†PET 3372 HUMAN KINETICS II (4)
PR: PET 3381C and PET 3001C. 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.

†PET 3377C HUMAN KINETICS III (4)
PR: PET 3372. The mechanical laws of physics as they relate to movement within and of the human body and the projection of objects in throwing, hitting, and kicking. Efficiency of human movement through sound body mechanics.

†PET 3381C HUMAN KINETICS I (4)
The development and integration of the neuromuscular and 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.

†PET 3434C MOVEMENT EDUCATION THEORY AND APPLICATION I (3)
A two course sequence emphasizing movement experiences appropriate for elementary school children. The philosophy, objectives, and analytical framework of movement education are studied relative to basic movement competence. Principles of space, time, force, and flow of human movement are applied to the development of children through basic movement and manipulative skills leading to gymnastics, dance, and sports-related activities.

†PET 3435C MOVEMENT EDUCATION THEORY AND APPLICATION II (3)
A two-course sequence emphasizing movement experiences appropriate for elementary school children. The philosophy, objectives, and analytical framework of movement education are studied relative to basic movement competence. Principles of space, time, force, and flow of human movement are applied to the development of children through basic movement and manipulative skills leading to gymnastics, dance, and sports-related activities.

†PET 3942C SEMINAR AND FIELD EXPERIENCE IN PHYSICAL EDUCATION (6)
Students spend approximately two hours a day at an elementary school teaching physical education and assisting in the classroom. Emphasis is placed on understanding the primary aged child and effective ways of setting the teacher-learning environment. (S/U only.)

†PET 3943C SEMINAR AND FIELD EXPERIENCE IN PHYSICAL EDUCATION (6)
PR: PET 3942C. Elementary school physical education teaching experiences are provided for students with added focus on the upper elementary grades. Seminars emphasize planning and teaching methodology. Health and recreation as they relate to elementary school children are studied.

†PET 3944C SEMINAR AND INTERNSHIP IN PHYSICAL EDUCATION (5)
PR: PET 3942C. 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.

PET 4302 PRINCIPLES AND ISSUES IN COACHING (5)
The application of principles from philosophy, psychology, sociology, and physiology to competitive athletics and coaching.

†PET 4346C APPLIED HUMAN KINETICS I (4)
PR: PET 3377C. A three course sequence which stresses the biomechanical analysis of movement, principles of psychomotor learning and teaching competencies in dance, and the skills and strategies common to a number of individual and team sports.

†PET 4361C APPLIED HUMAN KINETICS II (4)
PR: PET 3354C. A three course sequence which stresses the biomechanical analysis of movement, principles of psychomotor learning and teaching competencies in dance, and the skills and strategies common to a number of individual and team sports.

†PET 4362C APPLIED HUMAN KINETICS III (4)
A three course sequence which stresses the biomechanical analysis of movement, principles of psychomotor learning and teaching competencies in dance, and the skills and strategies common to a number of individual and team sports.

†PET 4905 INDEPENDENT STUDY: PROFESSIONAL PHYSICAL EDUCATION (1-5)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

†PET 4909 DIRECTED STUDY: PROFESSIONAL PHYSICAL EDUCATION (1-4)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

†PET 4943C SEMINAR AND INTERNSHIP IN PHYSICAL EDUCATION (5)
PR: PET 3944C. A three course experience involving supervised teaching experiences at the secondary school level. On-campus seminars emphasize: development of junior and senior high school students; the influence of various teaching styles on the learning process; the process of individualization; structuring meaningful learning experiences in the psychomotor, cognitive, and affective domains.

†PET 4944C SEMINAR AND INTERNSHIP IN PHYSICAL EDUCATION (5)
PR: PET 3944C. A three course experience involving supervised teaching experiences at the secondary school level. On-campus seminars emphasize: development of junior and senior high school students; the influence of various teaching styles on the learning process; the process of individualization; structuring meaningful learning experiences in the psychomotor, cognitive, and affective domains.

†Enrollment in these courses requires admission to the Physical Education Program.

GRADUATE COURSES

PET 6051C 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.

PET 6205 SOCIO-PSYCHOLOGICAL ASPECTS OF HUMAN MOVEMENT (4)
Involves the psychological and sociological implications of movement to historical and contemporary man. Emphasis on psychomotor learning, movement behavior, physical self-concept, role of movement in society and values and attitudes held toward movement.

PET 6296 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 movement.

PET 6345 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 cardiorespiratory systems.

PET 6393C 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.

PET 6425 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.
READING EDUCATION

UNDERGRADUATE COURSES

RED 4337 READING IN THE SECONDARY SCHOOL (4)
PR: CI. Basic course in Reading for Secondary school personnel. Work with a student is required.

RED 4360 READING IN SECONDARY CONTENT AREAS (2)
PR: CI and other content area PR or CR. Provides basic instruction on phonics, word recognition, readability, interests, corrective procedures, reading behaviors, comprehension, etc. Offered only in conjunction with special content reading courses.

RED 4515 CORRECTIVE READING FOR THE CHILD (4)
PR: RED 4310 or equivalent. Procedures for meeting individual differences through diagnosis of needs, differentiated instruction, selective use of materials, and classroom organization.

RED 4905 INDEPENDENT STUDY: READING EDUCATION (1-5)
PR: CI. Specialized independent study determined by the student’s needs and interests. May be repeated when subjects vary. (S/U only.)

RED 4909 DIRECTED STUDY: READING EDUCATION (1-4)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

RED 4936 SENIOR SEMINAR IN READING EDUCATION (3)
PR: Senior standing. Synthesis of teacher candidate’s courses in complete college program. Required concurrently with internship.

RED 4940 INTERNSHIP: READING EDUCATION (1-12)
One full quarter of internship in a public or private school. Intern 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 from 9 to 12 quarter hours. (S/U only.)
SCIENCE EDUCATION

UNDERGRADUATE COURSES

SCE 4305 COMMUNICATION SKILLS IN THE SCIENCE CLASSROOM (2)
PR: RED 4360 or CR in RED 4360. Reading and communication skills important in understanding scientific literature and communicating findings to others.

SCE 4330 TEACHING METHODS IN THE SECONDARY SCHOOL—SCIENCE (4)
PR: Completion of 40 hours in approved science areas or CE completion of EDG 4200 or CR in EDG 4200. Techniques and materials of instruction in secondary school sciences.

SCE 4630 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.

SCE 4631. NEW TRENDS IN TEACHING BIOLOGY (4)
Recent developments in curriculum materials and in strategies for teaching biological sciences, grades 7-12. Recommended for preservice teachers of secondary school biology.

SCE 4905 INDEPENDENT STUDY: SCIENCE EDUCATION (1-5)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

SCE 4909 DIRECTED STUDY: SCIENCE EDUCATION (1-4)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

SCE 4936 SENIOR SEMINAR IN SCIENCE EDUCATION (3)

SCE 4940 INTERNSHIP: SCIENCE EDUCATION (1-12)
One full quarter of internship in a public or private school. Intern 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 from 9 to 12 quarter hours. (S/U only.)

GRADUATE COURSES

SCE 5937 SELECTED TOPICS IN SCIENCE EDUCATION (1-5)
May be repeated when topics are not duplicated.

SCE 6336 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.

SCE 6436 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.

SCE 6634 CURRENT TRENDS IN SECONDARY SCIENCE EDUCATION (4)
PR: Bachelor's degree with major in science area: certification in secondary science, or CI. Curricular patterns and instructional practices in secondary science.

SCE 7641 PROGRAMS AND RESEARCH IN EARTH SCIENCE EDUCATION (4)
PR: Master's degree or equivalent in Science Education or CI. A study of curricula, issues, and research in Earth Science Education, grades K-12. Also included are the study and application of: (1) skills for assisting pre- and in-service school personnel with Earth Science instruction; and (2) skills for developing Earth Science curricula.

SCE 7642 PROGRAMS AND RESEARCH IN LIFE SCIENCES EDUCATION (4)
PR: Master's degree or equivalent in Science Education or CI. A study of curricula, issues and research in Life Science Education, grades K-12. Also included are the study and application of: (1) skills for assisting pre- and in-service school personnel with Life Science instruction; and (2) skills for developing Life Science curricula.

SCE 7643 PROGRAMS AND RESEARCH IN PHYSICAL SCIENCE EDUCATION (4)
PR: Master's degree or equivalent in Science Education or CI. A study of curricula, issues and research in Physical Science Education, grades K-12. Also included are the study and application of: (1) skills for assisting pre- and in-service school personnel with Physical Science instruction; and (2) skills for developing Physical Science curricula.

SOCIAL SCIENCE EDUCATION

UNDERGRADUATE COURSES

SSE 4333 TEACHING METHODS IN SECONDARY SCHOOL—SOCIAL STUDIES (4)
PR: EDG 4200 or CR in EDG 4200. Techniques and materials of instruction in social studies.

SSE 4640 COMMUNICATION SKILLS IN THE SOCIAL STUDIES (2)
PR: CI. Communication Skills in the Social Studies. Methods of dealing with reading problems in social studies. This course and RED 4360 satisfy the state certification requirement pertaining to secondary reading. (S/U only.)

SSE 4905 INDEPENDENT STUDY: SOCIAL SCIENCE EDUCATION (1-5)
PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

SSE 4909 DIRECTED STUDY: SOCIAL SCIENCE EDUCATION (1-4)
PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

SSE 4936 SENIOR SEMINAR IN SOCIAL SCIENCE EDUCATION (3)

SSE 4940 INTERNSHIP: SOCIAL SCIENCE EDUCATION (1-12)
One full quarter of internship in a public or private school. Intern 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 from 9 to 12 quarter hours. (S/U only.)

GRADUATE COURSES

SSE 5324 TEACHING METHODS IN THE MIDDLE SCHOOL—SOCIAL STUDIES (4)
PR: CI. Techniques of instruction in Middle School Social Studies.

SSE 6117 ELEMENTARY SOCIAL STUDIES CURRICULUM (4)
PR: Admission to College of Education or CI. Evaluation of past and present curriculum in Elementary Social Studies.

SSE 6133 SECONDARY SOCIAL SCIENCE CURRICULUM (4)
PR: Admission to College of Education or CI. Evaluation of past and present curriculum in Secondary Social Science.

SSE 6354 CRITIQUE OF SELECTED SOCIAL SCIENCE EDUCATION LITERATURE (4)
PR: Major in Secondary Social Science or CI. An investigation into various selected readings in Social Science Education literature.
SSE 6445 EVALUATION AND IMPLEMENTATION OF MEDIA IN SOCIAL STUDIES (4) PR: CI. Techniques of evaluation and using various media in the Social Studies.

SSE 6636 CURRENT TRENDS IN SECONDARY SOCIAL STUDIES (4) PR: SSE 4333 or equivalent or CI. Curricular patterns and instructional practices in Secondary Social Studies.

SSE 6647 INSTRUCTIONAL PROBLEMS AND STRATEGIES IN SOCIAL STUDIES: ELEMENTARY, MIDDLE, OR SECONDARY SCHOOL (4) PR: Admission to Secondary Social Science or CI. Investigation of problems confronted when teaching Social Studies in the elementary, middle, or secondary school.

SSE 6795 REVIEW OF RESEARCH IN SOCIAL SCIENCE EDUCATION (4) PR: EDF 4430 or EDF 6431. Graduate Students in Education or CI. Investigation into and an evaluation of the research in Social Science Education.

SSE 6939 SEMINAR IN SOCIAL SCIENCE EDUCATION (1-4) PR: EDF 4430 or EDF 6431, or CI. To increase general technological knowledge of graduate students in Social Science Education.

SPECIFIC LEARNING DISABILITIES EDUCATION

UNDERGRADUATE COURSES

ELD 4011 THEORIES IN SPECIFIC LEARNING DISABILITIES (4) PR: EEX 3010. Characteristics, needs and abilities of children with specific learning disabilities. Emphasis is on theories, issues, trends, and philosophy of problems for such children.

ELD 4110 SKILLS IN DIAGNOSIS AND INSTRUCTION FOR CHILDREN WITH SPECIFIC LEARNING DISABILITIES (4) PR: ELD 4011 and a Specific Learning Disabilities major. Instructional diagnosis and individualizing instruction for children with specific learning disabilities.

ELD 4905 INDEPENDENT STUDY: SPECIFIC LEARNING DISABILITIES (1-5) PR: CI. Specialized independent study determined by student's needs and interests. May be repeated when subjects vary. (S/U only.)

ELD 4909 DIRECTED STUDY: SPECIFIC LEARNING DISABILITIES (1-4) PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.

ELD 4936 SENIOR SEMINAR IN SPECIFIC LEARNING DISABILITIES (3) PR: Senior standing. Synthesis of teacher candidate's courses in complete college program. Required concurrently with internship.

ELD 4940 INTERNSHIP: SPECIFIC LEARNING DISABILITIES (1-12) One full quarter of internship in a public or private school. Intern takes Senior Seminar in Education concurrently. In special programs where the intern experience is distributed over two or more quarters, the students will be registered for credit which accumulates from 9 to 12 quarter hours. (S/U only.)

ELD 4944 UNDERGRADUATE SUPERVISED PRACTICUM IN SPECIFIC LEARNING DISABILITIES (6) PR: EEX 3010, ELD 4011, ELD 4110 and major in Specific Learning Disabilities. Supervised practicum experiences in classes for children with specific learning disabilities.

GRADUATE COURSES

EDG 5734 PLURALISM AND ITS EDUCATIONAL IMPLICATIONS (4) Characteristics and needs of the culturally disadvantaged and their implications for educational programming.

EDG 6946 FIELD WORK WITH POTENTIALLY HANDICAPPED (CULTURALLY DISADVANTAGED) (1-9) Teaching and participation in activities related to teaching disadvantaged young children. (N-3)

ELD 6115 ADVANCED ASSESSMENT AND PROCEDURES FOR SPECIFIC LEARNING DISABLED YOUNGSTERS (4) PR: CI. Concepts related to the assessment and teaching of specific learning disabled children.

ELD 6141 CURRENT TRENDS AND ISSUES RELATED TO EDUCATING SPECIFIC LEARNING DISABILITIES CHILDREN (4) PR: CI. Trends and issues related to educating children with specific learning disabilities.

EPH 5951 EDUCATIONAL PROBLEMS OF THE PHYSICALLY HANDICAPPED (4) PR: EEX 3010 or CI. Introduction to the educational, psychological and social problems of the physically disabled child in the public schools.

EPH 5321 TEACHING THE CEREBRAL PALSY CHILD (4) PR: EEX 3010 or CI. Introduction to the educational, psycho-aspects of cerebral palsy and its implications for classroom teachers.

EVI 5311 THE VISUALLY HANDICAPPED IN THE CLASSROOM (4) PR: EEX 3010 and CI. The visually handicapped in the classroom. Structure, hygiene and educational implications.

SPEECH COMMUNICATION-ENGLISH EDUCATION

UNDERGRADUATE COURSES

SED 4335 METHODS OF TEACHING SPEECH COMMUNICATION (4) PR: 21 quarter hours in speech/communication or CI. Investigation of curricular programs in speech communication including courses, curriculum guides, preparation of units and lessons; determination of objectives and teaching strategies; problems of teachers; completion of course with C grade required for recommendation for internship.

SED 4371 DIRECTING SPEECH ACTIVITIES IN THE SECONDARY SCHOOL (5) PR: 15 hours of speech communication courses or CI. Coaching and directing cocurricular activities in discussion, debate, oratory, theatre, oral interpretation, and extemporaneous speaking. Planning and supervision of tournaments, contests, and festivals. Observations required.

SED 4374 READING IN SPEECH COMMUNICATION INSTRUCTION (2) PR: RED 4360 or in conjunction with this course. Strategies and materials for teaching oral and silent reading in speech and theatre classes at the secondary school level.

SED 4905 INDEPENDENT STUDY: SPEECH COMMUNICATION-ENGLISH EDUCATION (1-5) PR: CI. Specialized independent study determined by the student's needs and interests. May be repeated when subjects vary. (S/U only.)

SED 4909 DIRECTED STUDY: SPEECH COMMUNICATION-ENGLISH EDUCATION (1-4) PR: Senior standing. To extend competency in teaching field. Offered only as a scheduled class.
COLLEGE OF ENGINEERING


BASIC AND INTERDISCIPLINARY ENGINEERING

UNDERGRADUATE COURSES

EGN 1002 ENGINEERING ORIENTATION (1)
The role of engineering in society, characteristics of different fields of engineering, required preparation for engineering careers, techniques and approaches used by engineers in their profession. (S/U only.)

EGN 1111C GRAPHIC ANALYSIS I (3)
The theory and application of projective systems and related topics. Basic problems in engineering drawing. Purchase of drawing instruments and other necessary drafting supplies to be discussed at first class session. Lec.-lab.

EGN 1401 GRAPHIC ANALYSIS II (3)

EGN 1402 GRAPHIC ANALYSIS III (3)
PR: EGN 1111C. An elective course designed for students with limited background in pre-calculus mathematics necessary for graphic procedures. Emphasis on graphical concepts of algebraic and trigonometric relationships.

EGN 1403 GRAPHIC ANALYSIS IV (3)
Continuation of EGN 1402.

EGN 2021L INTRODUCTION TO ENGINEERING I (3)
To present an overview of Engineering, its role and its concepts. Experimental program; see adviser.

EGN 2210 ANALYSIS & COMPUTATION I (3)
Basic computer operation and programming concepts. Use of FORTRAN in solving engineering type problems.

EGN 2405L INTRODUCTION TO ENGINEERING II (3)
PR: EGN 2021L. Continuation of EGN 2021L. (Experimental program.)

EGN 2410 ENGINEERING PROBLEMS I (2)

EGN 3211 ANALYSIS & COMPUTATION II (3)
PR: EGN 2210 or equivalent. Use of FORTRAN and WAT-FIV in solving engineering problems. Use of computer libraries. Structure and use of SIMSCRIPT in systems simulation.

EGN 3313 STATICS (3)
PR: MAC 3281. Principles of statics, mechanical equilibrium, forces, moments, plane trusses. Lec.-pro.

EGN 3321 DYNAMICS (3)
PR: EGN 3313. Dynamics of discrete particles and distributed mass bodies; spatial kinematics and kinetics. Lec.-pro.

EGN 3331 DEFORMABLE BODIES (4)
PR: EGN 3313. Stress, strain, Hooke's Law; torsion, beam, column analysis; combined stresses; inelastic effects, limit design. Lec.-lab.

EGN 3343 THERMODYNAMICS I (4)

EGN 3344 THERMODYNAMICS II (3)

EGN 3354C BASIC FLUID MECHANICS (4)
PR: EGN 3321. Fundamental and experimental concepts in ideal and viscous fluid theory; momentum and energy consideration, introduction to hydraulics, pipe flow. Lecture.

EGN 3355C COMRESSIBLE FLOW (3)
PR: EGN 3354C. Compressible flow and free surface flow.

EGN 3365L MATERIALS ENGINEERING I (4)
PR: CHM 2047, EGN 3313. An introduction to structure and property relationships in engineering materials, i.e., metal, ceramic and polymer systems. Environmental effects on materials are also treated. Lecture.

EGN 3366 MATERIALS ENGINEERING II (3)
PR: EGN 3365L. Continuation of EGN 3365L.

EGN 3373 INTRODUCTION TO ELECTRICAL SYSTEMS I (4)

EGN 3374 INTRODUCTION TO ELECTRICAL SYSTEMS II (4)
PR: EGN 3373. Continuation of EGN 3373.

EGN 3375 INTRODUCTION TO ELECTRICAL SYSTEMS III (4)
PR: EGN 3373. Continuation of EGN 3373 or EGN 3374.

EGN 3411 ENGINEERING PROBLEMS I (2)
CR: MAC 3282. Continuation of EGN 2410.

EGN 3412 ENGINEERING PROBLEMS II (2)
CR: MAC 3283. Continuation of EGN 3411.

EGN 3413 ENGINEERING PROBLEMS IV (2)
CR: MAC 3284. Continuation of EGN 3412.

EGN 3433L DYNAMIC RESPONSE OF ENGINEERING SYSTEMS I (4)
EGN 3443  ENGINEERING STATISTICS I  (3)

EGN 3633  ENGINEERING VALUATION I  (3)
PR: EGN 2210. A study in analyzing the economic limitations imposed on engineering activities using basic models which consider the time value of money.

