.......... Assistant Professor (Education), 1969
B.S.E.: M.Ed.: M. Adm.: Ed.S., University of Arizona, 1971
Shackleton, L. Lee ....... Professor (Humanities), 1964
B.S., M.A., Ph.D., Ohio State University, 1959
Shannon, Robert F......... Associate Professor (Economics), 1966
B.S.: M.B.A.: Ph.D., University of Illinois, 1966
Shannon, Robert L...........Professor (Education), 1960
Sharpe, John R........... Instructor (Surgery), 1973, (Part time)
B.S.: B.S., M.D., Medical School of Virginia, 1967
Sheffield, Thomas M.……..Lecturer (Engineering), 1973
Shenoy, Subodh R.........Interim Assistant Professor (Physics), 1973
B.Sc.: M. Phil., Ph.D., Yale University, 1973
Shepherd, David C...........Professor (Communications), 1972
B.A., M.A.: Ph.D., Syracuse University, 1962
Sherman, James J........... Professor (Management), 1967
B.S.: J.D.: Ph.D., State University of New York at Buffalo, 1966
Sherman, Rodney C.........Assistant Professor (Management), 1969
B.S.: M.B.A.: Ph.D., Georgia State University, 1972
Sherman, Roger T..........Chairman and Professor (Surgery), 1972
A.B.: M.D., University of Cincinnati, 1948
Shiholi, Ailon ............ Professor (Anthropology), 1973
B.A.: M.A.: Ph.D., Dropsie University, 1959
SHIRE, DANA L., JR. ……… Associate Professor (Internal Medicine), 1973
B.S., M.D.: University of Florida, 1961
SHIVER, ROBERT H. ……… Director (Golf Course, Intercollegiate Athletics, Student Affairs), 1969
B.S.: University of Florida, 1961
SHORE, HERBERT L. ……… Chairman and Professor (Theatre Arts), 1972
SHOWS, E. WARREN ……… Associate Professor (Economics), 1964
B.B.A., M.B.A., Ph.D.: Georgia State University, 1968
SIDOR, JOHN M., JR. ……… Assistant Professor (Political Science), 1969
SIDOWSKI, JOSEPH B. ……… Chairman and Professor (Psychology), 1969
B.A.: M.S.: Ph.D.: University of Wisconsin, 1956
SIEBESMEYER, HERSHEL ……… Chairman and Professor (Pathology), 1972
B.S.; M.S.: M.D.: M.S.: Tulane University Graduate School, 1958
SIEBEL, JERRY D. ……… Associate Professor (Accounting), 1972
SILBERT, EDWARD M. ……… Associate Professor (History), 1965
SILBEG, MARTIN L. ……… Associate Professor (Radiology), 1973 (Part time)
A.B.: M.D.: Western Reserve University, 1962
SILVER, BRUCE S. ……… Assistant Professor (Philosophy), 1971
B.A., M.A.; Ph.D.: University of Colorado, 1971
SILVER, JAMES W. ……… Professor (History), 1969
A.B.: M.A.; Ph.D.: Vanderbilt University, 1935
SILVER, WARREN S. ……… Professor (Biology), 1970
B.S., M.S.; Ph.D.: Johns Hopkins University, 1953
SILVERMAN, IRA ……… Assistant Professor (Criminal Justice Program), 1972
B.A.: M.A.; Ph.D.: Ohio State University, 1970
SILVERMAN, MITCHELL ……… Director and Associate Professor (Criminal Justice Program), 1968
B.A.: M.S.; Ph.D.: Ohio State University, 1968
SILVERMAN, STUART H. ……… Assistant Professor (Education), 1970
B.B.A.: M.S.; Ph.D.: Yeshiva University, 1971
SIMPSON, JOSEPH I. ……… Associate Professor (Biology), 1963
B.S.; M.S.; Ph.D.: University of New Hampshire, 1963
SINGH, SURENDRA P. ……… Associate Professor (Education), 1967
SISCO, JOHN I. ……… Acting Chairman (Speech Communication), and Associate Professor (Education), 1968
B.S.: M.A.; Ph.D.: University of Minnesota, 1966
SISK, DOROTHY D. ……… Associate Professor (Education), 1966
B.S.; M.A.; Ed.D.: University of California, Los Angeles, 1966
SISTRENN, FRANCIS ……… Professor (Psychology), 1965
B.A.; M.S.; Ph.D.: University of Miami, Florida, 1963
SKELETON, WILLIAM F. ……… Assistant Professor (SMF-Engineering), 1971
B.S.; M.S.; Ph.D.: Iowa State University, 1971
SLEEPER, DAVID C. ……… Chairman and Professor (Marketing), 1964