EGN 4421  ENGINEERING ANALYSIS I  (4)

EGN 4450  INTRODUCTION TO LINEAR SYSTEMS  (3)
PR: EGN 4421. Study and application of matrix algebra, differential equations and calculus of finite differences.

EGN 4905  INDEPENDENT STUDY  (1-5)
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated up to 15 credit hours. (S/U only.)

EGN 4933  SPECIAL TOPICS  (1-5)
New technical topics of general interest on an intermediate or experimental basis. May be repeated to a total of 10 credit hours.

EGN 4935  PROFESSIONAL ENGINEERING SEMINAR I  (1-5)
PR: CI. A lecture-discussion seminar on modern trends in the engineering profession.

EGN 4936  PROFESSIONAL ENGINEERING SEMINAR II  (1-5)
PR: CI and Senior standing. An examination of current engineering and related problems facing the graduating senior.

EMC 3121  TRANSFER OPERATIONS I  (3)

EGN 5422, 5423, 5424, 5425, 5426  ENGINEERING ANALYSIS II, III, IV, V, VI  (3,3,3,3,3)
PR: CC or MAP 4302. 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.

EGN 6427  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.

EMC 6720C  SCIENTIST IN THE SEA I  (4)
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. Lec.-lab. (Also offered under Marine Science.)

EGN 6721C  SCIENTIST IN THE SEA II  (4)
PR: CI and divers 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. Lec.-lab. (Also offered under Marine Science.)

EGN 6722C  SCIENTIST IN THE SEA III  (4)
PR: CI and diver certification (NAVI or equiv.) Underwater Engineering; the ocean as a constraint for structures and devices. Factors involved in the planning and design of underwater operations and experimental devices. Lec.-lab. (Also offered under Marine Science.)

EGN 6907  INDEPENDENT STUDY  (var.)
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

EGN 6911  DIRECTED RESEARCH  (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

EGN 6971 THESIS: MASTER'S  (var.)
Repeatable. (S/U only.)

EGN 6991 GRADUATE INSTRUCTION METHODS  (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

EGN 6992 GRADUATE RESEARCH METHODS  (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

EGN 7911 DIRECTED RESEARCH  (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

EGN 7980 DISSERTATION: DOCTORAL  (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

CHEMICAL AND MECHANICAL ENGINEERING

UNDERGRADUATE COURSES

ECH 4131  REACTING SYSTEMS I  (3)
PR: EMC 4104. 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.

ECH 4215  TRANSPORT PHENOMENA  (4)
PR: ECH 4234, EGN 3354C, or EMC 3103. A comparative study of transport phenomena with emphasis on the macroscopic applications of the balance and flux equations of momentum, energy, and mass.

ECH 4234 MASS TRANSFER  (3)
PR: EMC 3121. Study of molecular and turbulent diffusion in fluids, diffusion in solids, mass transfer coefficients and interphase mass transfer. Qtr. II, III.

ECH 4413 SEPARATION PROCESSES I  (3)
PR: MAC 3412, CR: EGN 3343. 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.) Qtr. I, II.

ECH 4414 SEPARATION PROCESSES II  (3)
PR: ECH 4413 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. Qtr. III, IV.

ECH 4615 DESIGN AND CASE PROBLEMS  (3)
PR: EGN 3613, ECH 4414. 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" connotes 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.

ECH 4714 INDUSTRIAL CHEMISTRY  (3)
PR: CHM 3210, ECH 4414. 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.

ECH 5103 THERMODYNAMICS III  (4)
PR: EGN 3343. 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.
CHEMICAL ENGINEERING

EMC 3117 HEAT TRANSFER I  (4)
PR: EMC 3121. 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.

EMC 3301 PHYSICAL MEASUREMENTS I  (3)

EMC 4303L ENERGY CONVERSION LABORATORY I  (3)
CR: EGN 3343. Introduction to engineering laboratory measurement with emphasis on the use of the library and the writing of technical reports. Experiments in the measurement of temperature, pressure, fluid flow, psychrometric properties of air, concentration, viscosity. Determination of mass-energy balances of simple systems. Preparations of formal engineering reports covering laboratory work.

EMC 4104 THERMODYNAMICS IV  (4)
PR: EGN 3343 or CI. Introduction to Chemical Engineering Thermodynamics; Maxwell relations, properties of real substances and solutions, description of multicomponent systems in equilibrium. Qtr. III, IV.

EMC 4112 ELECTRONIC EQUIPMENT COOLING  (3)

EMC 4131 FUELS AND COMBUSTION  (3)
PR: EMC 3103 or EMC 4104. A study of chemical reactions as sources of energy. Emphasis on the combustion characteristics of gaseous, solid, and liquid fuels, and equipment needed to safely and economically control combustion processes. Lec.-lab.

EMC 4311L CONTROLS LABORATORY  (1)

EMC 4312 MECHANICAL CONTROL  (3)
PR: EGN 3373, EGN 3433L, and EMC 4411. Analysis of devices for measurement and control. Transmitters, error detectors, controllers, and final control elements. Block diagram representation.

EMC 4314 PROCESS CONTROL SYSTEMS I  (3)
PR: EMC 4312 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.

EMC 4402 DYNAMIC RESPONSE OF ENGINEERING SYSTEMS II  (3)
PR: EGN 3433L. Analysis of response of dynamic systems with emphasis on the inter-disciplinary nature of such response. A continuation of Dynamic Response I, EGN 3433L.

EMC 4411 ANALOG AND DIGITAL SIMULATION I  (3)
PR: EGN 3433L or CI. The use of analog and digital computers as tools for the solution of engineering problems by means of simulation. Lec.-lab.

EMC 4501 FLUID MACHINERY I  (4)
PR: EGN 3354C and EMC 3121 or CI. 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.

EMC 4522L ENERGY CONVERSION LABORATORY II  (2)
PR: EMC 3303L. Continuation of EMC 3303L with emphasis on material and energy balances of mechanical and chemical systems and processes. Lec.-lab.

EMC 4523 ENERGY CONVERSION LABORATORY III  (2)
PR: EMC 4522L or CI. Continuation of EMC 4522L. Emphasis on experiments involving momentum transfer and non-Newtonian fluids, heat conduction, and mass diffusion.

EMC 4905 INDEPENDENT STUDY  (1-5)
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated up to 15 credit hours. (S/U only.)

EMC 4930 SPECIAL TOPICS ENERGY CONVERSION I  (1-4)
PR: CI.

EMC 4931 SPECIAL TOPICS ENERGY CONVERSION II  (1-4)
PR: CI.

EML 3264 DYNAMICS OF MECHANICAL SYSTEMS  (3)
PR: MAC 3282, PHY 3040. 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.

EML 4500 MACHINE ANALYSIS AND DESIGN  (3)
PR: EGN 3313. Stress analysis, stress strain relations, deflection analysis, shock and impact, selection of materials, principles of design. Lec.-lab.

EML 4503 MECHANICAL DESIGN I  (3)
PR: EML 3264, EML 4500. Application of the principles of engineering mechanics, materials and manufacturing to the analysis and design of mechanical elements. Lec.-lab.

EML 4513 POWER PLANT ANALYSIS AND DESIGN  (3)
CR: EMC 3103, EMC 3117. Parameters affecting utility power production; load curves; estimation of future loads; economics of power generations; system efficiency as affected by the thermodynamic cycle, multiunit scheduling, and load variation; heat transfer regions in the steam generator; water treatment methods.

EML 4601 REFRIGERATION AND AIR CONDITIONING  (3)
CR: EMC 3103, EML 3117. 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.

ENU 4142 INTRODUCTION TO NUCLEAR ENGINEERING I  (3)
Neutron density and thermalization parameters; criticality calculations; transient flux parameters; reactor operation; control instrumentation.

GRADUATE COURSES

ECH 6217 ADVANCED TRANSPORT PHENOMENA  (4)
PR: ECH 4215 or CI. 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 fluid mechanics and heat and mass transfer courses.

ECH 6515 REACTING SYSTEMS II  (4)
PR: ECH 4131 or CI. Dynamics of heterogenous reaction. Economic factors in the design of chemical reactors. Simulation of complex reacting systems.

ECH 6616 DESIGN AND CASE STUDIES  (4)
PR: ECH 4615. Plant and Process Design with emphasis on computer aided design.

EMC 5107 INDUSTRIAL CHEMICAL ENGINEERING THERMODYNAMICS  (4)
PR: CI. Classical thermodynamics applied to complex power cycles and reacting systems of industrial importance. Review of Maxwell relations, equations of state of real substances, and Gibbs Free Energy and Equilibria.

EMC 5305 INSTRUMENTAL ANALYSIS  (4)
PR: CHM 2047, PHY 3042. This course deals with the engineering bases of a variety of sophisticated instrumental techniques for chemical analysis. Emphasis is placed on the physical basis of the instrument and its design rather than on the interpretation of the analysis. Systems to be examined include
light and r.f. spectroscopy, mass spectrometry and methods which depend on various transport properties.

**EMC 5315 HYDRAULIC CONTROL** (3)
PR: EMC 4312 or CC. Hydraulic control system components and their effects on closed loop system performance. Lec.-lab.

**EMC 5502 FLUID MACHINERY II** (3)
PR: EMC 4501. 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.

**EMC 5510 POWER UTILIZATION SYSTEMS** (3)

**EMC 5611 INDUSTRIAL AIR POLLUTION CONTROL** (4)
PR: EGN 3343. A basic course in the elements of large source air pollution and control as presented from the engineering viewpoint. Major topics include: Sources, Atmospheric Meteorology, Diffusion, Local Influences. Control Measures, Emergencies, Protection. Lec.-lab.

**EMC 5930 SPECIAL TOPICS ENERGY CONVERSION III** (1-4)
PR: CC.

**EMC 5931 SPECIAL TOPICS ENERGY CONVERSION IV** (1-4)
PR: CC.

**EMC 6105 ADVANCED THERMODYNAMICS** (4)
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.

**EMC 6106 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.

**EMC 6115 PROCESS HEAT TRANSFER I** (3)
PR: EMC 3117. Review of conduction and convection heat transfer, counterflow, 1-2 parallel-counterflow flow arrangements for increased heat recovery; calculations for process conditions, condensation and evaporation.

**EMC 6116 PROCESS HEAT TRANSFER II** (3)
PR: EMC 3117, EMC 6115. Extended surface, longitudinal and radial fins, crossflow, fanned passages, longitudinal high fin exchangers, radial flow fin exchangers, transverse high fin exchangers and compact heat exchangers.

**EMC 6118 HEAT TRANSFER II** (3)
PR: EGN 4421, EMC 3117. Steady and unsteady heat transfer by conduction; one, two, and three dimensional systems, numerical, graphical, and analog methods, finite difference methods, and periodic convection heat flow.

**EMC 6119 HEAT TRANSFER III** (3)
PR: EGN 4421, EMC 3117, 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.

**EMC 6302 PHYSICAL MEASUREMENTS II** (3)
PR: EMC 3301, EMC 4411, EMC 4522L or CC. The techniques and theory for measuring temperature, pressure, displacement, speed, acceleration, force, power, and psychrometric properties with particular attention to dynamic measurement. Lec.-lab.

**EMC 6316 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.

**EMC 6317 DIRECT DIGITAL CONTROL** (3)
PR: EMC 4314 or CC. Application of digital computer to control of engineering processes. Includes study of digital filter-
methods of noise attenuation; community noise ordinances; instrumentation for noise measurement. Lec.-lab.

**EML 5241 LUBRICATION I**  
PR: EGN 3354C, EGN 4421. The theoretical basis of lubrication and hydrodynamic bearing theory. The study of lubrication requirements of different types of machines.  

**EML 5273 ADVANCED DYNAMICS OF MACHINERY**  
PR: EML 3264. 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 motion. A complete force analysis will be made of an internal combustion engine.

**EML 5505 MECHANICAL DESIGN II**  
PR: EML 4503. A continuation of EML 4503. Lec.-lab.

**EML 5509 PROJECT DESIGN**  
PR: CC. Correlation of previously acquired mechanical design experiences with a creative design project. Lec.-lab.

**EML 5528 ANALYSIS METHODS FOR MECHANICAL DESIGN**  

**EML 5608 MECHANICAL UTILITIES SYSTEMS**  
PR: EMC 4501. Analysis and design of a building’s mechanical systems for fire and lightning protection, air conditioning, water supply, waste and storm drains.

**EML 6054 AIR CONDITIONING SYSTEMS DESIGN**  
PR: EML 4601, EML 6606 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 the types of systems available.

**EML 6222 VIBRATION ANALYSIS**  
PR: EML 5221. Application of generalized coordinates. Lagrange’s equation, matrix iteration, and other specialized methods to discrete multilink systems.

**EML 6225 ACOUSTICS AND NOISE CONTROL II**  
PR: EML 5224. Continuation of EML 5224. Acoustics and Noise Control I.

**EML 6235 APPLIED ENGINEERING: ASPECTS OF FATIGUE**  

**EML 6242 LUBRICATION II**  
PR: EML 5241. A continuation of EML 5241 with emphasis on hydrodynamic squeeze film theory and gas lubricated bearings.

**EML 6253 NOISE CONTROL DESIGN**  
PR: EML 5224, EML 6225. 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.

**EML 6533 ADVANCED MECHANICAL DESIGN**  
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.

**EML 6606 AIR CONDITIONING SYSTEMS**  
PR: EMC 4501, EML 4601. 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.

### CIVIL ENGINEERING AND MECHANICS

#### UNDERGRADUATE COURSES

**CES 3400 DESIGN PRINCIPLES AND PRACTICES**  

**CES 3401 JUNIOR DESIGN IN STRUCTURES, MATERIALS, FLUIDS**  
PR: Introductory Engineering Design. Introductory engineering design topics in structures, materials, fluids. Topics include design in drainage, metals, concrete, transportation system, water supply, wastewater treatment, hydraulic modeling. Lec.-pro.

**CES 3402 JUNIOR LABORATORY IN STRUCTURES, MATERIALS, FLUIDS**  
PR: Strength of Materials. Beginning laboratory experience in departmental facilities including the following laboratories: structures, mechanical testing, x-ray, corrosion, soils, surveying, stress analysis, fluids, water resources, dynamics. Laboratory records and reports are required. Lab.

**CES 4002 STRUCTURES II**  
PR: CES 4001. Introduction to the behavior of composite structural members; laminates, sandwich panels, reinforced concrete, timber and structures. Lec.-lab.

**CES 4003 STRUCTURES III**  

**CES 4004 STRUCTURES IV**  
PR: CES 4003. Analysis of suspension structures, towers, and tall buildings by both approximate and exact methods. Lec.-lab.

**CES 4104 STRESS ANALYSIS**  
PR: EGN 3331, MAP 4302. Analytical and experimental analysis of the mechanical behavior of deformable solids. Elastic and inelastic methods, plastic limit analysis, flexure and torsion of beams, photolasticity, electric strain gages, introduction to finite element computer methods. Lec.-lab.

**CES 4124 STRUCTURAL MECHANICS**  

**CES 4208 STRUCTURAL DYNAMICS**  
PR: CES 4124. Behavior of structural components and systems when subjected to periodic dynamic loads. Lecture.

**CES 4403 SENIOR DESIGN IN STRUCTURES, MATERIALS, FLUIDS**  
PR: Introductory Design Experience in Engineering. Intermediate level of design topics in structures, materials, fluids. Topics include design in structures, machine components, pipe flow, drainage, foundations, transportation systems, water supply, wastewater treatment, hydraulic modeling. Lec.-pro.

**CES 4404 SENIOR LABORATORY IN STRUCTURES, MATERIALS, FLUIDS**  
PR: Introductory Lab Experience in Engineering. Intermediate experience in department facilities including the following laboratories: structures, mechanical testing, x-ray, corrosion, soils, surveying, stress analysis, fluids, water resources, dynamics. Laboratory records and reports are required. Lab.
CES 4501 CONCEPTS OF STRUCTURAL DESIGN (3)  
PR: CES 4001. 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.

CES 4541 STRUCTURAL CONNECTIONS (3)  
PR: CES 4501. Use of theoretical and experimental data in the analysis and design of structural connections in metal, wood, concrete and plastic. Lec.-lab.

CES 4617 STRUCTURAL DESIGN IN METALS (3)  
PR: CES 4003, CES 4501. Design of ductile metallic structural elements and systems. Lec.-lab.

CES 4702 REINFORCED CONCRETE STRUCTURES (3)  
PR: CES 4003, CES 4501. Design of reinforced concrete structures; interpretation and application of various codes and specifications governing design. Lecture.

CES 4711 PRESTRESSED STRUCTURES (3)  

CES 4911 SENIOR DESIGN PROJECT (3)  
PR: CES 4403. Problem-solving experience and training for seniors in research/design projects. Oral and written final reports are required.

ECI 4311 SOIL MECHANICS I (3)  
PR: EGN 3354C. Fundamental and experimental concepts in soil mechanics with emphasis on soil properties, soil moisture, soil structure, and shearing strength. Lecture.

ECI 4312 SOIL MECHANICS II (3)  
PR: ECI 4311. A study of the application of the principles of soil mechanics to problems in soils engineering. Lecture.

ECI 4633 ADVANCED HYDROLOGY LABORATORY (3)  
PR: ENV 4623. Practical experience in the solution of hydrologic problems including data collection, data processing, and the application of numerical computer models to watersheds.

ECI 4911 RESEARCH IN SMF (1-4)  
PR. CC.

ECI 4124C EXPERIMENTAL MECHANICS I (3)  
PR: EGN 3354C. An introduction to the experimental methods used in the study of structures, materials, fluids. Lec.-lab.

EGM 4125C EXPERIMENTAL MECHANICS II (3)  

EGM 4224 SOLID MECHANICS IV (3)  

EGM 4260 VIBRATIONS (3)  

EGM 4340 ENGINEERING ANALYSIS SMF (3)  
PR: EGN 3211, MAP 4302. Computational methods for engineering problems found structures, materials, and fluids. Lec.-lab.

EGM 4430 INTERMEDIATE DYNAMICS AND VIBRATION (3)  
PR: EGN 3321, MAP 4302. Dynamics of discrete and distributed mass, spatial kinematics, and kinetics, inertia tensor, Euler equations, vibrations. Lecture.

EGM 4610 ANALYTICAL METHODS IN MECHANICS (3)  
PR: MAP 4302. Development of techniques of applied mathematics to SMF problems; partial differential equations, complex variable, vector and tensor analysis. Lecture.

EGM 4816 FLUID MECHANICS (3)  

EMA 4066 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.

EMA 4205 STRENGTHENING PROCESSES IN MATERIALS (3)  
PR: EMA 4303L. Introduction to the separate and combined effects of the primary strengthening mechanisms in materials. Applications to the real material systems such as steels, titanium, beryllium, nickel and refractory metal alloys; and composites. Lecture.

EMA 4303L MATERIALS ENGINEERING III (3)  
PR: EGN 3343, EGN 3365L. Principles of chemical thermodynamics as applied to the interaction of materials with various gaseous, aqueous, and solid phase environments. Lecture.

EMA 4324 CORROSION OF ENGINEERING MATERIALS I (3)  

EMA 4503C EXPERIMENTAL METHODS IN MATERIALS ENGINEERING (3)  
PR: EMA 4303L or CI. Introduction to the experimental methods of metallography, X-ray diffraction, phase diagram determination, heat-treating techniques, and electron microscopy. Lec.-lab.

EMA 4584 CEMENT AND CONCRETE (3)  

EMA 4604 PROCESSES IN MATERIALS ENGINEERING (3)  
PR: EMA 4303L 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.

EMA 4605 DIFFUSION (3)  
PR: EMA 4303L. 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.

EMA 4644 ENGINEERING CERAMICS (3)  
PR: EGN 3365L. Detailed examination of the materials of ceramic engineering and the engineering properties of advanced ceramic products. Lecture.

EMA 4703 CONCEPT OF ENGINEERING MATERIALS (3)  

EMA 4704 SELECTION AND APPLICATION OF ENGINEERING MATERIALS (3)  
PR: EGN 3365L. 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.

EMA 4905 INDEPENDENT STUDY (1-5)  
PR: CI. Specialized independent study determined by the students’ needs and interests. May be repeated up to 15 credit hours. (S/U only.)

ENV 3001 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.

ENV 4111 INTRODUCTION TO AIR POLLUTION CONTROL
PR: CI. Behavior and effects of atmospheric contaminants and the principles of making measurements in the air environment are studied. Basic concepts of meteorology and control technology are discussed. Regulatory aspects and air pollution standards are covered. Lecture.