SMALL, LESLIE W. ……… Interim Assistant Professor (Finance), 1968
B.A.: M.A.; Ph.D.: Indiana University, 1973
SMALL, NORMAN C. ……… Professor (SMF-Engineering), 1969
B.M.E.: M.M.E.; Ph.D.: Brown University, 1960
SMEECH, STEPHEN C. ……… Assistant Professor (Mathematics), 1973
B.A.: M.A.; Ph.D.: North Carolina State University, 1973
SMITH, ALICE G. ……… Professor and Director (Education), 1965
B.A., M.S.; Ed.D.: Wayne State University, 1965
SMITH, B. OTHELLE ……… Professor (Education), 1969
B.S.; M.A.; Ph.D.: Columbia University, 1937
SMITH, CARLOS A. ……… Assistant Professor (Energy Conversion Engineering), 1972
B.S.; M.S.; Ph.D.: Louisiana State University, 1972
SMITH, CHARLES D. ……… Associate Professor (Education), 1967
B.S.; M.A.; Ed.D.: Temple University, 1967
SMITH, CHARLES E. ……… Interim Instructor (Accounting), 1973
B.S.; M.B.A.: University of South Florida, 1973
SMITH, CHARLES T. ……… Associate Professor (Finance), 1968
SMITH, DONN D. ……… Director (Medical Center), Dean and Professor (College of Medicine), 1969
B.A., M.S.; Ph.D.: University of Colorado, 1958
SMITH, EDWIN E. ……… Instructor (Religious Studies), 1972
SMITH, ELTON E. ……… Professor (English), 1961
SMITH, HAYWOOD C., JR. ……… Visiting Assistant Professor (Astronomy), 1972
B.A.; M.A.; Ph.D.: University of Virginia, 1972
SMITH, JACK L. ……… Associate Professor (Accounting), 1969
B.B.A.; M.S.; Ph.D.: University of Mississippi, 1969, C.P.A.
SMITH, JEFFREY B. ……… Student Affairs Coordinator (University Studies, Student Affairs), 1972, St. Petersburg Campus B.A.: University of South Florida, 1971
SMITH, J. JEROME ……… Assistant Professor (Anthropology), 1972
B.A.; M.A.; Ph.D.: University of Arizona, 1972
SMITH, JOHN L., JR. ……… Assistant Professor (Music), 1972
B.M.E.; M.M.E.: Indiana University, 1961
SMITH, NORMAN V. ……… Instructor (Engineering), 1965
B.S., Ph.D.: Ohio State University, 1927
SMITH, WILLIAM A. ……… Associate Professor (History), 1966
B.S.M.E.; M.S.; Ph.D.: University of Florida, 1966
SMITH, WILMA A. ……… Lecturer (Industrial Systems Engineering), 1966
B.B.E.: University of Florida, 1959
SMITZES, MELPOMENE ……… Assistant Professor (Education), 1965
B.A.; M.A.; University of Florida, 1957
SNIDER, ARTHUR D. ……… Assistant Professor (Mathematics), 1970
B.S.; M.A.; Ph.D.: New York University, 1971
SNOOK, JANICE B. ……… Assistant Professor (Political Science), 1968
A.B.; M.S.; Ph.D.: University of Maryland, 1969
SOFA, SABATINO ……… Professor (Astronomy), 1967
B.A.; M.S.; Ph.D.; Yale University, 1966
SOLOMONS, W. GRAHAM ……… Professor (Chemistry), 1960
B.S.; Ph.D.; Duke University, 1959
SOPHIO, GEORGE ……… Assistant Professor (Modern Languages), 1968
B.S.; Ph.D.; Duke University, 1967
SORTOR, MARVIN E. ……… Assistant Professor (Industrial Systems Engineering), 1968
B.S.; M.S.; University of Florida, 1964
SPARKS, FRANK H. ……… Director and Lecturer (Community College Relations), 1959
SPLENDERS, DANIEL P. ……… Assistant Professor (Geology), 1969
B.A.; M.S.; Ph.D.: University of Arizona, 1969
SPARKS, AMY J. ……… Associate Professor (Modern Languages), 1968
B.A.; M.A.; Ph.D.: Louisiana State University, 1964
SPENCER, FRANK E. ……… Director, Publications (University Relations), 1969
B.B.A.; M.A.: University of Iowa, 1960
SPIELBERGER, CHARLES D. ……… Professor (Psychology), 1972
B.S.; M.A.; Ph.D.: University of Iowa, 1954
SPIELLINE, JAMES R. ……… Assistant Professor (Humanities), 1966
B.S.; M.A.: University of Iowa, 1966
SPOTO, EDWARD, JR. ……… Assistant Professor (Internal Medicine), 1973
B.S.; M.D.: Tulane Medical School, 1964
STOWERS, H. ALLAN  Assistant Professor (Education), 1971
B.S.; M.Ed.; Ed.D.; University of Georgia, 1973