ENV 4417 URBAN WATER SYSTEMS
PR: ENV 4622. A study of the engineering principles involved in the design and operation of urban water supply systems, urban drainage systems, urban waste collection systems, and urban waste water treatment systems.

ENV 4622 WATER RESOURCES ENGINEERING I
PR: EGM 4816. 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.

ENV 4623 WATER RESOURCES ENGINEERING II
PR: ENV 4622. 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.

SUR 3101C ENGINEERING LAND SurveyING
PR: Principles of land surveying for engineering practice. Traverse, levels, boundary surveys, route surveys, coordinate geometry, and mapping.

TTE 4004 TRANSPORTATION I
PR: MAP 4302. Introduction to Transportation Engineering. Lecture.

TTE 4006 TRANSPORTATION II
PR: TTE 4004. Transportation system planning. Lecture.

GRADUATE COURSES

CES 5335 OPTIMIZATION TECHNIQUES IN STRUCTURES, MATERIALS AND FLUIDS
PR: Explanation and application of optimization techniques to system analysis and design problems concerning structural, water resources and materials engineering.

CES 6217 STRUCTURAL STABILITY
PR: CES 4003. Elastic and inelastic stability of trusses and frames, local buckling of structural members and plates. Lecture.

CES 6336 STRUCTURAL OPTIMIZATION
PR: CES 4003, CES 4501, CES 5335. Use of optimization techniques in the design of structures including use of the digital computer as a design aid. Lec.-lab.

CES 6508 ADVANCED STRUCTURAL DESIGN I
PR: CES 4001, CES 4501. Selected advanced design topics in structural engineering. Topics from the areas of ductile metallic structural elements and systems, reinforced concrete structures, design of prestressed structural systems, design of building foundations.

CES 6509 ADVANCED STRUCTURAL DESIGN II
PR: CES 4001, CES 4501. Selected advanced design topics in structural engineering. Topics from the areas of ductile metallic structural elements and systems, reinforced concrete structures, design of prestressed structural systems, design of building foundations.

CES 6915 DIRECTED RESEARCH
PR: GR. Master's level. Repeatable. (S/U only.)

CES 6938 GRADUATE INSTRUCTION METHODS
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

CES 6939 GRADUATE RESEARCH METHODS
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

CES 7915 DIRECTED RESEARCH
PR: GR. Ph. D. level. Repeatable. (S/U only.)

EAS 5100 AERODYNAMICS

ECI 6206, 6207 HYDROSPACE ENGINEERING I, II
PR: CI. Advanced analysis of structural, material, and fluid systems for marine environment, including underwater acoustics. Lecture.

ECI 6208 COASTAL AND ESTUARY MODELING
PR: CI. Modeling of coastal and estuary systems, currents, tide heights, sediment transport, erosion, data collection, temperature distribution, sources, and sinks. Special emphasis on Florida. Lecture.

ECI 6239 FREE SURFACE FLOW
PR: EGM 4816 or CI. Fundamental and applied aspects of free surface flow, including river hydraulics, canal flow, and open channel design. Lecture.

ECI 6631 HYDROLOGIC MODELS
PR: CI. A study of the theoretical principles of hydrologic modeling and an examination of various numerical hydrologic models available. Students will be required to develop and apply computer models.

ECI 6632 URBAN HYDROLOGY
PR: CI. A study of the quantity and quality problems and solution techniques associated with the subject of urban runoff.

ECI 6933 SPECIAL TOPICS IN SMF
PR: CC.

ECI 6939 SMF SEMINAR
PR: CC.

ECI 6971 THESIS: MASTER'S
Repeatable. (S/U only.)

ECI 7980 DISSERTATION: DOCTORAL
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

EES 6203 WATER QUALITY FOR ENGINEERS
PR: CI. An introduction to the form, structure, and biochemical activities of the important microorganisms which are essential to biological treatment processes for agricultural, domestic, and industrial wastewater.

EGM 5352, 5353 FINITE ELEMENT METHODS I, II

EGM 5562 MECHANICS OF COMPOSITE MATERIALS

EGM 5611 CONTINUUM I
PR: CI. Development of fundamental problems in solids and fluids from a unified viewpoint; application to ideal media; elastic, plastic, visco-elastic, and fluids. Lecture.

EGM 5655 CONTINUUM II
PR: EGM 5611. 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.

EGM 5814 VISCOUS FLOWS
PR: EGN 3355C. Formulation of problems in the flow of viscous fluids. Mathematical methods and techniques of solutions.

EGM 5817 POTENTIAL FLOW
PR: EGN 3354C. Mathematical hydrodynamics, inviscid flow. Lec.-lab.

EGM 6126 ADVANCED X-RAY METHODS
PR: CI. X-Ray diffraction analytical and experimental studies of defects, texture, residual stress, crystal and polycrystalline aggregates. Lec.-lab.

EGM 6343 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. Lecture.

EGM 6391 APPLIED TENSOR ANALYSIS (3) PR: CI. Tensor analysis applied to structures, materials, fluids. Lecture.


EGM 6656 ADVANCED ELASTIC ANALYSIS (3) PR: CI. Contemporary elasticity theory and applications. Lecture.

EGM 6675 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. Lecture.


EGM 6796 STRESSED SURFACE STRUCTURES (4) PR: CES 4001. Elastic and plastic behavior of plate and shell structures, smooth and ribbed surfaces. Lecture.

EGM 6818 ADVANCED FLUID MECHANICS I (4) PR: CI. Flow of Newtonian and Non-Newtonian viscous fluids. Lec.-lab.


EMA 6126C EXPERIMENTAL MECHANICS III (4) PR: EGM 4124C. Moire and photoelastic experimental techniques. Lec.-lab.

EMA 6127C EXPERIMENTAL MECHANICS IV (4) PR: EGM 4124C. Theory and application of photoelasticity. Lec.-lab.


EMA 6129C EXPERIMENTAL MECHANICS VI (4) PR: EGM 4124C. Theory and application of holography and optical imaging. Lec.-lab.


EMA 6236 DISLOCATION STRUCTURES AND PROPERTIES OF ENGINEERING MATERIALS (3) PR: EMA 4303L and EMA 4530C. 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.

EMA 6326 CORROSION OF ENGINEERING MATERIALS II (3) PR: EMA 4303L, EMA 4324. Advanced aspects of electrochemical polarization phenomena. Experimental potential static and galvanostatic polarization studies and corrosion rate determinations. Optimum design of cathodic protection systems. Lec.-lab.

EMA 6907 INDEPENDENT STUDY (var.) Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

ENV 6007 ENVIRONMENTAL PLANNING (4) PR: ENV 4623 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.

ENV 6439 URBAN WATER TREATMENT THEORY AND DESIGN (4) PR: ENV 4622 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.

ENV 6539 URBAN WASTEWATER TREATMENT THEORY AND DESIGN (4) PR: CI. A study of the theory of wastewater 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.

ENV 6645 WATER RESOURCES SYSTEMS II (3) CES 5335, ENV 4623. The planning, design and operation of water resources systems by the use of systems analysis and operations research techniques. Lecture.

ENV 6666 WATER RESOURCES SYSTEMS II (3) PR: ENV 6645. The planning, design, and operation of water resource systems by the use of systems analysis and operations research techniques. Lecture.

ELECTRICAL ENGINEERING

UNDERGRADUATE COURSES

CDA 4101 COMPUTER ORGANIZATION (3) PR: EEL 4705. The structural organization of digital computers; control, data operations, I/O, memory. Functional description of their behavior.


CIS 4911 COMPUTER SCIENCE PROJECT (3) Projects intended to develop individual interests and abilities in computer science involving either computer hardware or software aspects of a well defined proposal.

CMM 4100 ENGINEERING ANALYSIS FOR COMPUTER SCIENCE I (3) PR: CC or MAP 4302. Numerical solutions of ordinary differential equations through series and numerical methods.

COP 2170 PROGRAMMING IN BASIC (CAI) (1) Laboratory course in theory and applications of BASIC interactive programming language using a minicomputer and CAI instruction.

COP 3150 PROGRAMMING IN APL (CAI) (2) PR: MAC 1104 and MAC 1114. Laboratory course in fundamental theory and applications of APL programming language using a minicomputer and CAI learning technique.

COP 3510 INTRODUCTION TO COMPUTER SCIENCE I (2) PR: MAC 1104. CR: COP 3510L. Introduction to the concepts of algorithmic formulation of problems for computer solution and the general abstract operations used in these formulations.

COP 3510L COMPUTER SCIENCE LABORATORY I (1) CR: COP 3510. Laboratory for implementation of algorithms in a general purpose computer language.

COP 3514 INTRODUCTION TO COMPUTER SCIENCE II (2) PR: COP 3510L and MAC 3281 or equivalent. CR: COP 3514L. Looping and I/O structures; local, global, static, and dynamic storage. Debugging aids. Data structures. Numeric and non-numeric problems.
COP 3514L COMPUTER SCIENCE LABORATORY II (1) PR: COP 3510L. CR: COP 3514. Continuation of COP 3510L.

COP 4400 COMPUTER SYSTEMS (3) PR: EGN 3211, MAC 3283 or CC. Linked course with COP 4400L. Principles of computer organization, machine and assembly language programming.

COP 4400L COMPUTER SYSTEMS LAB (1) PR: EGN 3211, MAC 3283 or CC. Linked course with COP 4400. Computer systems and programming laboratory.

COP 4550 PROGRAMMING LANGUAGES (3) PR: COP 4400. An introduction to programming languages, syntax and semantics, properties of algorithmic languages, binding times, arithmetic, string handling, data structures, list processing, translation, and theory.

COP 4620 INTRO TO SYSTEMS PROGRAMMING (3) PR: COP 4400. Introduction to systems programming, design of assemblers, loaders, linking, data structures and operating systems.

COT 4001 INTRODUCTION TO DISCRETE STRUCTURES (3) PR: EEL 4705. Introduction to set algebra, propositional logic and finite algebraic structures as they apply to computers.

COT 4320 SWITCHING THEORY (3) PR: EEL 4705. Elements of sequential machine theory including minimization methods.

EEL 3100, 4101 NETWORK ANALYSIS AND DESIGN I, II (3,3) PR: EGN 3373. A second course in linear circuit analysis and design.Transient and steady-state responses of passive R-L-C networks to various forcing functions.

EEL 3302, 4301 ELECTRONICS I, II (3,3) PR: EGN 3374. 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.

EEL 3410, 4411 FIELDS AND WAVES I, II (3,3) PR: EGN 4421, PHY 3042, PHY 3042L. A basic introduction to electromagnetic field theory, including static and dynamic electromagnetic fields.

EEL 4101 See EEL 3100

EEL 4102 LINEAR SYSTEMS ANALYSIS (3) PR: EEL 4101. Provides further study in the analysis of linear networks and systems. Includes time and frequency domain points of view. Laplace, Fourier and superposition integrals.

EEL 4108 DISTRIBUTED NETWORKS (3) PR: EEL 3410, EEL 4101. Transmission lines, standing waves, impedance, waveguides.

EEL 4133 MATRICES AND ELECTRICAL NETWORKS (3) PR: EEL 3100. Introduction to matrices applied to electrical networks: two-port network parameters.

EEL 4163 COMPUTER AIDED DESIGN AND ANALYSIS (3) PR: EEL 4301. The emphasis is upon applications and how to use the major CADA programs as effective tools to solve a wide variety of engineering problems. The coverage includes solid state design, systems analysis, digital logic, transfer function solutions and concludes with a brief look at thermal and mechanical systems analysis. The programs used include SUPER*SCEPTRE, SPICE 2, NASAP and others.


EEL 4220L, 4222L ELECTROMECHANICS LAB I, II (1,1) CR: EEL 4220, EEL 4222, respectively.

EEL 4300 COMMUNICATION CIRCUITS (3) PR: EEL 4301. Provides further study in electronic circuits. Includes oscillator, modulator, and detector analysis and design.

EEL 4301 See EEL 3302.


EEL 4330L MICROELECTRONICS LABORATORY (1) CR: EEL 4330.

EEL 4411 See EEL 3410

EEL 4511 COMMUNICATION ENGINEERING (3) PR: EEL 4300. System considerations of electronic circuits; radio propagation; antennas; transmitters and receivers.

EEL 4511L COMMUNICATIONS LABORATORY (1) CR: EEL 4511. Experiments in amplitude modulation, frequency modulation, pulse communications, and data transmission.

EEL 4655 LINEAR CONTROL SYSTEMS (3) PR: EEL 4301, EGN 3433L. Introduction to analysis and design of linear feedback control systems. Covers block diagram, flow charts, Bode, Nyquist, and root locus techniques.

EEL 4656L CONTROL LABORATORY (1) CR: EEL 4656.

EEL 4705 LOGIC DESIGN (3) PR: EGN 3374. Non-majors may enroll with CC. Binary number system; truth functions; Boolean algebra; canonical forms; minimization of combinational logic circuits; logic circuits in computers.

EEL 4705L LOGIC LABORATORY (1) CR: EEL 4705.

EEL 4745L MICROPROCESSORS LABORATORY (1) CR: EEL 4757. Laboratory for Microprocessor use and evaluation.


EEL 4850C PROGRAMMING METHODOLOGY (3) PR: CC. Methods of designing and developing effective and efficient computer programs. Top-down design, structured programming, debugging, and program analysis are addressed.

EEL 4905 INDEPENDENT STUDY (1-5) PR: CI. Specialized independent study determined by the students’ needs and interests. May be repeated up to 15 credit hours. (S/U only.)

EEL 4906 DESIGN PROJECT (3) PR: Senior standing. An individual or team project involving the design of an electrical component system. Required of all electrical seniors.

EEL 4935, 4936, 4937 SPECIAL ELECTRICAL TOPICS I, II, III (1-4 each) PR: CC.

ELR 3301L LABORATORY I (1) PR: EGN 3373.

ELR 3302L LABORATORY 2 (1) PR: EGN 3374.

ELR 3303L LABORATORY 3 (1) PR: ELR 3301L.

ELR 4114 ELECTRICAL MEASUREMENTS (2) PR: EEL 3100. Techniques and principles of electronic measurement.

ELR 4115 ELECTRICAL MEASUREMENTS LABORATORY (1) CR: ELR 4114.

ELR 4221 SYSTEMS APPROACH TO BIO MEDICAL ENGINEERING II (3) PR: ELR 4228. Continuation of ELR 4228. Computer studies of physiological subsystems, model evaluation. Biomedical measurements, automated data collection.

ELR 4228 SYSTEMS APPROACH TO BIO MEDICAL ENGINEERING I (3) PR: EEL 4101 or CC. Characterization of physiological systems, principles of modeling, system properties. Transfer
function description, physiological feedback, effects of non-
linearities.

ELR 4304L LABORATORY 4
PR: EEL 3302L. CR: EEL 4301. (1)

ELR 4305L LABORATORY 5
PR: EEL 3302L. CR: EEL 4300. (1)

ELR 4306L LABORATORY 6
PR: EEL 3302L. CR: EEL 4411. (1)

ELR 4313L DISTRIBUTED NETWORKS LABORATORY
Laboratory for EEL 4108. (1)

MAP 4363 ENGINEERING ANALYSIS FOR
COMPUTER SCIENCE III
PR: CC or MAP 4302. Vector analysis and methods of solution
for boundary value problems in partial differential equations.

COP 5001 TOPICS IN COMPUTERS AND
PROGRAMMING
PR: CC. Machine organization, assembly and machine lan-
guage, data structures, systems programming, operating sys-
tems. (4)

COP 6530 DATA STRUCTURES
PR: CC. Representation of information and information
structures in a computer system, linear linked lists, multi-linked
lists, algorithms for list manipulation, stack, queues and
queues, trees and binary trees, tree traversing algorithms.
(3)

COP 6613 OPERATING SYSTEMS
PR: CC. Operating systems functions and design, resource
management, protection systems, process communication and
deadlocks. (3)

COP 6640 PROGRAMMING LANGUAGES AND
TRANSLATION
PR: CC. Grammars and languages, symbols, strings, syntax,
parsing, the design of a compiler, storage organization and
symbol tables, translator writing systems. (3)

EEL 5250 POWER SYSTEMS ANALYSIS
PR: CC. Analysis techniques for AC power systems. (3)

EEL 5253 COMPUTER ANALYSIS OF POWER
SYSTEMS
PR: CC. Review of Fortran programming, matrix algebra,
network formulation, short circuit studies, simulation of alge-
braic equations, load flow studies, numerical solution of
differential equations, transient stability studies. Strong em-
phasis on techniques adaptable to digital computer studies,
programs will be written and run on the IBM 360/65. (3)

EEL 5367 PULSE CIRCUIT PRINCIPLES
PR: EEL 4102. EEL 4300. An introduction to the analysis and
design of pulse and timing circuits with applications. (3)

EEL 5435 UHF PRINCIPLES
PR: EEL 4102, EEL 4300, EEL 4411. A study of tubes,
devices, and circuits peculiar to systems which operate at ultra
high and super high frequencies. (3)

EEL 5435L UHF LABORATORY
CR: EEL 5435. (1)

EEL 5620 NONLINEAR CONTROL SYSTEMS
PR: EEL 4656. Principles of state-variables, phase-plane and
describing functions. (3)

EEL 5620L CONTROL LABORATORY
CR: EEL 5620. (1)

EEL 5711 DIGITAL COMPUTERS
PR: EEL 4705. Digital arithmetic; computer subsystems,
arithmetic units; control units; memory units; general purpose
computers. (3)

EEL 5711L DIGITAL LABORATORY
CR: EEL 5711. (1)

EEL 5730 SEQUENTIAL CIRCUITS
PR: EEL 4705. 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. (3)

EEL 5755 DIGITAL SIGNAL PROCESSING
TECHNIQUES
PR: EEL 4102 or CC. Techniques of real time statistical
analysis of signals, signal conditioning and enhancement. De-
design of digital networks. (3)

EEL 5760 DISCRETE STRUCTURES FOR DIGITAL
SYSTEMS
PR: EEL 4705. Set algebra, basic algebraic structures in com-
puters. Boolean algebra, propositional logic and graphs. Ap-
lications to computers. (3)

EEL 5771 INTRODUCTION TO COMPUTER
GRAPHICS I
PR: CC. An introduction to the evolution of computer graphics
including point-plotting, line drawing, two-dimen-
sional transformations and graphics software packages. (3)

EEL 5820 IMAGE PROCESSING BY COMPUTERS
PR: EEL 4102 or CC. Two dimensional convolution and sys-
tem functions. Fourier transform in two dimensions. Digitiza-
tion of two dimensional signals, sampling theorems, band-limitted signals. Image processing by computers. Applications of image processing. (3)

EEL 5851C FILE AND DATA ACCESS SYSTEMS
PR: COP 4400. Introduction to data organization and file
structure principles of mass storage devices. Sequential, con-
secutive, direct-access, indexed, and virtual file access
methods are addressed. (3)

EEL 5852C DATA BASE SYSTEMS
PR: EEL 5851C. Fundamentals of data base management
systems. CODASYL, network, hierarchical, and relational
data base systems are analyzed, and typical applications are
presented. (3)

EEL 5853C TELEPROCESSING AND
TELECOMMUNICATIONS
PR: Systems Analysis and Design. Fundamentals of tele-
processing and telecommunications from a software perspec-
tive. Multi-access remote communications structures and
requirements, message queueing, teleprocessing monitors and
software systems are addressed. (3)

EEL 5931 ENGINEERING SEMINAR
PR: CC. (1)

EEL 5935, 5936, 5937 SPECIAL ELECTRICAL
TOPICS I, II, III
(1-3 each)
PR: CC. (1)

EEL 6141, 6142, 6143 NETWORKS SYNTHESIS I, II,
III
PR: CC. Network fundamentals; network characterization;
frequency analysis; superposition integrals; signal-flow
problems; stability problems; real-and-imaginary relations.
(3,3,3)

EEL 6150, 6151 ADVANCED CIRCUIT THEORY I, II
PR: CC. Network fundamentals; network characterization;
frequency analysis; superposition integrals; signal-flow
problems; stability problems; real-and-imaginary relations.
(3)

EEL 6152 NONLINEAR CIRCUITS
PR: CC. Analytical and topological approaches to nonlinear
circuits; nonlinear resonance; relaxation oscillations. (3)

EEL 6168 CADA: MODELING & SOFTWARE
PR: EEL 4163. Coverage includes all facets of solid-state
modeling pertaining to CADA applications. Discrete and
macro modeling techniques are explored for a wide range of
devices. Software methods for CADA applications are dis-
cussed from several vantage points. Methodology and treat-
ment required for the large scale, general purpose programs
are explored. The mathematical techniques used for the
modern integration routines are examined, with trade-offs
discussed. (3)

EEL 6174 OPTIMUM FILTERING AND
IDENTIFICATION
PR: CC or EEL 6631. Estimation theory and development of
the Kalman-Wiener filters for continuous and discrete-time
systems. System identification through deterministic and
stochastic approaches. Application to control and communi-
cation systems.
EEL 6261, 6262, 6263 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.