STAFFORD, JOHN W. Assistant Professor and Chairman (Geography), 1969
B.S.; M.S.; M.A.; Ph.D.; Michigan State University, 1971

STALNAKER, LEO, JR. Assistant Professor and Director (Student Publications; Student Affairs), 1969
B.A.; M.A.; University of South Florida, 1973

STANKO, JOSEPH A. Associate Professor (Chemistry), 1973
B.S.; Ph.D.; University of Illinois, 1966

STANTON, EDGAR E., JR. Professor (American Studies), 1960
B.A.; M.A.; Ph.D.; Florida State University, 1959

STANTON, KENNETH D. Lecturer and Associate University Librarian (Educational Resources), 1964
B.D.E.S.; M.A.; University of South Florida, 1968

STAPLETON, DON J. Assistant Professor (Education), 1972
B.A.; M.Ed.; Pennsylvania State University, 1970

STEEL, HOWARD R. Director (Regional Data Center), 1972
B.S.M.E.; B.S.; M.B.A.; University of North Carolina, 1963

STEINKE, GEORGE C. Associate Professor (Economics), 1970
B.S.; Ph.D.; University of California, Berkeley, 1963

STELZMANN, RAINULF A. Professor (Modern Languages), 1963
Dip. I; Dip. II; Dr. Phil., University of Freiburg, 1953

STEVENS, WILLIAM L. Associate Professor (Accounting), 1971
B.S., M.Acc.; D.B.A.; Florida State University, 1971, C.P.A.

STEVENS, BRIAN. Assistant Professor (Chemistry), 1967
B.A.; M.A.; Ph.D.; Oxford University, England, 1960

STEVENS, LARRY E. Medical Director (Student Health Center; Student Affairs), 1971
B.S.; M.D.; University of Kentucky, 1970

STEVENSON, RALPH G., JR. Assistant Professor (Geology), 1968
B.S.; M.S.; Ph.D.; Florida State University, 1965

STEWART, CLAUDIA C. University Serials Librarian (Libraries), 1964
B.A.; M.L.S.; Columbia University, 1958

STEWART, LAWRENCE R. Lecturer (Education), 1970, St. Petersburg Campus
A.B.; M.A.; M.Ed.; Ed.D.; George Peabody College, 1956

STEWART, WILLIAM L., JR. University Acquisition Librarian (Libraries), 1963
B.A.; M.S.L.S.; University of North Carolina, 1963

STIRLING, HAMILTON, W. Lecturer (Management), 1971, St. Petersburg Campus
B.S.; M.B.A.; Rutgers University, 1968

STONE, DOUGLAS E. Professor (Education), 1964
B.A.; M.A.; Ph.D.; University of Chicago, 1962