EEL 6270 LIGHTNING AND SURGE PROTECTION (3)
PR: CC. Methods of protection against overvoltage due to lightning. Ground wire shielding, systems and tower grounding, lightning arresters. Dynamic overvoltage, switching phenomena and system recovery voltages.

EEL 6271 PROTECTIVE RELAYING OF POWER SYSTEMS PR: EEL 5250, EEL 6261 or CC. Fundamentals of instrumentation. Design and operation of protective schemes for equipment in generation, transmission, and distribution circuits. Analysis of abnormal system conditions requiring relay operation.

EEL 6332 ELECTRICAL PROPERTIES OF THIN FILMS (3)
PR: EEL 4330 or equivalent and EEL 4411 or CC. Electrical properties of thin films as derived from Boltzmann's transport equation. Electrical characteristics of thin films. The fabrication of electrical circuits with thin films. Lecture supplemented by laboratory experiments and demonstrations.

EEL 6351, 6352, 6353 SOLID STATE ELECTRONICS I, II, III (3,3,3)
PR: CC. Theory of operation and application of circuits and devices.

EEL 6386, 6389 PRINCIPLES OF SEMICONDUCTOR DEVICE MODELING I, II (3,3)
PR: EEL 4102, EEL 4411. 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.

EEL 6387 NOISE THEORY (3)
PR: CC. Electrical noise and signals through linear filters and electronic systems.

EEL 6432 MICROWAVE COMPONENTS (3)
PR: CC. A study of directional couplers, junctions, cavities and other passive microwave components including microwave integrated circuits.

EEL 6433 MICROWAVE NETWORKS (3)
PR: CC. Transfer and representation of n-ports. Odd and even mode theory. Wave filters.

EEL 6434 MICROWAVE GENERATION AND AMPLIFICATION (3)

EEL 6482, 6483, 6484 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.

EEL 6506 DATA TRANSMISSION (3)
PR: EEL 6508. Quantization theory, binary coding systems, ideal binary transmission, on-off keying, FSK, PSK, PCM applications.

EEL 6507 DATA TRANSMISSION II (3)
PR: EEL 6506. M-ary systems-MASK, MFSK, MPSK, orthogonal systems, multilevel and multistate coding, simplex coding, orthogonal and biorthogonal codes, polychon systems, synchronization methods.

EEL 6508 PULSE COMMUNICATIONS SYSTEMS (3)
PR: CC. Sampling theory, pulse waveform generation and modulation. PAM, PWM, PPM, related multiplex systems, telemetry applications.

EEL 6522 INFORMATION THEORY (3)
PR: CC. Concepts of information, information channels, capacity, information sources and Shannon's fundamental theorem.

EEL 6551, 6532, 6533 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.

EEL 6613 MODERN CONTROL THEORY (3)
PR: EEL 4656, EEL 5620, EEL 6631, EEL 6640 or CC. A study of modern control techniques including optimum and adaptive control.

EEL 6631 DIGITAL CONTROL SYSTEMS (3)
PR: EEL 4656. Sample-data and digital control processes.

EEL 6640 RANDOM PROCESSES IN CONTROL SYSTEMS (3)
PR: EEL 4656. Analysis and design of control systems subject to random inputs and disturbances.

EEL 6756 SPECTRAL ANALYSIS BY COMPUTERS (3)
PR: 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.

EEL 6764 DIGITAL ARITHMETIC METHODS (3)
PR: CC or EEL 5711. Study of the number systems and the algorithms used for digital arithmetic computation with emphasis in their implementation, speed and reliability considerations.

EEL 6765 COMPUTER DESIGN LANGUAGES (3)
PR: CC or EEL 5711. Simulation languages for digital computer systems: APL, CDL and others. Simulation of elements, operations, sequences and a complete digital computer.

EEL 6766 COMPUTER ARCHITECTURE (3)
PR: CC or EEL 6764 or EEL 6765. The macro-structure of computers is considered in this course, ranging from the orthodox von Neumann design to multiprocessors, stack processors, pipeline systems, and associative computers.

EEL 6772 INTERACTIVE GRAPHICS II (3)
PR: CC. Intermediate level course covers the interactive and raster graphics aspects of computer graphics.

EEL 6773 THREE-DIMENSIONAL GRAPHICS AND SYSTEMS (3)
PR: EEL 6772. Advanced course covers the methods of representation of three dimensional objects in the plane of the graphics screen and the hardware and software required for their processing.

EEL 6822 PATTERN RECOGNITION THEORY (3)

EEL 6823 COMPUTER APPROACHES TO PATTERN RECOGNITION (3)

EEL 6830 CODING THEORY I (3)
PR: CC. Error-correcting codes, algebraic block codes, linear codes and feedback shift registers. BCH codes and decoding methods.

EEL 6831 CODING THEORY II (3)

EEL 6840 AUTOMATA THEORY I (3)

EEL 6841 AUTOMATA THEORY II (3)
PR: EEL 6840. Vector spaces over finite fields, linear sequen-
tional circuits, pseudo-random sequences. Turing machines, re-

cursive function computability.

EEL 6842 AUTOMATA THEORY III (3)
PR: EEL 6841. Artificial languages, phase-structure gram-
mars, operations on languages, decision problems, discrete
value random processes, Markov processes, probabilistic se-
quential machines, non-deterministic sequential machines.

EEL 6908 INDEPENDENT STUDY (var.)
Independent study in which students must have a contract
with an instructor. Repeatable. (S/U only.)

EEL 6932 ADVANCED ENGINEERING SEMINAR (1-3)
PR: CC.

EEL 6935 SELECTED ELECTRICAL TOPICS (1-3)
PR: CC.

EEL 6936 SPECIAL ELECTRICAL PROBLEMS (1-3)
PR: CC.

EEL 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

EEL 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable.
(S/U only.)

ELR 6117 ELECTRICAL MEASUREMENTS (2)
PR: CC. Advanced techniques and principles of electronic
measurement.

ELR 6118 MEASUREMENTS LABORATORY (1)
CR: ELR 6117.

ELR 6310L ELECTRICAL LABORATORY (1)
CR: EEL 6434.

ELR 6910 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

ELR 6911 GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate
research assistants. Variable credit. Limited to a cumulative
total of 5 credits per student. (S/U only.)

ELR 6940 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate
teaching assistants. Variable credit, repeatable. Limited to a
cumulative total of 5 credits per student. (S/U only.)

ELR 7910 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

ESI 6198 CASE STUDIES IN INDUSTRIAL
COMPUTER SYSTEMS (3)
PR: CC. A case study approach to the definition and imple-
mentation of industrial computer systems. The role of auto-
mation within the industrial concern. Design of systems in
inventory, production control, and related areas. Directing the
computer function and systems development.

INDUSTRIAL AND MANAGEMENT
SYSTEMS ENGINEERING

UNDERGRADUATE COURSES

EIN 4304C INDUSTRIAL PROCESSES (4)
PR: EGN 3613. Introduction to basic industrial processes em-
phasizing interdependency and similarities among industries.
Students research specific industries and visit local industrial
plants. Lec.-lab.

EIN 4312L PRODUCTION DESIGN I (3)
PR: EIN 4304C, EIN 4304C. Methods study, predetermined
time systems, wage administration, work measurement tech-
niques including stop-watch time study, work sampling, stan-
dard data and production studies. Lec.-lab.

EIN 4313L PRODUCTION DESIGN II (3)
PR: EIN 4312L. Continuation of EIN 4312L. Lec.-lab.

EIN 4334 PRODUCTION CONTROL SYSTEMS I (3)
PR: ESI 4215, ESI 4314, ESI 4455. Principles and techniques
of industrial planning and control systems design. Cost
analysis, forecasting, and controlling production activities.

EIN 4335 PRODUCTION CONTROL SYSTEMS II (3)
PR: EIN 4334, ESI 4315. Advanced topics in industrial plan-
ning and control systems design including the use of CPM,
PERT, and LOB.

EIN 4352 ENGINEERING VALUATION II (3)
PR: EGN 3613 or equivalent. Analysis of economic limita-
tions on engineering projects. Income tax considerations,
replacement models, MAPI, and obsolescence.

EIN 4364L PLANT FACILITIES DESIGN I (3)
PR: EIN 4313L, EIN 4352. Design and modification of plant
facilities, including design of a complete manufacturing op-
teration. Problems in plant location, layout, material handling,
and equipment selection.

EIN 4366 PLANT FACILITIES DESIGN II (3)
PR: EIN 4313L, EIN 4352. Design and modification of plant
evaluation of alternative plans for plant arrangement, including
equipment location and material handling systems.

ESI 4120 COMPARATIVE COMPUTER
LANGUAGES I (1)
PR: EGN 2210, EGN 3211. Comparison of higher level lan-
guages from viewpoint of structure, logic, data processing,
and ease of usage for applications to system problems.
Included are FORTRAN, WATFIV, SIMSCRIPT, GPSS,
PL-I, and AL-GOL.

ESI 4121 COMPARATIVE COMPUTER
LANGUAGES II (2)
PR: ESI 4120. Use of the higher level languages analyzed in
ESI 4120 for specific applications to system design from the
viewpoint of language comparisons and preferred choices.
Additional comparisons are made with several procedure-
oriented languages.

ESI 4132 HYBRID COMPUTERS (3)
PR: EGN 3211, ESI 4143. The use of hybrid computers for the
solution of problems in systems analysis. Lec.-lab.

ESI 4141 COMPUTER SYSTEMS I (3)
PR: ESI 4141. Study of computer hardware usage. Peripheral
subsystems. Transfer of information and control within a
complete operating system. Executive systems and control
monitors.

ESI 4143 COMPUTER SYSTEMS III (3)
PR: ESI 4142. A continuation of ESI 4142 stressing detailed
applications of machine and assembly language to computer
operating systems.

ESI 4145 COMPUTER PROJECTS (3)
PR: EIN 4352, ESI 4121, ESI 4142, ESI 4521. Special projects
involving the use and operation of digital computers.

ESI 4215 ENGINEERING STATISTICS II (3)
PR: EGN 3443. Estimating and testing procedures, regression
and correlation analysis.

ESI 4221 STATISTICAL QUALITY CONTROL (3)
PR: EGN 3443. Application of statistical techniques to the
control of industrial processes. Control charts and acceptance
procedures. Sequential sampling. For undergraduates.

ESI 4244 DESIGN OF EXPERIMENTS I (3)
PR: EGN 3443. Development of the basic experimental de-
signs. Randomized block, latin squares and factorial designs.

ESI 4314 OPERATIONS RESEARCH I (3)
PR: EIN 4450. An introduction to the basic operations re-
search techniques—linear programming, dynamic program-
ing, simulation, and queuing.

ESI 4315 OPERATIONS RESEARCH II (3)
PR: ESI 4215, ESI 4314. Continuation of ESI 4314.

ESI 4316 SYSTEMS ANALYSIS AND DESIGN (3)
PR: EGN 3211, EIN 4334, EIN 4315. The definition and anal-
ysis of systems. The solution of industrial systems prob-
lems using dynamic programming, simulation, queuing, linear
and non-linear programming.

ESI 4455 NETWORK MODELS (3)
PR: EGN 3211. A study of the design and analysis of network
models as applied to the solution of process related situations.
ESI 4504 FORTRAN APPLICATIONS I (3)  

ESI 4521 COMPUTER SIMULATION I (3)  
PR: EGN 3211. Use of computers in physical and industrial systems. Simulation languages and their applications.

ESI 4573 NUMERICAL METHODS (3)  
PR: EGN 4450. Continuation of materials in EGN 4450.

ESI 4905 INDEPENDENT STUDY (1-5)  
PR: CI. Specialized independent study determined by the students' needs and interests. May be repeated up to 15 credit hours. S/U only.

**GRADUATE COURSES**

**EIN 5218 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.

**EIN 5245 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.  

**EIN 5345 INVENTORY CONTROL (3)**  
PR: EIN 4335 or equivalent. Properties of inventory systems and the fundamentals of deterministic and probabilistic inventory models.

**EIN 5353 ENGINEERING VALUATION STUDIES (3)**  
PR: CC. The analysis of economic considerations affecting engineering decision making. Not open to students who have had EIN 4352.

**EIN 5389 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.

**EIN 5914, 5915, 5916 SPECIAL INDUSTRIAL PROJECTS I, II, III (1-3 each)**  
PR: CC.

**EIN 6247 MAN/MACHINE SYSTEMS (3)**  
PR: EIN 5245. Principles of work measurement, process analysis, value analysis, and human factors and their application to industrial situations.

**EIN 6336 PRODUCTION CONTROL SYSTEMS III (3)**  
PR: EIN 4335 or equivalent. Forecasting procedures, development of production plans, scheduling techniques, and inventory models. Application of EDP to production control systems.

**EIN 6356 ADVANCED ENGINEERING VALUATION (3)**  
PR: EIN 4332 or equivalent. Statistical models for analyzing engineering alternatives from an economic viewpoint. The interrelation between machine, assembly, and procedure oriented languages. Introduction to the design of monitors, assemblers, compilers.

**EIN 6933 ADVANCED ENGINEERING SEMINAR (1-3)**  
PR: CC.

**EIN 6934, 6935, 6936 SPECIAL INDUSTRIAL TOPICS I, II, III (1-3 each)**  
PR: CC.

**EIN 6971 THESIS: MASTER'S (var.) (Repeatable. S/U only.)**

**ESI 5145 COMPUTER OPERATION (4)**  
PR: Graduate engineering or science status. EGN 2210 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 ESI 6146, ESI 6147, ESI 6148 sequence.

**ESI 5216 ENGINEERING STATISTICS III (3)**  
PR: ESI 4215 or equivalent. Application of non-parametric statistics, sequential analysis, orthogonal polynomials and other optimization techniques to industrial problems.

**ESI 5219 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 ESI 4215.

**ESI 5222 STATISTICAL QUALITY CONTROL (3)**  
PR: EGN 3443 or equivalent. Application of statistical techniques to the control of industrial processes. Control charts and acceptance procedures. Sequential sampling.

**ESI 5233 RELIABILITY ENGINEERING (3)**  

**ESI 5245 DESIGN OF EXPERIMENTS II (3)**  
PR: ESI 4244. Continuation of material in ESI 4244.

**ESI 5306 OPERATIONS RESEARCH (3)**  
PR: CC. Linear programming, game theoretic models, economic optimization. Not open to students who have had ESI 4315.

**ESI 5505 FORTRAN APPLICATIONS II (3)**  
PR: ESI 4504 or equivalent. Advanced numerical methods using FORTRAN, applied to higher level problems in the individual student's field of engineering, mathematics, or applied science.

**ESI 5622 COMPUTER SIMULATION II (3)**  
PR: ESI 4521. Continuation of material in ESI 4521.

**ESI 6146 COMPUTER THEORY I (3)**  

**ESI 6147 COMPUTER THEORY II (3)**  
PR: ESI 6146. Advanced concepts in programming languages. The interrelation between machine, assembly, and procedure oriented languages. Introduction to the design of monitors, assemblers, compilers.

**ESI 6148 COMPUTER THEORY III (3)**  
PR: ESI 6147. Continuation and extension of ESI 6147 emphasizing detailed design principles used in the construction of monitors, assemblers and compilers.

**ESI 6213, 6214 THEORY OF INDUSTRIAL STATISTICS I, II (3,3)**  
PR: ESI 4215 or equivalent. Theoretical distributions, continuous and discrete expectation and estimation, properures sampling distributions.

**ESI 6227 STATISTICAL ASSURANCE PLANS (3)**  
PR: ESI 5222 or equivalent. Advanced techniques in sequential quality control systems and acceptance sampling plans.

**ESI 6238 THEORY OF RELIABILITY (3)**  
PR: ESI 4215 or equivalent. Topics in statistical methodology which have applications in the field of reliability. Discrete and continuous distribution models, reliability estimation, reliability structure and growth models, and statistical design for reliability.

**ESI 6247, 6248 STATISTICAL DESIGN MODELS I, II (3,3)**  
PR: ESI 6214 or equivalent. Design of experiment mathematical models, application of advanced analysis of variable techniques as applied to industrial problems.

**ESI 6291 SPECIAL TOPICS IN STATISTICS (3)**  
PR: CC. Special topics in statistics related to research in engineering.

**ESI 6336 QUEUEING THEORY (3)**  
PR: ESI 4215, ESI 4315. Deterministic and probabilistic queueing models. Poisson queues and special non-Poisson queues with exponential and non-exponential services. Single and multiple channel queues.

**ESI 6341, 6346 STOCHASTIC PROCESSES I, II (3,3)**  
PR: ESI 5245. Theory and application of stochastic processes as models for empirical phenomena, with emphasis on the following processes: Poisson, stationary, normal, counting re-
newal, Markov, birth and death. Spectral representations, time series, smoothing and filtering.

ESI 6405 NONLINEAR AND DYNAMIC PROGRAMMING (3)

ESI 6414 LINEAR PROGRAMMING (3)
PR: ESI 4315 or equivalent. The simplex method, degeneracy, duality theory; applications of linear programming to industrial problems.

ESI 6491 MULTIVARIABLE OPTIMIZATION (3)

ESI 6550, 6551 INDUSTRIAL SYSTEMS DESIGN I, II (3,3)
PR: ESI 4521. Design of integrated systems using statistical and operations research models. Simulation of integrated systems using digital, analog, and hybrid computers.

ESI 6552 EVALUATION OF SYSTEM PERFORMANCE I (3)
PR: EGN 4421, ESI 4215, ESI 4314, or CC. Application of probability and random processes to the design and evaluation of physical systems from the viewpoint of satisfying prescribed specification. System variabilities include random process inputs and system parameters treated as random variables.

ESI 6553 EVALUATION OF SYSTEM PERFORMANCE II (3)
PR: ESI 6552. Continuation of ESI 6552 with special emphasis upon writing the computer software required to implement the evaluation algorithms. Advanced problems.

ESI 6906 INDEPENDENT STUDY (var.)
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

ESI 6911 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

ESI 6991 GRADUATE RESEARCH METHODS (1-5)
Special-course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

ESI 6992 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

ESI 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

COMPUTER SERVICE COURSES

UNDERGRADUATE COURSES

CDA 3040 S.C. INTRODUCTION TO COMPUTERS IV (3)
PR: CDA 3102. Continuation of the material in CDA 3102. (No credit for engineering majors.)

CII 3101 S.C. INTRODUCTION TO COMPUTERS II (3)
PR: CII 3100. Component parts of a computer system. Internal representation and manipulation of data and program instructions. Algorithms and flowcharting. Programming languages and systems. (No credit for engineering majors.)

CDA 3102 S.C. INTRODUCTION TO COMPUTERS III (3)
PR: CDA 3101. Continuation of the material in CDA 3101. (No credit for engineering majors.)

COC 3300 S.C. INTRODUCTION TO COMPUTERS I (3)
Basic principles of computer operation, program structure, machine and assembly language.

COP 3110 S.C. COMPUTER PROGRAMMING-FORTRAN (3)
PR: COC 3300. Programming of scientifically oriented prob-
lems using FORTRAN. Introduction to the use of the systems library.

COP 3120 S.C. COMPUTER PROGRAMMING—COBOL I (3)

COP 3121 S.C. COMPUTER PROGRAMMING—COBOL II (3)
PR: COP 3120. Advanced applications of COBOL. Development of matrix structures, subscripting and data manipulating techniques as used in comprehensive data processing problems.

COP 3130 S.C. COMPUTER PROGRAMMING—PL/1 (3)
PR: COC 3300. Programming of both business and scientifically oriented problems. Manipulation of data records. Control sequencing and transmission of data.

COP 3160 S.C. COMPUTER PROGRAMMING—RPG (3)
PR: COC 3300. Analysis, design, and implementation of data processing systems using RPG.

COP 3300 S.C. COMPUTER PROGRAMMING—GPSS-SIMSCRIPT (3)
PR: COP 3110 or equivalent. SIMSCRIPT AND GPSS will be used to implement and analyze general types of simulation.

GRADUATE COURSES

CAP 5812 S.C. COMPUTERS FOR RESEARCH I (3)
PR: Graduate student status. The use of FORTRAN IV and WATFIV languages in solving research problems.

CDA 6113 S.C. COMPUTERS FOR RESEARCH II (3)
PR: CAP 5812 or equivalent. Continuation of the material covered in CAP 5812. Use of computer library programs and plotting equipment.

COP 5401, 5402 S.C. COMPUTER LANGUAGES AND COMPUTATION I, II (3,3)
PR: CRM 5115. Study of principles of machine assembly and compiled languages. Programming applications.

CRM 5115 S.C. COMPUTER SYSTEMS (3)
PR: COP 3110 or equivalent. Study of computer systems components, I/O devices, theory of computer operations. (Not available to students who have taken CDA 3040, CDA 3011, and CDA 3102.)

ENGINEERING TECHNOLOGY

UNDERGRADUATE COURSES

BCN 4570 ACOUSTICS IN CONSTRUCTION TECHNOLOGY (2)
Fundamentals of architectural acoustics, behavior of sound in closed spaces, noise control, and noise reduction.

ETC 4420 FUNDAMENTAL TOPICS IN CONSTRUCTION TECHNOLOGY II (3)
PR: ETG 4504. Selection and application of materials in construction technology with associated consideration of material properties, change of properties and environmental effects.

ETG 4533 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.

ETG 4505 INDEPENDENT STUDY (1-5)
PR: CI. Specialized independent study determined by the students’ needs and interests. May be repeated up to 15 credit hours. (S/U only.)

ETG 4504 FUNDAMENTAL TOPICS IN CONSTRUCTION TECHNOLOGY I (5)
PR: MAC 2244 or equivalent. Introduction to the principles of
ETM 4750 AIR CONDITIONING SYSTEMS DESIGN I (3) PR: ETM 4610 or CI. Heating and Air Conditioning Load Calculations, 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.

ETM 4751 AIR CONDITIONING SYSTEMS DESIGN II (3) PR: ETM 4750 or CI. Design of applied air conditioning systems, advanced load calculations, system selection, chilled water systems, multizone systems, equipment survey: coils, chillers, fans and pumps, associated electrical equipment, controls, humidification, dehumidification, and installation.

ETM 4930 AIR CONDITIONING DESIGN SEMINAR (3) PR: ETM 4751. 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.

EVS 4650 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.

GRADUATE COURSES

ETE 5100 INTRODUCTION TO ELECTRONICS FOR SCIENTISTS (5) Basic electronic devices and instruments, dc and ac circuits, diodes and power supplies, transistor, circuits, integrated circuits, laboratory instruments, transducers and special instrumentation. (2 three hour lecture labs, 1 two hour problem discussion). No credit toward graduate degree requirements.

ETG 6931 SPECIAL TECHNICAL TOPICS I (1-4) PR: CC.

ETG 6932 SPECIAL TECHNICAL TOPICS II (1-4) PR: CC.

ETG 6933 SPECIAL TECHNICAL TOPICS III (1-4) PR: CC.

COLLEGE OF FINE ARTS


UNDERGRADUATE COURSES

ARH 3000 INTRODUCTION TO ART (4) An expanded introductory treatment of basic concepts. For art majors and non-majors.

ARH 4100 PREHISTORIC AND ANCIENT ART (4) A comprehensive study of Paleolithic, Neolithic, Egyptian, Assyrian and Mesopotamian painting, sculpture and architecture.

ARH 4170 GREEK AND ROMAN ART (4) A comprehensive study of Aegean, Mycenaean, Etruscan, Greek and Roman painting, sculpture and architecture.

ARH 4200 MEDIEVAL ART (4) A comprehensive study of early Christian, Byzantine and Medieval painting, sculpture, architecture and manuscript illumination.

ARH 4301 RENAISSANCE ART (4) A comprehensive study of Renaissance and Mannerist painting, sculpture and architecture in Italy and Northern Europe.

ARH 4350 BAROQUE AND ROCOCO ART (4) A comprehensive study of the painting, sculpture and architecture in France, Italy, Spain and the Netherlands in the seventeenth and early eighteenth centuries.

ARH 4430 NINETEENTH CENTURY ART (4) A comprehensive study of nineteenth century painting, sculpture and architecture in France and England.

ARH 4450 TWENTIETH CENTURY ART (4) A comprehensive study of painting, sculpture and architecture from Cezanne to the present in Europe and the United States. Required of all art majors.

ARH 4530 ORIENTAL ART (4) An introduction to concepts of the arts of China, Japan and other Far Eastern countries.

ARH 4743 INTRODUCTION TO THE PERSONAL FILM (4) PR: ART 3630C. Comparison of philosophical and technical distinctions between the personal film and theatrical or commercial release.

ARH 4746 ANATOMY OF THE COLLABORATIVE FILM (4) PR: ART 4631C. Analysis of aesthetic and other selected aspects of film produced through collaborative efforts. May be repeated.

ARH 4790 SELECTED TOPICS IN THE HISTORY OF FILM (4) In-depth investigation of a selected period, development, or school in the history of film as art. May be repeated.

ARH 4796 CRITICAL STUDIES IN ART HISTORY (4) PR: CI. Specialized intensive studies in art history. Specific subject matter varies. To be announced at each course offering. May be repeated for different topics only.
ART 4937 SEMINAR IN THE HISTORY OF ART
HISTORY
PR: Four courses in Art History at the 4000 level, CI. An examination of the origins of Art History as a discipline and changing nature of Art History from Vasari to the present.

ART 2202C VISUAL CONCEPTS I
(4)
Studio problems supplemented by reading and discussion. Consideration of spatial organization of the two-dimensional surface.

ART 2203C VISUAL CONCEPTS II
(4)
Studio problems supplemented by reading and discussion. Consideration of three-dimensional organization of space and mass.

ART 2205C VISUAL CONCEPTS III
PR: Visual Concepts I. Continued with emphasis on color.

ART 3110C CERAMICS I
PR: Visual Concepts II and Introduction to Art. Intermediate problems in ceramics with emphasis on the exploration of methods and media and the development of individual concepts.

ART 3301C DRAWING I
PR: Visual Concepts I and III and Introduction to Art. Drawing as a means of formal organization. Introduction to intermediate drawing methods and media.

ART 3420 LITHOGRAPHY I
PR: Visual Concepts I and III, Introduction to Art and Drawing I. Intermediate problems in lithography with emphasis on the exploration of methods and media and development of individual concepts.

ART 3430 SILKSCREEN I
PR: Visual Concepts I and III, Introduction to Art and Drawing I. Intermediate problems in silkscreen with emphasis on the exploration of methods and media and development of individual concepts.

ART 3470 INTAGLIO I
PR: Visual Concepts I and III, Introduction to Art and Drawing I. Intermediate problems in intaglio with emphasis on the exploration of methods and media and development of individual concepts.

ART 3510C PAINTING I
PR: Visual Concepts I and III, Introduction to Art and Drawing I. Intermediate problems in painting with emphasis on the exploration of methods and media and development of individual concepts.

ART 3600C PHOTOGRAPHY I
PR: Visual Concepts I and III and Introduction to Art. Intermediate problems in photography with emphasis on exploration of materials and media and development of individual concepts.

ART 3630C CINEMATOGRAPHY I
PR: Visual Concepts I and III and Introduction to Art. Intermediate problems in cinematography with emphasis on exploration of materials and media and development of individual concepts.

ART 3701C SCULPTURE I
PR: Visual Concepts II and Introduction to Art. Intermediate problems in sculpture with emphasis on exploration of materials and media and development of individual concepts.

ART 3935 STUDIO TECHNIQUES: SELECTED PROJECTS
PR: Visual Concepts I, II, and III. Introduction to Art and CI. Concentration in specialized technical and data process. May be repeated for credit for different topics only.

ART 4111C CERAMICS II
PR: ART 3110C. Continued problems in ceramics. May be repeated.

ART 4320c DRAWING II
PR: ART 3301C. Continued problems in drawing. May be repeated.

ART 4421C LITHOGRAPHY II
PR: ART 3420. Continued problems in lithography. May be repeated.

ART 4431C SILKSCREEN II
PR: ART 3430. Continued problems in silkscreen. May be repeated.

ART 4471C INTAGLIO II
PR: ART 3470. Continued problems in intaglio. May be repeated.

ART 4520C PAINTING II
PR: ART 3510C. Continued problems in painting. May be repeated.

ART 4601C PHOTOGRAPHY II
PR: ART 3600C. Continued problems in photography. May be repeated.

ART 4631C CINEMATOGRAPHY II
PR: ART 3630C. Continued problems in cinematography. May be repeated.

ART 4633C SOUND TECHNIQUES
PR: ART 3630C. The recording and editing of sound for film. Collaboration with other departments, particularly Music and Theatre, is encouraged. To be taken concurrently with ART 4631C or ART 5642C whenever possible.

ART 4670C SCULPTURE II
PR: ART 3701C. Continued problems in sculpture. May be repeated.

ART 4900 DIRECTED READING
PR: CI and CC. A course of reading and study in an area of special concern governed by student demand, instructor interest and/or departmental requirements. Selection of study area and materials for the course must be agreed upon and appropriate credit must be assigned prior to registration. A contract with all necessary signatures is required for registration. May be repeated for credit for different study areas only.

ART 4905 DIRECTED STUDY
PR: CC. Independent studies in the various areas of Visual Arts. Course of study and credits must be assigned prior to registration. May be repeated.

ART 4930 IDEA SEMINAR
PR: Introduction to Art. Readings, discussion. Subjects will change each quarter, determined by mutual student and faculty interests. May be repeated.

ART 4935 ART SENIOR SEMINAR
PR: Senior Status. To aid majors to understand, appraise, and perfect their own art and technique through critical and aesthetic judgments of their colleagues. Discussion and critical evaluation.

GRADUATE COURSES
Admission to all 5000 level studio courses by Consent of Instructor

ARH 6055 ART HISTORY
PR: CI. May be repeated.

ART 5125C CERAMICS
PR: ART 4111C. Advanced problems in the various ceramic techniques, including throw and glaze calculation. May be repeated.

ART 5340C DRAWING
PR: ART 4320C. Advanced problems in various drawing techniques. Emphasis on individual creative expression. May be repeated.

ART 5422C LITHOGRAPHY
PR: ART 4421C. Advanced problems in various lithographic techniques. Emphasis on individual creative expression. May be repeated.

ART 5432C SILKSCREEN
PR: ART 4431C. Advanced problems in the various silk-screen techniques. Emphasis on individual creative expression. May be repeated.

ART 5472C INTAGLIO
PR: ART 4471C. Investigations into more complex intaglio
processes including photoengraving and color printing procedures. Emphasis on personal conceptual development in graphic media. May be repeated.

**ART 5523 PAINTING**

PR: ART 4520C. Advanced problems in the various painting techniques. Emphasis on individual creative expression. May be repeated.

**ART 5604C PHOTOGRAPHY**

PR: CI. Advanced work in photography and related media leading to development of personal/expressive statements. May be repeated.

**ART 5624C CINEMATOGRAPHY**

PR: ART 4631C. Advanced studio work using black and white, color and sound as technical and aesthetic factors in visual, artistic productions. May be repeated.

**ART 5730C SCULPTURE**

PR: ART 4702C. Advanced problems in the various techniques of sculpture. Emphasis on individual creative expression. May be repeated.

**ART 5910 RESEARCH**

PR: CC. May be repeated.

**ART 5936 STUDIO TECHNIQUES: SELECTED PROJECTS**

PR: Visual Concepts I, II, and III. Introduction to Art, topic-technique related. 3000-4000 level studio sequence and CI. Concentration in specialized technical data and process. May be repeated for credit for different topics only.

**ART 6126C CERAMICS**

PR: CI. May be repeated.

**ART 6314C DRAWING**

PR: CI. May be repeated.

**ART 6423C LITHOGRAPHY**

PR: CI. May be repeated.

**ART 6450C SILKSCREEN**

PR: CI. May be repeated.

**ART 6473C INTAGLIO**

PR: CI. May be repeated.

**ART 6580C PAINTING**

PR: CI. May be repeated.

**ART 6620C PHOTOGRAPHY**

PR: CI. May be repeated.

**ART 6645C CINEMATOGRAPHY**

PR: CI. May be repeated.

**ART 6731C SCULPTURE**

PR: CI. May be repeated.

**ART 6907 INDEPENDENT STUDY**

Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

**ART 6911 DIRECTED RESEARCH**

PR: GR. Master's level. Repeatable. (S/U only.)

**ART 6936 GRADUATE SEMINAR**

PR: CI. Advanced course in theoretical and conceptual foundations of the visual arts. The specific structure and content to be determined by the instructor. Must be repeated for a minimum of four hours.

**ART 6937 GRADUATE INSTRUCTION METHODS**

Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

**ART 6940 SELECTED TOPICS IN ART**

PR: Graduate Standing and CI. Variable credit depending upon the scope and magnitude of the work agreed to by the student and the responsible member of the faculty. May be repeated.

**ART 6956 GRADUATE STUDIO THESIS DOCUMENTATION**

PR: CI. An advanced seminar focused on the problems of documenting in verbal form the development of a body of work in the visual arts.

**ART 6971 THESIS: MASTER'S**

Repeatable. (S/U only.)

**DANCE**

Chairperson: B. S. Moehlenkamp; Professor: W. G. Hug; Associate Professors: B. S. Moehlenkamp, C. Robinson; Assistant Professor: M. Starbuck; Visiting Instructor: C. Worth; Visiting Lecturers: L. A. Cunningham.

**UNDERGRADUATE COURSES**

**DAA 2160 BEGINNING MODERN**

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.

**DAA 2200 BEGINNING BALLET**

PR: Admission by audition. Basic positions and fundamental barre 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.

**DAA 2700 CHOREOGRAPHY I**

Study and execution of basic principles of improvising. Preparation of studies in theme and variations, breath phrases and metric phrases. May be repeated.

**DAA 3161 INTERMEDIATE MODERN**

PR: Admission by audition. Continuation of DAA 2160. 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. May be repeated.

**DAA 3201 INTERMEDIATE BALLET**

PR: Admission by audition. Continuation of DAA 2200. Intensification of barre exercises for the development of strength and form. Centre 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. May be repeated.

**DAA 3220 BALLET VARIATIONS**

PR: DAA 3201. This course introduces fundamental exercises for the development of pointe technique. Material covered may also be pas de deux, character, and variations. Must be repeated for a total of 6 hours by majors in ballet concentration. May be repeated.

**DAA 3502 JAZZ DANCE**

PR: DAA 3161 or DAA 3201 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.

**DAA 3701 CHOREOGRAPHY II**

PR: DAA 2700 or CI. Preparation of studies in rhythm, dynamics, form and motivation, culminating in a solo. May be repeated.

**DAA 4162 ADVANCED MODERN**

PR: Admission by audition. Continuation of DAA 3161 on an advanced level. Work in improvisation and individual invention creating an awareness of many possibilities of movement. Intensive work on the growth of personal performance styles as a means of communication. Equal emphasis will be given to training the body in the development of technical excellence. Dancing in student choreography leading to performance. Rehearsal hours to be arranged. Must be repeated for a minimum of 15 hours by the student concentrating in Modern Dance. May be repeated.

**DAA 4202 ADVANCED BALLET**

PR: Admission by audition. Continuation of DAA 3201. 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. Perfecting the execution of classical ballet technique and a continuing awareness of performing projection and audience communication for those with a professional performing career in mind. Complete background and knowledge of the classical ballet technique 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 15 hours by the student concentrating in Ballet. May be repeated.

DAA 4702 CHOREOGRAPHY III
PR: DAA 3701 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. Lec.-lab., reading. May be repeated.

DAA 4703 CHOREOGRAPHY IV
PR: DAA 4702. The student will prepare studies based on free form, minimal art, and chance methods. Lec.-lab., reading. May be repeated.

DAN 3100 INTRODUCTION TO DANCE
For non-dance majors, a study of the art of dance. Lecture and activities including Modern, Ballet, Jazz, Ethnic, and Tap. DAN 3100 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 3110 WORLD HISTORY OF DANCE
Study of the development of dance from its inception through the Middle Ages. Reading, lecture.

DAN 3603 MUSIC FOR DANCE
Development of practical music skills in relation to dance. Emphasis on rhythm and the relationship of music forms to dance. May be repeated up to 6 credit hours.

DAN 3710 REPERTORY
The development and performance of solo and/or group dances. Open to all University students by audition. May be repeated.

DAN 4120 HISTORY OF MODERN DANCE
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.

DAN 4151 HISTORY OF 20TH CENTURY BALLET

DAN 4170 DANCE SENIOR SEMINAR
PR: Senior or CC. To aid majors to understand, appraise and perfect their own art and technique through critical and aesthetic judgements of their colleagues.

DAN 4905 DIRECTED READING
PR: CI and CC. Readings in topic of special interest to the student. Selection of topic and materials must be agreed upon and appropriate credit must be assigned prior to registration. A contract with all necessary signatures is required for registration. May be repeated for credit for different topics only.

DAN 4906 DIRECTED STUDY
PR: CC. Independent studies in the various areas of Dance. Course of study and credits must be assigned prior to registration. May be repeated.

DAN 4930 SELECTED TOPICS IN DANCE
PR: CI and CC. The content of the course will be governed by student demand and instructor interest. May be repeated for credit for different topics only.

MUSIC

UNDERGRADUATE COURSES
MUC 2202 COMPOSITION
PR: MUT 1113 and CI. Private instruction in original composition with composition lab meeting 5 times each quarter. Required of composition majors. May be repeated for four quarters.

MUC 2301 INTRODUCTION TO ELECTRONIC MUSIC
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. May be repeated.

MUC 3203 COMPOSITION
PR: Necessary competency at MUC 2202 level determined by faculty jury. Private instruction in original composition with composition lab meeting 5 times each quarter. Required of composition majors. May be repeated for four quarters.

MUC 3401, 3402, 3403 ELECTRONIC MUSIC-ANALOG SYNTHESIS
Pr: MUC 2301 and CI. Composition for tape medium with analog synthesizers; use of sound recording studio; repertory or analog music synthesis; technical basis of analog systems design and construction.

MUC 3441, 3442, 3443 ELECTRONIC MUSIC-DIGITAL SYNTHESIS
PR: MUC 2301 and CI. Computer assisted composition for conventional instruments; composition for tape medium with computer controlled analog synthesizers; direct digital synthesis; digital systems design and construction.

MUC 3601, 3602, 3603 CONTEMPORARY TECHNIQUES OF COMPOSITION
PR: CI. 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.

MUC 4204 COMPOSITION
PR: Necessary competency at MUC 3203 level determined by faculty jury. Private instruction in original composition with composition lab meeting 5 times each quarter. Required of composition majors. Must be repeated for credit for a minimum of 9 hours for majors.

MUC 4405, 4406, 4407 ELECTRONIC MUSIC-REAL-TIME PERFORMANCE
PR: MUC 3403 and MUC 3443 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 machines; use of scores, system flexibility and event-detail prediction.

MUC 4501 SEMINAR IN NEW MUSICAL SYSTEMS
PR: CI. Experimental sound sources and ensemble groupings; creating of new instruments; unfamiliar sonic materials and unique social contexts for music. May be repeated for credit.

MUG 3101 BASIC CONDUCTING
PR: CI. The study and practical application of basic conducting techniques. Development of skills related to the conducting of musical scores.
MUSIC 4201 CHORAL CONDUCTING (2)
PR: MUG 3101 or its equivalent and CI. Practical application of conducting techniques to choral works, score study, performance practices, and rehearsal techniques. Class serves as performing group.

MUSIC 4301 INSTRUMENTAL CONDUCTING (2)
PR: MUT 3011-3013. A study of those techniques of conducting unique to instrumental music ensembles: baton technique, score reading, terminology, rehearsal management.

MUSIC 3016 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 Requirements and may be used to satisfy part of the 9 hours in-College Requirement for Fine Arts majors in Art, Dance, Theatre and as a music elective.