STORR, KARL Instructor (Mass Communications), 1973
Abitur, Deutsche Oberschule, Berlin, 1942

STORY, COLEEN M. Assistant Professor (Education), 1965
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STODINGER, SUSAN M. Assistant Professor (Political Science), 1969
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STOWERS, DEWEY M., JR. Associate Professor (Geography), 1967
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B.M.; M.A.; University of South Florida, 1970

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B.S.; Ph.D.; Massachusetts Institute of Technology, 1971

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B.A.; M.S.; Ph.D.; Lehigh University, 1964

SZENTIVANYI, ANDOR Chairman and Professor (Pharmacology), 1970
M.D.; University Medical School, Debrecen, Hungary, 1950

TAFT, WILLIAM H. Director of Research and Associate Professor (Sponsored Research), 1963
B.S.; M.A.; Ph.D.; Stanford University, 1962

TANNER, PATRICIA W. Associate Professor (Education), 1969
B.A.; M.Ed.; Ph.D.; Ohio State University, 1969

TATUM, JIM C. Associate Professor (Modern Languages), 1963
B.A.; M.A.; Ph.D.; Tulane University, 1968

TAYLOR, JUANITA L. Assistant Professor (Interdisciplinary Social Science), 1968
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B.A.; M.S.L.S.; M.A.; University of South Florida, 1973

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THIELEKER, ERNST A. Assistant Professor (Mathematics), 1970
B.S.; M.S.; Ph.D.; University of Chicago, 1968

THOMAS, DELBERT C. Systems Coordinator (Computer Research Center), 1968
B.S.; M.B.A.; Rollins College, 1967

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B.S. Ed.; State University of New York - Brockport, 1951

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B.S.; Florida Atlantic University, 1971