MUSIC 3211, 3212, 3213 MUSIC HISTORY (3,3,3)
PR: CI. Required of music majors; a survey of the historical development of musical styles and of the music representative of music for small combinations of voices, strings, woodwind, brass, or percussion instruments, and piano; may be repeated for music majors.

MUSIC 3001 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 performance in illusory of the abstract and aesthetic elements in music which vitally concern the artist-performer. This course is also available on WUSF/TV Channel 16 by the O.U. Program. (S/U only.)

MUSIC 3011, 3012 THE ENJOYMENT OF MUSIC (3,3)
Open only to non-music majors; 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.

MAJOR PERFORMING ENSEMBLES (below)
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.

MUSIC 3100 UNIVERSITY BAND (1)
MUSIC 3140 WIND ENSEMBLE (1)
MUSIC 3210 UNIVERSITY ORCHESTRA (1)
MUSIC 3310 UNIVERSITY SINGERS (1)
MUSIC 3380 UNIVERSITY-COMMUNITY CHORUS (1)
MUSIC 3390 JAZZ-POP CHOIR (1)
MUSIC 3451 PIANO ENSEMBLE (1)
MUSIC 3501 OPERA WORKSHOP (1)

CHAMBER MUSIC ENSEMBLES (below)
PR: CI. Open to all university 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.

MUSIC 3340 CHAMBER SINGERS (1)
MUSIC 3411 STRING QUARTET (1)
MUSIC 3421 FLUTE CHOIR (1)
MUSIC 3423 CLARINET CHOIR (1)
MUSIC 3426 WOODWIND QUINTET (1)
MUSIC 3430 BRASS CHOIR (1)
MUSIC 3432 HORN QUARTET (1)
MUSIC 3436 BRASS QUINTET (1)
MUSIC 3440 PERCUSSION ENSEMBLE (1)
MUSIC 3441 MARIMBA ENSEMBLE (1)
MUSIC 3470 COLLEGIUM MUSICUM (1)
MUSIC 3490 NEW MUSIC ENSEMBLE (1)
MUSIC 3710 JAZZ LABORATORY BAND (1)
MUSIC 4900 DIRECTED READING (1-4)
PR: CI and CC. Readings in a topic of special interest to the student. Selection of topic and materials must be agreed upon and appropriate credit must be assigned prior to registration. A contract with all necessary signatures is required for registration. May be repeated for credit for different topics only.

MUSIC 4005 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.

MUSIC 4020 SELECTED TOPICS IN MUSIC (1-6)
PR: CI and CC. The content of the course will be governed by student demand and instructor interest. May be repeated for credit for different topics only.

MUSIC 4031 SELECTED STUDIOS TOPICS IN MUSIC (1-6)
PR: CI. The content of the study will be governed by individual student demand and instructor interest with an emphasis on individual instruction.

MUSIC 4035 MUSIC SENIOR SEMINAR (3)
PR: CI. To aid majors to understand, appraise and perfect their own art through critical and aesthetic judgments of their colleagues. (S/U only.)

MUT 1001 RUDIMENTS OF MUSIC (3)
Open to non-music majors; development of skills in hearing and performing music in and basic notation. Will not count as degree credit for music majors.

MUT 1111, 1112, 1113 MUSIC THEORY (3,3,3)
PR: CI. Required of music majors; development of skills in perceiving and writing music through the use ofaural and visual analysis of examples from all historical periods of music literature.

MUT 1241, 1242, 1243 AURAL THEORY (2,2,2)
PR: CI. Course designed to begin training in aural recognition and vocal realization of materials used in music composition. Includes rhythmic, melodic and harmonic dictation, and sight singing. To be taken concurrently with MUT 1111, 1112, 1113.

MUT 2116, 2117, 2118 MUSIC THEORY (3,3,3)
PR: MUT 1113. Required of music majors; continuation of MUT 1111-1113.

MUT 2246, 2247, 2248 ADVANCED AURAL THEORY (2,2,2)
PR: MUT 1243. Course designed to continue training in aural recognition and vocal realization of materials used in music composition. Includes rhythmic, melodic and harmonic dictation, and sight singing. To be taken concurrently with MUT 2116, 2117, 2118.

IMPROVISATION COURSES (below)
PR: MUT 1113 and CI. A studio course of study designed to acquaint the student with basic improvisational techniques; emphasis on individual performance. May be repeated for credit.

MUT 3631 IMPROVISATION: FUNDAMENTAL TECHNIQUES (1)
MUT 3642 IMPROVISATION: JAZZ TECHNIQUES (1)
MUT 4311, 4312 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.

MUT 4411 SIXTEENTH CENTURY PRACTICE (3)
PR: MUT 2118. A study of the music of the 16th century from a theoretical standpoint; development of skills in perceiving and writing music in the style of the period through the use of aural and visual analysis.

MUT 4421 EIGHTEENTH CENTURY PRACTICE (3)
PR: MUT 2118. An intensive study of the contrapuntal practice of the 18th century; development of skills in perceiving and writing music in the style of the period through the use of aural and visual analysis.

MUT 4431 TWENTIETH CENTURY PRACTICE (3)
PR: MUT 2118. A study of 20th century theoretical concepts; development of skills in perceiving and writing music in contemporary styles through the use of aural and visual analysis.

SECONDARY APPLIED MUSIC COURSES (below)
PR: CI. One half-hour private lesson or one hour class 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.

MVB 1211 APPLIED TRUMPET (1)
MVB 1212 APPLIED FRENCH HORN (1)
MVB 1213 APPLIED TROMBONE (1)
MVB 1214 APPLIED BARITONE (1)
MVB 1215 APPLIED VIOLA (1)
MVK 1211 APPLIED PIANO (1)
MVP 1211 APPLIED PERCUSSION (1)
MVS 1211 APPLIED VIOLIN (1)
MVS 1212 APPLIED VIOLA (1)
MVS 1213 APPLIED VIOLONCELLO (1)
MVS 1214 APPLIED DOUBLE BASS (1)
MVS 1215 APPLIED HARP (1)
MVB 1211 APPLIED VIOLIN (1)
MWB 1212 APPLIED OBOE (1)
MWB 1213 APPLIED CLARINET (1)
MWB 1214 APPLIED BASSOON (1)
MWB 1215 APPLIED SAXOPHONE (1)

CLASS PIANO COURSES (below)
PR: CI. Class is elementary piano and music fundamentals designed for students with limited keyboard experience. Primarily emphasis is placed on sight-reading, accompanying, transposition, harmonization, basic technique, and appropriate literature.

MVK 1111 MUSIC MAJORS, LEVEL I (2)
MVK 1121 MUSIC MAJORS, LEVEL II (2)
MVK 2111 MUSIC MAJORS, LEVEL III (2)
MVK 2121 MUSIC MAJORS, LEVEL IV (2)
MVK 3111 MUSIC MAJORS, LEVEL V (2)
MVK 1811 NON-MUSIC MAJORS, LEVEL I (2)
MVK 1821 NON-MUSIC MAJORS, LEVEL II (2)
MVK 2811 NON-MUSIC MAJORS, LEVEL III (2)
MVK 2821 NON-MUSIC MAJORS, LEVEL IV (2)

APPLIED MUSIC COURSES (below)
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.

MVB 1411 APPLIED TRUMPET (3)
MVB 1412 APPLIED FRENCH HORN (3)
MVB 1413 APPLIED TROMBONE (3)
MVB 1414 APPLIED BARITONE (3)
MVB 1415 APPLIED TUBA (3)
MVB 1411 APPLIED PIANO (3)
MVP 1411 APPLIED PERCUSSION (3)
MVS 1411 APPLIED VIOLIN (3)
MVS 1412 APPLIED VIOLA (3)
MVS 1413 APPLIED VIOLONCELLO (3)
MVS 1414 APPLIED DOUBLE BASS (3)
MVS 1415 APPLIED HARP (3)
MVS 1411 APPLIED VOICE (3)
MWB 1411 APPLIED FLUTE (3)
MWB 1412 APPLIED OBOE (3)
MWB 1413 APPLIED CLARINET (3)
MWB 1414 APPLIED BASSOON (3)
MWB 1415 APPLIED SAXOPHONE (3)

APPLIED MUSIC COURSES (below)
PR: Necessary competency at freshman 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 for a minimum of 9 hours for majors.

MVB 2421 APPLIED TRUMPET (3)
MVB 2422 APPLIED FRENCH HORN (3)
MVB 2423 APPLIED TROMBONE (3)
MVB 2424 APPLIED BARITONE (3)
MWB 2425 APPLIED TUBA (3)
MWB 2426 APPLIED VIOLIN (3)
MWB 2427 APPLIED VIOLA (3)

APPLIED MUSIC COURSES (below)
PR: Necessary competency at sophomore 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 for a maximum of 6 hours for the same section.

MVB 2421 APPLIED TRUMPET (3)
MVB 2422 APPLIED FRENCH HORN (3)
MVB 2423 APPLIED TROMBONE (3)
MVB 2424 APPLIED BARITONE (3)
MWB 2425 APPLIED TUBA (3)
MWB 2426 APPLIED VIOLIN (3)
MWB 2427 APPLIED VIOLA (3)

APPLIED MUSIC COURSES (below)
PR: Necessary competency at junior 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.

MVB 4441 APPLIED TRUMPET (3)
MVB 4442 APPLIED FRENCH HORN (3)
MVB 4443 APPLIED TROMBONE (3)
MVB 4444 APPLIED BARITONE (3)
MWB 4445 APPLIED TUBA (3)
MVB 4441 APPLIED PIANO (3)
MVP 4441 APPLIED PERCUSSION (3)
MVS 4441 APPLIED VIOLIN (3)
MVS 4442 APPLIED VIOLA (3)
MVS 4443 APPLIED VIOLONCELLO (3)
MVS 4444 APPLIED DOUBLE BASS (3)
MVS 4445 APPLIED HARP (3)
MVB 4441 APPLIED VOICE (3)
MWB 4441 APPLIED FLUTE (3)
MWB 4442 APPLIED OBOE (3)
MWB 4443 APPLIED CLARINET (3)
MWB 4444 APPLIED BASSOON (3)
MWB 4445 APPLIED SAXOPHONE (3)

MUSIC STUDIO PEDAGOGY COURSES (below)
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.

MVB 4640 BRASS (3)
MVB 4640 CLASS PIANO (3)
MWB 4641 PIANO (3)
MWB 4640 STRINGS (3)
MWB 4641 VOICE (3)
MWB 4640 WINDS AND PERCUSSION (3)

GRADUATE COURSES

MUC 6251 COMPOSITION (4)
PR: CI. Private instruction in original composition with
composition lab meeting 5 times each quarter. Required of composition majors. May be repeated for four quarters.

MUC 6444,6445,6446 ELECTRONIC MUSIC— ANALOG/DIGITAL SYSTEMS RESEARCH (3,3,3)
PR: CI. State-of-the-art compositional and performance applications; new concepts of electronic music synthesis, documentation and critical analysis of new repertory.

MUG 6256,6257,6258 CHORAL LITERATURE AND CONDUCTING (6,6,6)
PR: CI. Combination of seminar, classroom and laboratory types of experience designed to provide depth in stylistic study of choral music literature and performance.

MUG 6930 SEMINAR IN CONDUCTING (3)
PR: CI. Intensive study of conducting techniques with emphasis on interpretation of music scores and application in laboratory and critical analysis of new repertory.

MUL 6375 TWENTIETH CENTURY MUSIC LITERATURE (3)
PR: CI. A study of the literature, compositional techniques and music philosophies of the major 20th century composers from Debussy to the present.

MUL 6410,6411,6412 KEYBOARD REPERTORY (3,3,3)
PR: CI. A study of style, history and performance practice in keyboard repertory including masterworks of all periods.

MUL 6505 SYMPHONIC LITERATURE (3)
PR: CI. A chronological study of the development of orchestral music; analysis and study of major works from a stylistic and biographical perspective.

MUL 6565 CHAMBER MUSIC LITERATURE (3)
PR: CI. A survey and stylistic analysis of chamber music repertory 1750 through the present day; emphasis on aural recognition of representative works.

MUL 6624,6625,6626 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.

MUL 6663,6664 OPERA LITERATURE (3,3)
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.

MUL 6687 SOLO VOCAL LITERATURE IN ORATORIO (3)
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.

MAJOR ENSEMBLE PERFORMANCE COURSES (below)
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.

MUN 6100 UNIVERSITY BAND (1)

MUN 6140 WIND ENSEMBLE (1)

MUN 6210 UNIVERSITY ORCHESTRA (1)

MUN 6310 UNIVERSITY SINGERS (1)

MUN 6380 UNIVERSITY-COMMUNITY CHORUS (1)

MUN 6390 CHORAL UNION (1)

MUN 6451 PIANO ENSEMBLE (1)

MUN 6591 OPERA WORKSHOP (1)

CHAMBER MUSIC ENSEMBLES COURSES (below)
PR: CI. Open to all university graduate 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.

MUN 6340 CHAMBER SINGERS (1)

MUN 6411 STRING QUARTET (1)

MUN 6421 FLUTE CHOIR (1)

MUN 6423 CLARINET CHOIR (1)

MUN 6426 WOODWIND QUINTET (1)

MUN 6430 BRASS CHOIR (1)

MUN 6432 HORN QUARTET (1)

MUN 6436 BRASS QUINTET (1)

MUN 6440 PERCUSSION ENSEMBLE (1)

MUN 6441 MARIMBA ENSEMBLE (1)

MUN 6470 COLLEGIUM MUSICUM (1)

MUN 6490 NEW MUSIC ENSEMBLE (1)

MUN 6710 JAZZ LABORATORY BAND (1)

MUS 5905 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.

MUSIC WORKSHOP COURSES (below)
PR: CI. Intensive study in the specialized areas indicated below; open to teachers, University students, and secondary students; credit available to qualified students.

MUS 5924 BAND WORKSHOP (1-3)

MUS 5925 CHAMBER MUSIC WORKSHOP (1-3)

MUS 5926 CHORUS WORKSHOP (1-3)

MUS 5927 ORCHESTRA WORKSHOP (1-3)

MUS 5928 PIANO WORKSHOP (1-3)

MUS 5929 STRING WORKSHOP (1-3)

MUS 6793 TECHNIQUES OF RESEARCH IN MUSIC (3)
PR: CC. A study of the methods of research and professional bibliography and with an individual, formal project as a terminal requirement.

MUS 6905 INDEPENDENT STUDY (var.)
PR: CC. Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

MUS 6910 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

MUS 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

MUS 6976 GRADUATE RECITAL (2)
PR: CC.

MUS 6994 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

MUS 6995 GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

MUT 5051 GRADUATE REVIEW OF MUSIC THEORY (3)
A graduate level review of basic theoretical concepts with emphasis on the common practice period. The course serves to satisfy deficiencies in music theory and as such does not count toward the degree.

MUT 6535,6547,6558 CRITICAL ANALYSIS OF MUSIC REPERTORY (3,3,3)
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.

MUT 6751,6752 TEACHING OF MUSIC THEORY (3,3)
PR: CI. Comparative study of teaching techniques, procedures, and materials used in teaching the individual student in performance.

APPLIED MUSIC COURSES (below)
PR: Necessary competency determined by faculty jury audition. Required of all applied music majors. Private and class instruction.

MVB 6251 APPLIED TRUMPET, SECONDARY (2)

MVB 6252 APPLIED FRENCH HORN, SECONDARY (2)

MVB 6253 APPLIED TROMBONE, SECONDARY (2)

MVB 6254 APPLIED BARITONE, SECONDARY (2)

MVB 6255 APPLIED Tuba, SECONDARY (2)

MVB 6451 APPLIED TRUMPET (4)

MVB 6452 APPLIED FRENCH HORN (4)

MVB 6453 APPLIED TROMBONE (4)

MVB 6454 APPLIED BARITONE (4)

MVB 6455 APPLIED Tuba (4)

MVK 6251 APPLIED PIANO, SECONDARY (2)

MVK 6451 APPLIED PIANO (4)

MVP 6251 APPLIED PERCUSSION, SECONDARY (2)

MVP 6451 APPLIED PERCUSSION (4)
THE 3110 THEATRE HISTORY

A survey of significant periods in world theatre from the beginning up to 1700. Six selected representative plays will be read. Required of all theatre majors. Open to non-majors.

THE 3111 THEATRE HISTORY II

PR: THE 3110 or equivalent or CI. A survey of significant periods in world theatre from the 1700's to the present. Six selected representative plays will be read as well. Required of all theatre majors. Open to non-majors.

THE 3925 PERFORMANCE

The rehearsal, construction and production of major theatrical works. Concurrent registration in this course is expected of all students who are enrolled in courses carrying an ACPI (Advanced Course Production Involvement). Assignments are made contractually at the time of registration. Open to non-majors on a credit or non-credit basis. May be repeated up to 12 times. (Six ACPIs required of all theatre majors.)

THE 4180 THEATRE ORIGINS

PR: Completion of first three years as a theatre major and one from the following: THE 4320, THE 4330, THE 4370, THE 4401, THE 4442, THE 4480, or CI. 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. Required of all theatre majors.

THE 4264 HISTORY OF CLOTHING

PR: Completion of 2000-level theatre laboratory requirements for theatre majors or CI. Required of all theatre majors with a design and technology concentration. A survey of clothing and costume from Ancient Egypt to the 20th Century with an emphasis on current and social influences.

THE 4266 HISTORY OF ARCHITECTURE AND DECOR

PR: Completion of 2000-level theatre laboratory requirements for theatre majors or CI. The survey of architectural and decorative motifs and decor and their stylistic concepts. Required for majors in Design-Tech track.

THE 4320 THEATRE OF MYTH AND RITUAL/ NORTHERN EUROPEAN (950-1600) AND ORIENTAL (400-1800)

PR: THE 3110 or THE 3111. An investigation into the inter-relationship of myth, ritual, and theatre event. Enables the student to analyze these scripts in light of their present productivity and past cultural energy. Open to non-majors.

THE 4330 SHAKESPEARE FOR THE THEATRE

PR: THE 3110 or THE 3111 (for theatre majors). Study of several of Shakespeare’s plays from the histrionic point of view. “No sort of study of a Shakespearean play can better the preparation of its performance if this is rightly done.”—Harley Granville-Barker. Open to non-majors.

THE 4370 THE 19TH CENTURY THEATRE REVOLUTION

Survey of materials in the Continental, English & American Stage dating from 1870. Deals with the extraordinary playwrights and new theatre movements.

THE 4401 O’NEILL AND AFTER

PR: THE 3110, THE 3111, or CI. Survey of materials in the American Theatre from the writings of Eugene O’Neill to the present.

THE 4442 THE COMEDY OF THE CLASSIC AND NEO-CLASSIC STAGE

PR: THE 3110, THE 3111, or CI. A course in the function of the script of the active theatre artist, treating materials from the Ancient Greeks through the Restoration, giving some attention to later reflections.

THE 4480 DRAMA—SPECIAL TOPICS

PR: THE 3110, THE 3111, or CI. A course in the function of the script for the active theatre artist treating materials of a single playwright: Repeatable with consent of adviser and change in topic. Only four hours will be counted toward major requirements, but other hours may be counted toward elective.

THE 4562 SENIOR COLLOQUIUM IN THEATRICAL CREATIVITY

PR: THE 4180. A colloquium in the nature of the synthesized theatre object. Required of all theatre majors. Open to non-majors with CI.

THE 4900 DIRECTED READING

PR: CI and CC. Readings in a topic of special interest to the student. Selection of topic and materials must be agreed upon and appropriate credit must be assigned prior to registration. A

UNDERGRADUATE COURSES

THE 2020 THEATRE FUNDAMENTALS

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 TPA 2200, TPA 2223, TPP 2110. Required of all theatre majors.

THE 3080C MODERN THEATRE PRACTICE

Initial readings and exercises in theatre; play analysis, performance, and technical theatre for non-theatre majors.

THE 3925 PERFORMANCE

The rehearsal, construction and production of major theatrical works. Concurrent registration in this course is expected of all students who are enrolled in courses carrying an ACPI (Advanced Course Production Involvement). Assignments are made contractually at the time of registration. Open to non-majors on a credit or non-credit basis. May be repeated up to 12 times. (Six ACPIs required of all theatre majors.)

THE 4180 THEATRE ORIGINS

PR: Completion of first three years as a theatre major and one from the following: THE 4320, THE 4330, THE 4370, THE 4401, THE 4442, THE 4480, or CI. 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. Required of all theatre majors.

THE 4264 HISTORY OF CLOTHING

PR: Completion of 2000-level theatre laboratory requirements for theatre majors or CI. Required of all theatre majors with a design and technology concentration. A survey of clothing and costume from Ancient Egypt to the 20th Century with an emphasis on current and social influences.

THE 4266 HISTORY OF ARCHITECTURE AND DECOR

PR: Completion of 2000-level theatre laboratory requirements for theatre majors or CI. The survey of architectural and decorative motifs and decor and their stylistic concepts. Required for majors in Design-Tech track.

THE 4320 THEATRE OF MYTH AND RITUAL/ NORTHERN EUROPEAN (950-1600) AND ORIENTAL (400-1800)

PR: THE 3110 or THE 3111. An investigation into the inter-relationship of myth, ritual, and theatre event. Enables the student to analyze these scripts in light of their present productivity and past cultural energy. Open to non-majors.

THE 4330 SHAKESPEARE FOR THE THEATRE

PR: THE 3110 or THE 3111 (for theatre majors). Study of several of Shakespeare’s plays from the histrionic point of view. “No sort of study of a Shakespearean play can better the preparation of its performance if this is rightly done.”—Harley Granville-Baker. Open to non-majors.

THE 4370 THE 19TH CENTURY THEATRE REVOLUTION

Survey of materials in the Continental, English & American Stage dating from 1870. Deals with the extraordinary playwrights and new theatre movements.

THE 4401 O’NEILL AND AFTER

PR: THE 3110, THE 3111, or CI. Survey of materials in the American Theatre from the writings of Eugene O’Neill to the present.

THE 4442 THE COMEDY OF THE CLASSIC AND NEO-CLASSIC STAGE

PR: THE 3110, THE 3111, or CI. A course in the function of the script of the active theatre artist, treating materials from the Ancient Greeks through the Restoration, giving some attention to later reflections.

THE 4480 DRAMA—SPECIAL TOPICS

PR: THE 3110, THE 3111, or CI. A course in the function of the script for the active theatre artist treating materials of a single playwright: Repeatable with consent of adviser and change in topic. Only four hours will be counted toward major requirements, but other hours may be counted toward elective.

THE 4562 SENIOR COLLOQUIUM IN THEATRICAL CREATIVITY

PR: THE 4180. A colloquium in the nature of the synthesized theatre object. Required of all theatre majors. Open to non-majors with CI.

THE 4900 DIRECTED READING

PR: CI and CC. Readings in a topic of special interest to the student. Selection of topic and materials must be agreed upon and appropriate credit must be assigned prior to registration. A
contract with all necessary signatures is required for registration. May be repeated for credit for different topics only.

THE 4905 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.

THE 4927 ADVANCED PERFORMANCE (1)
PR: THE 3925 or CI. The study, rehearsal, and performance of major theatrical works. Admission by audition. May be repeated. Additional credit may be earned with THE 4905 or THE 5909

THE 4930 SELECTED TOPICS IN THEATRE (1-12)
PR: CI. The content of the course will be governed by student demand and instructor interest. May be lecture or class discussion or studio format. May be repeated for credit for different topics only.

TPA 2220 STAGECRAFT (3)
The scenic materials and skills basic to theatrical production. An introductory course. Has a production commitment. Required of all theatre majors. Open to non-majors.

TPA 2223 STAGE LIGHTING AND COSTUME (3)
The fundamental materials and skills used in lighting and costume stage productions. May be repeated as a theatre lab requirement for majors. Open to non-majors.

TPA 2250 WORKSHOP IN STAGE MAKEUP (1)
Beginning theory and practice in makeup for the stage. Theatre majors given preference. A studio course. Required for theatre majors.

TPA 2400 THE ART OF MANAGING THE ARTS (3)
An overview of the administrative role required in the arts—examining all media in their historic and topical references. The course will survey the basic areas of administrative, production, and stage management. May be used as a theatre lab requirement for theatre majors. Open to non-majors with CI.

TPA 3086 MEANS OF VISUAL EXPRESSION (4)
PR: Completion of the four 2000-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.

TPA 3601 STAGE MANAGEMENT (3)
PR: Completion of a lower level concentration in theatre. A practical course in the working organizational function of the stage manager in theatre, dance, opera, and other live performance situations. Required of all theatre majors.

TPA 3810 INTRODUCTION TO PUPPETRY (4)
PR: Completion of all four 2000 level courses. Open to non-majors with CI. Principles and methods of puppetry with a survey of major forms and practical problems with laboratory production.

TPA 3820 PUPPETRY PRODUCTION (4)
PR: TPA 3810. Open to non-majors with CI. 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. May be repeated one time for additional elective credit, with CI, for a total of eight hours.

TPA 3840 PUPPETRY PERFORMANCE (4)
PR: TPA 3820. Open to non-majors with CI. Experience in the production and presentation of play for the puppet theatre. Follows directly from the course in Puppetry Production and must be taken the quarter immediately following that course. May be repeated one time for additional elective credit, with CI, for a total of eight hours.

TPA 4012 PROJECT DESIGN: HONORS (4)
PR: CI and two Design I sections and one Design II section in area of emphasis. A workshop for students in scenery, lighting, and costume design admitted only by recommendation of instructor and review of portfolio. Consideration will be given to the requirements of integrating the design for setting, costumes, and lights; under special circumstances may be credit for actualized production design.

TPA 4020 LIGHTING DESIGN I (4)
PR: Portfolio review, TPA 2223, TPA 3086 and TPA 3111. The aesthetic and practical application of the elements of design and lighting for theatre presentation. Admission by portfolio review.

TPA 4021 LIGHTING DESIGN II (4)
PR: Lighting Design I (TPA 4020) and TPA 4285. TPA 4285 may be concurrent registration. The aesthetic and practical application of the elements of design and costume for theatre presentation.

TPA 4040 COSTUME DESIGN I (4)
PR: Portfolio review, THE 4264, TPA 3086 and TPA 3111 (THE 4264 may be taken as a co-requisite). The aesthetic and practical application of the elements of design and costume for theatre presentation. Admission by portfolio review.

TPA 4045 COSTUME DESIGN II (4)
PR: Costume Design I (TPA 4040) and TPA 4052. TPA 4052 may be concurrent registration. The aesthetic and practical application of the elements of design and costume for theatre presentation.

TPA 4052 DRAWING—FIGURE (2)
PR: Completion of second year requirements for the theatre major and portfolio or CI. Drawing the human form and fabrics with an emphasis for the costume designer.

TPA 4060 SCENE DESIGN I (4)
PR: Portfolio review (TPA 3086) and TPA 3111. The aesthetic and practical application of the elements of design and scenery for theatre presentation. Admission by portfolio review.

TPA 4061 SCENE DESIGN II (4)
PR: Scene Design I (TPA 4060) and TPA 4211. The aesthetic and practical application of the elements of design and scenery for theatre presentation.

TPA 4071 DRAWING—ARCHITECTURAL (2)
PR: Completion of 2000-level theatre laboratory requirements for theatre majors and portfolio or CI. A course in rendering the inanimate form.

TPA 4081 SCENE PAINTING (2)

TPA 4083 SPECIAL PROJECTS FOR PRODUCTION (2)
PR: THE 4264, THE 4266, plus any three of TPA 4052, TPA 4071, TPA 4211. TPA 4230, TPA 4285. An individually designed course of study tailored for the student's advanced work in technology and design.

TPA 4211 STAGECRAFT II (4)
PR: For theatre majors, completion of 2000-level theatre laboratory requirements, including TPA 2200. A practical course in drafting for the stage and scene construction and application. A requirement in the Tech Design track/Scenic. Open to non-majors.

TPA 4230 COSTUME CONSTRUCTION I (2)
PR: Completion of 2000-level theatre laboratory requirements for theatre majors or CI. A practical course in costume drafting of workable patterns for costuming the actor.

TPA 4231 COSTUME CONSTRUCTION II (2)
PR: TPA 2223 or CI. Materials, skills and techniques for construction of costume accessories for stage. Included topics are millinery, footwear, jewelry, masks, armor, corsetry; both period and modern.

TPA 4240 STAGE PROPERTIES: TECHNIQUES AND MATERIAL STUDIO (2)
PR: TPA 3086. Demonstration and experience with comparatively newer materials used in construction of stage properties. Modeling of prototypes and basic casting techniques. Organization of shop.

TPA 4281 PRACTICUM IN TECHNICAL SUPERVISION (2)
PR: One of the following courses: TPA 4211, TPA 4285, TPA 4230, as applicable. A study of the technical operation and organization for the theatre technologist in costume or in scenery-lighting. Advanced problems in technology and organization. Repeatable up to 4 credit hours.
TTP 4285 AUDIO-VISUAL APPLICATIONS FOR THE STAGE
PR: Completion of 2000-level theatre laboratory requirements for theatre majors, including TPA 2223. A study of basic electrical and electronic systems of sound and light control. Optical principles of projection and light transmission will be included to establish skills in the use of projected scenery. Analysis of amplification and recording techniques and technology, and the study of acoustical characteristics will prepare the student for a design of production sound systems. Open to non-majors.

TTP 4402 THEATRE MANAGEMENT WORKSHOP
PR: Completion of an upper level concentration in theatre. The study of management relations for the theatre, including all fields of management from box office to publicity.

TPP 2110 VOICE IMPROVISATION
Exploring the elements basic to acting skills—a participation course. May be used as a theatre lab requirement for majors. Open to non-majors.

TPP 2500 BODY DISCIPLINES
A laboratory course in various disciplines or systems in controlling and understanding the body's motive powers. Mime, pantomime, combat forms, meditation exercises useful for the stage performer will be studied. May be used as a theatre lab requirement for theatre majors. Open to non-majors.

TPP 3111 WORKSHOP FOR TEXT ANALYSIS
PR: Completion of the four 2000-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.

TPP 3121 IMPROVISATION I
PR: Completion of all four 2000-level courses and/or CI; audition required. Open to non-majors. An intensive study in Improvisation is an enhancement of the actor's skills. Exercises and theatre games as flexible forms which accommodate improvisation and physical invention are examined and used to develop group creativity.

TPP 3122 IMPROVISATION II
PR: TPP 3121 and/or CI; audition required. Open to non-majors. A concentrated study of advanced techniques in improvisational skills as applied to the use of scenario. Depending on ensemble capabilities, the course will culminate in a classroom improvisational presentation.

TPP 3235 THEATRE FOR SPECIAL AUDIENCES
PR: Completion of all four 2000-level courses and/or CI. Open to non-majors. The preparation of a production for a special audience (ethnic, children, aged, institutionalized, etc.). Those enrolled would be expected to continue with TPP 3236. With CI, may be repeated one time as additional elective credit (total of eight hours).

TPP 3236 PERFORMING THEATRE FOR SPECIAL AUDIENCES
PR: TPP 3235 (preceding quarter) and/or CI. The presentation of production for a special audience (ethnic, children, aged, institutionalized, etc.). Follows directly from TPP 3235 and must be taken in the quarter immediately following that course. With CI, may be repeated one time as elective credit (total of eight hours).

TPP 3510 SPECIAL SKILLS IN MOVEMENT
PR: Completion of the four 2000-level courses. Stage violence, circus and acrobatic techniques, and other special techniques of movement. Repeatable for credit. Required for majors in the performance track.

TPP 3790L VOICE PREPARATION FOR THE ACTOR
PR: Completion of the four 2000-level courses. A laboratory in corrective speech and voice production for the actor. Repeatable for credit. Required for majors in the performance track.

TPP 4140 SCENE STUDY III
PR: TPP 4150 and audition or TPP 4151 or TPP 4152. Methodology and styles. Examination of the actor's craft and skills needed to fulfill the demands of various theatre forms. Special attention will be paid to the history of acting styles. Required of all theatre majors with a performance concentration.

TPP 4150 SCENE STUDY I
PR: TPP 3111 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.

TPP 4151 SCENE STUDY II
PR: TPP 4150 and audition or TPP 4140 or TPP 4152. Intermediate scene study. Special attention given to dialects and period movement. Required of all theatre majors with a performance concentration.

TPP 4152 SCENE STUDY IV
PR: TPP 4150 and audition or TPP 4140 or TPP 4151. A workshop in the classic repertoire. Advanced scene study. Required of all theatre majors with a performance concentration.

TPP 4180 SCENE STUDY V
PR: TPP 4152. Honors section in acting; admittance by competitive audition. The aesthetics of acting. The various theories of the art. A studio course.

TPP 4220 AUDITION WORKSHOP FOR THE ACTOR
PR: TPP 4140 and TPP 4151. Preparation for professional audition; discussion of professional objectives.

TPP 4230L LABORATORY WORKSHOP IN PERFORMANCE
PR: TPP 3111 and/or CI. Special workshop in advanced techniques based upon individual problems and needs. May be repeated twice (to a total of 12 hours credit).

TPP 4250 MUSIC THEATRE WORKSHOP
TPP PR: TPP 3111. Special problems in acting as applied to the musical theatre.

TPP 4310, 4311 DIRECTING I, II
PR: Completion of the first two years as a theatre major and CI. 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 pieces.

TPP 4610, 4611 WRITING FOR THE THEATRE I, II
PR: Completion of the first two years as a theatre major and CI. 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.

TPP 4920 SENIOR WORKSHOP FOR ACTORS
PR: TPP 4140, TPP 4151 and audition. A coaching workshop in individual problems. Enrollment requires contracted study.

GRADUATE COURSES

THE 5902 DIRECTED READING
PR: CI and CC. Readings in topics of special interest to the student. Contract defining scope of project, materials used, expected results and credit hours assigned must be completed prior to registration. May be repeated for different topics.

THE 5909 DIRECTED STUDIES
PR: CC. Independent studies in the various areas of Theatre. Course of study and credits must be assigned prior to registration.

THE 5931 SELECTED TOPICS IN THEATRE
PR: CI. The content of the course will be governed by student demand and instructor interest. May be lecture or class discussion or studio format. May be repeated for credit for different topics only.
## ANATOMY

**Chairperson:** J. A. G. Rhodin; **Professors:** R. J. Noer, H. N. Schmitzlein; **Associate Professor:** J. A. Colombo, J. J. Dwornik; **Assistant Professor:** H. K. Brown, M. F. Nolan, C. P. Phelps, S. Saporito.

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Additional Information</th>
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<tbody>
<tr>
<td>BMS 6100</td>
<td>GROSS ANATOMY</td>
<td>PR: Admission to College of Medicine.</td>
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<tr>
<td>BMS 6110</td>
<td>MICROSCOPIC ANATOMY</td>
<td>PR: Admission to College of Medicine.</td>
</tr>
<tr>
<td>BMS 6150</td>
<td>NEUROANATOMY</td>
<td>PR: Admission to College of Medicine.</td>
</tr>
<tr>
<td>BMS 6160</td>
<td>GROSS ANATOMY Seminar</td>
<td>PR: Consent of Chairman, Department of Anatomy.</td>
</tr>
<tr>
<td>BMS 7170</td>
<td>REGIONAL ANATOMY I—Head and Neck</td>
<td>PR: Enrolled in College of Medicine.</td>
</tr>
<tr>
<td>BMS 7171</td>
<td>REGIONAL ANATOMY II—Thorax, Abdomen, Pelvis and Perineum</td>
<td>PR: Enrolled in College of Medicine.</td>
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<tr>
<td>BMS 7172</td>
<td>REGIONAL ANATOMY III—Extremities</td>
<td>PR: Enrolled in College of Medicine.</td>
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<tr>
<td>BMS 7175</td>
<td>ADVANCED NEUROANATOMY</td>
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<tr>
<td>BMS 7176</td>
<td>ADVANCED MICROSCOPIC ANATOMY</td>
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<tr>
<td>BMS 7177</td>
<td>APPLIED NEUROANATOMY</td>
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**GMS 6600C CORE COURSE IN HUMAN ANATOMY (7)**

| PR: Admission to Ph. D. Program in Medical Sciences. |

**GMS 6601 METHODS OF ELECTRON MICROSCOPY IN MEDICAL RESEARCH (4)**

| PR: GMS 6600-GMS 6300, GMS 6608, GMS 6602 or CC. |

**GMS 6602 NEURAL CORRELATES OF BEHAVIOR (4)**

| PR: GMS 6600-GMS 6300 or CC. |

**GMS 6603 COMPARATIVE NEUROANATOMY (3)**

| PR: GMS 6600-GMS 6300 or CC. |

**GMS 6604 HUMAN EMBRYOLOGY (4)**

| PR: GMS 6600-GMS 6300 or CC. |

**GMS 6605 COMPARATIVE HEMATOLOGY (3)**

| PR: GMS 6600-GMS 6609, GMS 6608 or CC. |

**GMS 6606 ANATOMICAL ILLUSTRATIONS AND METHODS (3)**

| PR: GMS 6600-GMS 6300, GMS 6609, GMS 6608 or CC. |

**GMS 6607 HISTORY OF ANATOMY (2)**

| PR: GMS 6600-GMS 6300 or CC. |

**GMS 6608 ADVANCED MICROSCOPIC ANATOMY (4-8)**

| PR: GMS 6600-GMS 6300 or CC. |

**GMS 6609 ADVANCED HUMAN GROSS ANATOMY (8-16)**

| PR: GMS 6600-GMS 6300 or CC. |

**GMS 6610 ADVANCED NEUROANATOMY (4-8)**

| PR: Admission to GMS program and acceptance into the Anatomy department. This course is concerned with the organization of the human nervous system at the gross, microscopic and ultra-structural levels. May be repeated up to 8 credit hours. |

**GMS 6611 INTRODUCTION TO ANATOMICAL RESEARCH (3)**

| PR: Admission to GMS program and acceptance into the Anatomy department. This course is designed to introduce the student to research work ongoing in the department of Anatomy. May be repeated up to 9 credit hours. |

**GMS 6612 SUPERVISED TEACHING IN HUMAN ANATOMY (4)**

| PR: GMS 6608, 6609, or 6610 and acceptance into the Anatomy department. This course is designed to prepare the student to assume teaching responsibilities associated with a faculty position in a medical school anatomy department. May be repeated up to 12 credit hours (one time only in each of the anatomical disciplines). |

## BIOCHEMISTRY

**Chairperson:** J. G. Cory; **Professors:** W. L. Adair, Jr., D. C. Eichler, R. K. Keller, G. C. Ness, S. D. Schimmel, L. P. Solomonson, M. T. Williams.

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<tr>
<td>BMS 6200</td>
<td>BIOCHEMISTRY</td>
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<tr>
<td>BMS 6230</td>
<td>BIOCHEMISTRY SEMINAR</td>
<td>PR: Consent of Chairman, Department of Anatomy.</td>
</tr>
<tr>
<td>BMS 7260</td>
<td>RESEARCH IN BIOCHEMISTRY</td>
<td>PR: Enrolled in College of Medicine.</td>
</tr>
<tr>
<td>BMS 7262</td>
<td>MOLECULAR BASIS OF METABOLIC REGULATION</td>
<td>PR: Admitted to College of Medicine.</td>
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**GMS 6200C CORE COURSE IN MEDICAL BIOCHEMISTRY (7)**

| PR: Admission to Ph. D. Program in Medical Sciences. |

**GMS 6103 METABOLIC BASIS OF DISEASE (3)**

| PR: GMS 6600-GMS 6300 or CC. |

**GMS 6414 BIOLOGICAL MEMBRANES-STRUCTURE AND FUNCTION (4)**

| PR: GMS 6600-GMS 6300 or CC. |

**GMS 6415 LIPID METABOLISM AND REGULATION (4)**

| PR: GMS 6600-GMS 6300 or CC. |

**GMS 6416 MACROMOLECULAR METABOLISM (4)**

| PR: GMS 6600-GMS 6300 or CC. |

## COMPREHENSIVE MEDICINE

**Chairperson:** W. A. Sodeman, Jr.; **Professors:** R. J. Loiselle, D. L. Smith, W. A. Sodeman, Jr.; **Assistant Professors:** P. R. Bartlett, G. E. Rodrick, W. M. Tucker, A. L. Vincent.