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B.A.; Capital University, 1963, C.D.P.
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B.S.; M.S., University of South Florida, 1973
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B.S., M.S., Ph.D., Mississippi State University, 1965
TIVNAN, ELAINE K. ............ Instructor (Education), 1971
B.S.; M.Ed., Boston University, 1957
TOCCO, THOMAS S. ............Assistant Professor (Education), 1970
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TOMAIONO, JOSEPH M............Director, Alumni Affairs (Alumni Services), 1967
B.A.: M.A., University of South Florida, 1971
TOOTHMAN, REX C. ...........Associate Professor and Director (Education), 1970
B.A.: M.A., Florida Southern College, 1947
TOOT, JOHN C. ............Assistant Professor (Psychology), 1968, St. Petersburg Campus
B.A., M.A., Ph.D., Michigan State University, 1963
TOTTEN, W. FRED. ..........Lecturer (Education), 1971, St. Petersburg Campus
B.A.: M.A., Ph.D., Indiana University, 1943
TOWERY, GENE M. ..........Assistant Professor (Education), 1970, St. Petersburg Campus
B.S.; M.S., D.Ed., Florida State University, 1971
TOWERY, HENRY H. .........Assistant Professor (Marketing), 1970
B.S.; M.B.; D.B.A., Florida State University, 1969
TRASK, ROGER R. ............Chairman-Professor (History), 1973
B.A.; M.A., Ph.D., Pennsylvania State University, 1959
TREMMEL, WILLIAM C. .......Director and Professor (Religious Studies), 1969
A.B.; Th.M., Th.D., Iliff School of Theology, 1950
TRICE, ISAILIA..........Special Assistant for Minority Affairs (Academic Affairs), Assistant Professor (Physical Education, Student Affairs), 1970
B.S.; M.S., University of Colorado, 1961
TROUTMAN, ANDRIA M. .......Assistant Professor (Education), 1971
B.S.; M.A.; Ed.D., University of Florida, 1971
TRUDEAU, WALTER L. .......Associate Professor (Internal Medicine), 1972 (Part time)
TRUITT, WILLIS H. ........Associate Professor (Philosophy), 1968
A.B.; A.M., Ph.D., Boston University, 1968
TSANGADAS, BYRON C. P. ...Assistant Professor (History), 1969
A.B.; M.A., University of Michigan, 1954
TSERPES, NICHOLAS A. ........Associate Professor (Mathematics), 1968
B.A.; M.A., Ph.D., Wayne State University, 1968
TSOKOS, CHRIS P. ............Professor (Mathematics), 1972
B.S., M.S.; Ph.D., University of Connecticut, 1965
TSOKOS, JANICE O. ..........Assistant Professor (Chemistry), 1972
B.S., Ph.D., University of Rhode Island, 1969
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B.A.: M.Libr., Emory University, 1972
TURBEVILLE, JOSEPH E., JR. .......Lecturer (Physics), 1964
B.A., University of South Florida, 1963
TURNER, ROBERT O. ............Instructor and Coordinator of Advising (Social and Behavioral Sciences), 1972
B.S.; M.S., Wayne State University, 1958
TURNER, CAROL A. ..........Assistant Professor (Dance), 1970
B.F.A., New York University, 1970
TUTTLE, Lester W., JR.........Dean and Professor (Academic Affairs), 1964, St. Petersburg Campus
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B.S.; M.A., Boston University, 1949
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B.A., Ph.D., University of Southern California, 1937
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B.S.; M.D., Medical School of South Carolina, 1965
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B.S.; M.A., University of Illinois, 1959
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B.S., M.S., Florida State University, 1970
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B.A.; M.S.; Ed.D., University of Kansas, 1961
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B.A., University of South Florida, 1970
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B.A.; M.A., Southern Methodist University, 1951
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B.A.; M.A., University of Denver, 1973
VANDERBEK, ED STANLEY .......Lecturer (Fine Arts), 1972
VANDERCAR, DAVID H. ......Assistant Professor (Psychology), 1972
B.A., M.S., Ph.D., University of Miami, Florida, 1969
VANNESTE, ROY J. ............Assistant Professor (History), 1971
B.A.; M.A., Ph.D., University of Wisconsin, 1971
VANOVER, GEORGE W. ...........Assistant Professor (Education), 1967
B.S.; M.S.; Ed.D., University of Tennessee, 1973
VANVOORHIS, KENNETH R. ..........Assistant Professor (Management), 1970
B.S.; M.B.A., D.B.A., Louisiana State University, 1971
VASTINE, JAMES P. .......Assistant University Reference Librarian (Libraries), 1970
B.A.; M.S.L.S., Florida State University, 1965
VASTINE, SUSAN M. ............Assistant University Catalog Librarian (Libraries), 1965
B.A.; M.S.L.S., Emory University, 1965
VEGA, MANUEL .........Associate Professor (Criminal Justice Program), 1965
B.S., M.S., Ph.D., Florida State University, 1964
VICKREY, JAMES F., JR.......Director (University Relations), 1971
A.B.; M.A.; Ph.D., Florida State University, 1973
VILLEM, MELVIN G. ..........Assistant Professor (Education), 1971
B.A.; M.A., Ed.S., Kansas University, 1966
WALBOLT, DANIEL R. ........Assistant Vice President and Lecturer (Student Affairs), 1969
B.S.; J.D., New York University, 1965
WALLACE, ANDREW C. .......Assistant Professor (Marketing), 1969
B.S., M.A., University of Kentucky, 1967
WALLACE, JOYCE R. ..........Lecturer and Assistant to Dean (Language-Literature), 1972
WALLACE, ROBERT E. .......Assistant Vice President (Administrative Affairs), 1972
B.S., University of Akron, 1961
WALSH, RUTH M. ............Assistant Professor (Management), 1969
A.B.; A.M., State University of New York at Buffalo, 1964
WALTHER, JOHN D. ..........Assistant Professor (English), 1965
B.A.; M.A.; Ph.D., Vanderbilt University, 1972
WARD, ANNIE S. ............Associate Professor (Education), 1972
B.S.Ed., M.S.Ed., Ph.D., University of Tennessee, 1958
WARD, JAMES W. .........Professor (Anatomy), 1970
B.A., M.A.; M.S.; Ph.D., University of Mississippi, 1950
Retired Faculty

**Agens, Frederic F.** Lecturer (Physical Science), 1960-1971

**B.S.: M.S., University of California at Berkeley, 1937**

**Agens, Jeannette F.** Assistant Professor (Education), 1963-1972

**B.A.: M.A., George Washington University, 1944**

**Allen, John S.** President Emeritus, 1957-1970


**Auletta, Michael S.** Professor (Education), 1967-1973

**B.A.: M.A., Ed.D., New York University, 1947**

**Beauchamp, George E.** Associate Professor (English), 1960-1971

**B.A.: M.A.: Ph.D., Northwestern University, 1942**

**Boulware, Joe W.** Lecturer (Geology), 1961-1973

**B.S.: B.S.: M.S., University of Florida, 1963**

**Brusca, Donald D.** University Physician (Student Health), 1965-1973

**B.S.: M.D., Medical College of Virginia, 1936**

**Clark, Clarence C.** Professor Emeritus (Physical Science), 1960-1969

**B.S.: M.S.: Ph.D., New York University, 1932**

**Cleary, Florence D.** Lecturer (Education), 1964-1969

**B.S.: M.A.: Wayne State University, 1932**

**Cowell, George J.** Professor (Engineering), 1960-1973

**B.S.E.E.: M.S.: Ph.D., Western Reserve University, 1960**

**Dean, Harris W.** Vice President for Academic Affairs Emeritus, 1961-1971

**B.Ed.: M.A.: Ed.D., University of Illinois, 1947; L.H.D. (Hon.)**

**De Jongh, William F. J.** Visiting Professor (Modern Languages), 1967-1972

**A.B.: A.M.: Ph.D., Harvard University, 1939**

**Deyo, William A. Jr.** Associate Professor (Accounting), 1960-1973

**B.S.: M.B.A., Harvard University, 1941**

**Forman, Guy** Professor Emeritus (Physics), 1962-1972

**B.S.: M.A.: Ph.D., University of Kentucky, 1950**

**Foutz, Lucille C.** Lecturer (Counseling Center), 1963-1973

**B.A.: Ph.D., University of Iowa, 1930**

**French, Sidney J.** Dean Emeritus (Academic Affairs) and Professor (Education), 1958-1969

**B.S.: M.S., Ph.D., University of Wisconsin, 1928**

**Hartley, Jacquetta W.** Instructor (English), 1960-1972

**B.A., M.A., University of Florida, 1959**

**Hickman, William** Assistant Professor (English), 1963-1969

**A.B.: M.A.: Ph.D., University of Pittsburgh, 1963**

**Kauder, Emil** Distinguished Professor (Economics), 1968-1973

**Ph.D., University of Berlin, 1924**

**Keller, Walter D.** Professor (Geology), 1970-1973

**B.S.: A.B.: A.M.: Ph.D., University of Missouri, 1933**

**Lakela, Olga** Research Associate (Botany), 1960-1970

**B.S.: M.S., Ph.D., University of Minnesota, 1932**

**Osbemeyer, Charles** Lecturer (American Idea), 1964-1970

**B.A.: M.A.: Ph.D., University of London, 1928**

**O'Hare, Leo H.** Lecturer (English), 1960-1969

**B.A.: M.A., Woodstock College, 1920**

**Prescott, Gerald R.** Associate Professor (Music Education), 1967-1972

**B.A.: M.A., University of Iowa, 1938**

**Sarett, Alma J.** Professor Emeritus (Speech), 1960-1970

**B.S.: M.A,: Ph.D., Northwestern University, 1942**

**Sokolsky, Anatole** Associate Professor (Modern Languages), 1961-1972

**B.Lit., LL.D.: Ph.D., Sorbonne, 1952**

**Stubblebine, Albert N., Jr.** Assistant Professor (Engineering), Coordinator (Cooperative Education Program), 1964-1968

**B.S., United States Military Academy, 1924**

**Wunderlich, Herbert J.** Professor (Academic Affairs), 1962-1972

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This public document was promulgated at an annual cost of $43,276, or $618 per copy, including preparation, printing, and distribution, to provide comprehensive information on the University of South Florida. [40138]

(Section 283.27, Florida Statutes)