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<td>MEL 8206</td>
<td>COMMUNITY PUBLIC HEALTH AND PREVENTIVE MEDICINE (var.)</td>
<td>PR: Admission to the College of Medicine.</td>
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<tr>
<td>MEL 8207</td>
<td>LABORATORY RESEARCH IN TROPICAL MEDICINE (var.)</td>
<td>PR: Admission to the College of Medicine.</td>
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</table>

## FAMILY MEDICINE

**Chairperson (Acting):** C. E. Aucremann; **Associate Professors:** C. E. Aucremann, E. W. Witzel; **Assistant Professors:** B. Breiter, R. W. Dodd, T. Seethaunten, J. Warren, J. E. Perchalski.

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<td>OUT-PATIENT FAMILY MEDICINE (var.)</td>
<td>PR: Enrolled in College of Medicine.</td>
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<tr>
<td>MEL 7256</td>
<td>IN-PATIENT FAMILY MEDICINE (var.)</td>
<td>PR: Enrolled in College of Medicine.</td>
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<tr>
<td>MEL 7257</td>
<td>GERIATRIC MEDICINE (var.)</td>
<td>PR: Enrolled in College of Medicine.</td>
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<tr>
<td>BCC 8171</td>
<td>FAMILY PRACTICE PRECEPTORSHIP (var.)</td>
<td>PR: Enrolled in College of Medicine.</td>
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## INTERDISCIPLINARY

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<tr>
<td>MEL 7320</td>
<td>EXTRAMURAL CLERKSHIP (var.)</td>
<td>PR: Enrolled in College of Medicine.</td>
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<tr>
<td>MEL 7102</td>
<td>PERINATOLOGY (var.)</td>
<td>PR: Enrolled in College of Medicine.</td>
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<tr>
<td>MEL 7103</td>
<td>PEDIATRIC CARDIOLOGY AND PHYSIOLOGY (var.)</td>
<td>PR: Enrolled in College of Medicine.</td>
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INTERNAL MEDICINE


BMS 6810 INTRODUCTION TO MEDICINE
PR: Admission to College of Medicine. (var.)

BMS 6830 PHYSICAL DIAGNOSIS
PR: Admission to College of Medicine. (var.)

BCC 6110 MEDICINE CLERKSHIP
PR: Admission to College of Medicine. (var.)

MEL 7300 ELECTRO-CARDIOGRAPHIC INTERPRETATION
PR: Enrolled in College of Medicine. (var.)

MEL 7321 CLINICAL DERMATOLOGY
PR: Enrolled in the College of Medicine. (var.)

MEL 7305 CLINICAL ENDOCRINOLOGY AND METABOLISM
PR: Enrolled in College of Medicine. (var.)

MEL 7306 GASTROENTEROLOGY ELECTIVE
PR: Enrolled in College of Medicine. (var.)

MEL 7320 INFECTIOUS DISEASE
PR: Enrolled in College of Medicine. (var.)

MEL 7313 CLINICAL NEPHROLOGY
PR: Enrolled in College of Medicine. (var.)

MEL 7330 HEMATOLOGY-ONCOLOGY
PR: Enrolled in College of Medicine. (var.)

MEL 8211 CLINICAL NEUROLOGY CLERKSHIP
PR: Enrolled in College of Medicine. (var.)

MEL 8276 NEUROLOGY OF AMBULATORY PATIENTS
PR: Enrolled in College of Medicine. (var.)

MEDICAL MICROBIOLOGY


BMS 6300 MEDICAL MICROBIOLOGY
PR: Admission to College of Medicine. (var.)

BMS 6320 MEDICAL MICROBIOLOGY SEMINAR
PR: CC. (var.)

GMS 6100C CORE COURSE IN MEDICAL MICROBIOLOGY
PR: Admission to Ph. D. Program in Medical Sciences. (7)

GMS 6101 DIAGNOSTIC MICROBIOLOGY
PR: GMS 6600-GMS 6300 or CC. (4)

GMS 6102 RESEARCH PLANNING AND METHODS
PR: GMS 6600-GMS 6300 or CC. (4)

GMS 6104 CELLULAR IMMUNOLOGY
PR: GMS 6600-GMS 6300 or CC. (4)

GMS 6105 ADVANCES IN IMMUNOLOGY
PR: GMS 6600-GMS 6300 or CC. (3)

GMS 6106 IMMUNOCHEMISTRY
PR: GMS 6600-GMS 6300 or CC. (4)

GMS 6107 ADVANCES IN VIROLOGY
PR: GMS 6600-GMS 6300 or CC. (3)

GMS 6108 MICROBIAL PHYSIOLOGY AND GENETICS
PR: GMS 6600-GMS 6300 or CC. (3)

GMS 6109 REGULATORY CONTROL MECHANISMS IN ANIMAL CELL SYSTEMS
PR: GMS 6600-GMS 6300 or CC. (3)

GMS 6110 HOST-PARASITE INTERACTIONS
PR: GMS 6600-GMS 6300 or CC. (4)

GMS 6417 ANIMAL RESEARCH METHODS
PR: GMS 6600-GMS 6300 or CC.
# Obstetrics/Gynecology

**Chairperson:** J. M. Ingram; **Professors:** D. Cavanagh, J. M. Ingram; **Associate Professors:** W. R. Anderson, R. A. Knuppel, H. Prapatt, B. S. Verkauf; **Assistant Professors:** P. J. Bouis, Jr., A. M. Messina.

<table>
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<tr>
<th>Course Code</th>
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<tr>
<td>MEL 7404</td>
<td>Gynecologic Oncology</td>
<td>Admission to College of Medicine.</td>
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<tr>
<td>MEL 7440</td>
<td>Research in Obstetrics/Gynecology</td>
<td>Admission to College of Medicine.</td>
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<tr>
<td>MEL 7411</td>
<td>Preparation for Practice</td>
<td>Admission to College of Medicine.</td>
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<tr>
<td>MEL 7410</td>
<td>The Infertile Couple</td>
<td>Admission to College of Medicine.</td>
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<tr>
<td>MEL 7412</td>
<td>Infectious Disease in Obstetrics and Gynecology</td>
<td>Admission to College of Medicine.</td>
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# Ophthalmology

**Chairperson (Acting):** W. E. Layden; **Professors:** W. Biersdorf, W. C. Edwards; **Associate Professors:** W. E. Layden, L. D. Perry, E. Torczyński; **Assistant Professors:** W. S. Grizzard, R. J. Gistalter, J. B. Hess, J. D. Kingham, H. Kolodner, F. I. Mendelblatt, J. J. Older, J. A. Rush.

<table>
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<tr>
<td>MEL 7503</td>
<td>Tutorial Course of Advanced Ophthalmology</td>
<td>Admission to College of Medicine.</td>
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<tr>
<td>MEL 7501</td>
<td>Medical Ophthalmology</td>
<td>Admission to College of Medicine.</td>
</tr>
<tr>
<td>MEL 8524</td>
<td>Ophthalmic Research</td>
<td>Admission to College of Medicine.</td>
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# Pathology

**Chairperson (Acting):** J. U. Balis; **Professors:** H. A. Azar, J. U. Balis, P. Byvoet, D. G. Halkias; **Associate Professor:** R. L. Martin; **Assistant Professors:** C. G. Espinoza, E. L. Lee, M. Lotz, A. Richman, S. Saba, S. A. Shelley, T. Y. Wang; **Assistant Research Scientists:** J. E. Paciga, J. F. Paterson, B. H. Shinoda.

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<td>BMS 7611C</td>
<td>Elective in Laboratory Medicine</td>
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<tr>
<td>BMS 7661C</td>
<td>Experimental Pathology</td>
<td>Enrolled in College of Medicine.</td>
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<tr>
<td>BMS 7662C</td>
<td>Surgical Pathology</td>
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<td>BMS 7663C</td>
<td>Pathological Anatomy</td>
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<td>GMS 6111</td>
<td>Human Systemic Pathology</td>
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<td>GMS 6112</td>
<td>Biochemical Pathology</td>
<td>(3)</td>
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<td>GMS 6113</td>
<td>Immunopathology</td>
<td>(3)</td>
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<td>GMS 6300C</td>
<td>Core Course in Pathology</td>
<td>(7)</td>
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<td>GMS 6301</td>
<td>Advanced Gross Pathology</td>
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<tr>
<td>GMS 6302</td>
<td>Advanced Microscopic Pathology</td>
<td>(2)</td>
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<tr>
<td>GMS 6303</td>
<td>Electron Microscopy of Disease States</td>
<td>(3)</td>
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<tr>
<td>GMS 6304</td>
<td>Autoradiographic Techniques</td>
<td>(2)</td>
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# Pediatrics

**Chairperson:** L. A. Barness; **Professors:** L. A. Barness, F. J. Cozzetto, A. W. Root; **Associate Professors:** L. Cimino, J. S. Curran, J. A. Hallock, J. M. Judisch, J. I. Malone, W. E. Rush, T. A. Nesco, P. R. Williams; **Assistant Professors:** S. Brodsky, R. M. Cavanagh, Jr., J. M. Cozzetto, A. W. Root, K. E. Toomey, A. Vargas.

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<td>BCC 6130</td>
<td>OBSTETRICS-GYNECOLOGY CLERKSHIP</td>
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<tr>
<td>MEL 7501</td>
<td>INPATIENT PEDIATRICS, TAMPA GENERAL HOSPITAL</td>
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<td>MEL 7563</td>
<td>PEDIATRIC NEPHROLOGY</td>
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<td>MEL 7565</td>
<td>NEONATOLOGY</td>
<td>Enrolled in College of Medicine.</td>
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<td>MEL 7591</td>
<td>RESEARCH IN PEDIATRIC MEDICINE AND GENETICS</td>
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<tr>
<td>MEL 7596C</td>
<td>DIABETES &amp; METABOLIC DISEASE RESEARCH</td>
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<tr>
<td>MEL 8555</td>
<td>ALL CHILDREN'S HOSPITAL</td>
<td>Enrolled in College of Medicine.</td>
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<td>MEL 8566</td>
<td>PEDIATRIC ENDOCRINOLOGY-CLINICAL</td>
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<td>MEL 8567</td>
<td>PEDIATRIC PRACTICE</td>
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<td>MEL 8568</td>
<td>PEDIATRIC HEMATOLOGY-ONCOLOGY</td>
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<td>MEL 8570</td>
<td>GENETICS ELECTIVE</td>
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<td>NEONATAL RESEARCH</td>
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<td>MEL 8595</td>
<td>PEDIATRIC ENDOCRINE RESEARCH</td>
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# Pharmacology

**Chairperson:** D. L. Smith (acting); **Professors:** D. L. Smith, A. Szentivanyi; **Associate Professors:** D. F. Fitzpatrick, J. J. Kranowski, Jr., J. B. Polson, J. F. Williams; **Assistant Professors:** J. F. Hackney, J. R. Wiggins.

<table>
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<tr>
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<td>BMS 6420</td>
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<td>BMS 7371</td>
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<tr>
<td>BMS 7462</td>
<td>PULMONARY PHARMACOLOGY</td>
<td>Enrolled in College of Medicine.</td>
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<tr>
<td>BMS 7463</td>
<td>DRUG METABOLISM AND PHARMACOGENETICS</td>
<td>Enrolled in College of Medicine.</td>
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<tr>
<td>BMS 7464C</td>
<td>RESEARCH IN PHARMACOLOGY</td>
<td>Enrolled in College of Medicine.</td>
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<tr>
<td>BMS 7469</td>
<td>PSYCHOPEPHARMACOLOGY</td>
<td>Enrolled in College of Medicine.</td>
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<tr>
<td>BMS 7470</td>
<td>CLINICAL PHARMACOLOGY OF CARDIOVASCULAR AGENTS</td>
<td>Enrolled in College of Medicine.</td>
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<tr>
<td>BMS 7472</td>
<td>CLINICAL PHARMACOLOGY OF ANTIBIOTICS</td>
<td>Enrolled in College of Medicine.</td>
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<tr>
<td>BMS 6469</td>
<td>AUTONOMIC PHARMACOLOGY</td>
<td>(var.)</td>
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<tr>
<td>GMS 600C</td>
<td>GMS 600C-GMS 6300C or CC.</td>
<td>Enrolled in College of Medicine.</td>
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</table>
GMS 6500C  CORE COURSE IN PHARMACOLOGY  (7)  
PR: Admission to Ph.D. program in Medical Sciences.

GMS 6501  THEORETICAL PHARMACOLOGY  (5-10)  
PR: BMS 6600-GMS 6300 or CC.

GMS 6502  CLINICAL PHARMACOLOGY  (5-10)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6503  PHARMACOLOGY LABORATORY  (2-4)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6504  IMMUNOPHARMACOLOGY  (3-6)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6505  PHARMACOLOGY OF BACTERIAL PRODUCTS  (4-8)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6506  THE PHARMACOLOGY OF BIOLOGICAL MEMBRANES  (4-8)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6507  DRUG METABOLISM  (3-6)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6508  DRUG ADDICTION, TOLERANCE AND PHYSICAL DEPENDENCE  (2-4)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6509  THE HISTORY OF PHARMACOLOGICAL THOUGHT  (1-2)  
PR: GMS 6600-GMS 6300 or CC.

PHYSIOLOGY


BMS 6500  MEDICAL PHYSIOLOGY  (var.)  
PR: Admission to College of Medicine.

BMS 6530  PHYSIOLOGY SEMINAR  (0)  
PR: Consent of Chairman, Department of Physiology.

BMS 7560  RESEARCH IN PHYSIOLOGY  (var.)  
PR: Enrolled in College of Medicine.

BMS 7561  CARDIO-PULMONARY-RENAL PHYSIOLOGY  (var.)  
PR: Enrolled in College of Medicine.

GMS 6400C  CORE COURSE IN PHYSIOLOGY  (7)  
PR: Admission to Ph. D. Program in Medical Sciences.

GMS 6401  KIDNEY, FLUIDS AND ELECTROLYTES  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6402  RESPIRATION  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6403  ENDOCRINE MECHANISMS  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6404  NEUROPHYSIOLOGY  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6405  NERVE, MUSCLE AND SYNAPSE  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6406  CARDIAC MUSCLE  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6407  SMOOTH MUSCLE  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6408  SKELETAL MUSCLE  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6409  PERIPHERAL CIRCULATION  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6410  CARDIOVASCULAR REGULATION  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6411  CARDIOPULMONARY CIRCULATION  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6412  HEMODYNAMICS  (3)  
PR: GMS 6600-GMS 6300 or CC.

GMS 6413  PHYSIOLOGICAL BASIS OF CARDIOLOGY  (3)  
PR: GMS 6600-GMS 6300 or CC.

PSYCHIATRY


BMS 6840  INTRODUCTION TO PSYCHIATRY  (var.)  
PR: Admission to College of Medicine.

BMS 6850  PSYCHIATRY SEMINAR  (0)  
PR: GMS 6600-GMS 6300 or CC.

BMS 6880  BIOSTATISTICS  (var.)  
PR: Admission to College of Medicine.

BCC 6150  PSYCHIATRY CLERKSHIP  (var.)  
PR: Admission to College of Medicine.

MEL 7602  ELECTIVE IN CHILD PSYCHIATRY  (var.)  
PR: Enrolled in College of Medicine.

MEL 7607  INTRODUCTION TO PSYCHOSOMATIC MEDICINE  (var.)  
PR: Enrolled in College of Medicine.

MEL 8664  PSYCHIATRIC RESEARCH  (var.)  
PR: Enrolled in College of Medicine.

RADIOLOGY


MEL 7700  GENERAL RADIOLOGY  (var.)  
PR: Enrolled in College of Medicine.

SURGERY


BCC 6160  SURGERY CLERKSHIP  (var.)  
PR: Admission to College of Medicine.

MEL 7760  ANESTHESIOLOGY ELECTIVE  (var.)  
PR: Enrolled in College of Medicine.

MEL 7800  GENERAL SURGERY ELECTIVE  (var.)  
PR: Enrolled in College of Medicine.

MEL 7801  GENERAL SURGERY PRECEPTORSHIP  (var.)  
PR: Enrolled in College of Medicine.

MEL 7805  PLASTIC AND RECONSTRUCTIVE SURGERY ELECTIVE  (var.)  
PR: Enrolled in College of Medicine.

MEL 7806  PLASTIC SURGERY PRECEPTORSHIP  (var.)  
PR: Enrolled in College of Medicine.

MEL 7807  THORACIC SURGERY ELECTIVE  (var.)  
PR: Enrolled in College of Medicine.

MEL 7812  NEUROSURGERY ELECTIVE  (var.)  
PR: Enrolled in College of Medicine.

MEL 7813  OTO-LARYNGOLOGY ELECTIVE  (var.)  
PR: Enrolled in College of Medicine.
COLLEGE OF NATURAL SCIENCES

ASTRONOMY

UNDERGRADUATE COURSES

AST 2005 DESCRIPTIVE ASTRONOMY I (5)
History of astronomy, celestial phenomena, timekeeping, astronomical instruments, properties of light, contents and elementary dynamics of the solar system. Descriptive approach with a minimum of mathematics. No credit for astronomy majors.

AST 2006 DESCRIPTIVE ASTRONOMY II (5)
Distances, fundamental properties and evolution of stars; the sun as a star, unusual stars (exploding stars, pulsating stars, etc.); the nature of the Galaxy and other galaxies, cosmology. Descriptive approach with a minimum of mathematics. No credit for astronomy majors.

AST 230C ILLUSTRATIVE ASTRONOMY (4)
Constellations, use of small telescopes, etc., apparent motions of celestial objects, comets and meteors, seasons and weather. Current events in the space program. Planetarium and open sky demonstrations. No credit for astronomy majors. Lec.-lab.

AST 3033 CONTEMPORARY THINKING IN ASTRONOMY (5)
PR: Junior or senior standing or CI. Current concepts of astronomy and space science of general interest; background facts; artificial satellites, space probes; surface conditions of planets and evolution of the star; cosmology. No credit for astronomy majors or mathematics majors.

AST 3043 HISTORY OF THE SCIENCE OF ASTRONOMY (5)
To familiarize seriously interested students with the history of astronomy and the influence of this discipline on the development of human knowledge.

AST 3652 NAVIGATION (3)
PR: Some knowledge of geometry, algebra and trigonometry. Timekeeping, use of sextant, constellations, navigation with minimum equipment, some spherical astronomy.

AST 3930 SELECTED TOPICS IN ASTRONOMY (1-5)
PR: CI. Course content will depend upon the interest of the faculty member and student demand. May be repeated up to 8 credit hours.

GRADUATE COURSES

AST 5506 INTRODUCTION TO CELESTIAL MECHANICS (5)
PR: MAC 3411 and some knowledge of differential equations, or CI. The two-body problem, artificial satellites, elements of perturbation theory.

AST 5932 SELECTED TOPICS IN ASTRONOMY (1-6)
PR: Senior or advanced junior standing or CI. Intensive coverage of special topics to suit needs of advanced students.

AST 6507 CELESTIAL MECHANICS (6)
PR: AST 5506 or CI. Planetary theory, lunar theory, Hamiltonian systems, canonical variables, restricted three-body problem, artificial satellite theory, equilibrium and resonance. Certain topics will be emphasized according to the needs of the students.

BIOLOGY

UNDERGRADUATE COURSES

APB 2130 ENVIRONMENT (4)
The application of basic principles of ecology to relevant problems and topics relating to man's environmental interaction through consideration of scientific and popular literature. For non-majors.

APB 2140 FOODS AND DRUGS (4)
The application of basic biological principles to relevant problems and topics in nutrition and drugs through the consideration of scientific and popular literature. For non-majors.

APB 2160 GENES AND PEOPLE (4)
The application of basic biological principles of human heredity to relevant problems and topics through the consideration of scientific and popular literature. For non-majors.

APB 2250 SEX, REPRODUCTION AND POPULATION (4)
The application of basic biological principles from subject areas to relevant problems and topics through the consideration of scientific and popular literature. For non-majors. Qtr. I-IV.

APB 3110 MAN, MICROBE AND MOLECULE (4)
Origin of life, control of diseases, environmental quality and the use of microorganisms as tools in searching for molecular explanations of living phenomena. For non-majors.

APB 3123 MAN'S BIOLOGICAL ENVIRONMENT (4)

BOT 4663 INTRODUCTION TO TROPICAL BIOLOGY (5)
PR: BSC 210C, BSC 211C, BSC 212 or CI. The tropical environment and its effect on plant and animal communities. Plant and animal interactions and man's impact on the environment.

BSC 210C FUNDAMENTALS OF BIOLOGY I (4)
A brief review of living organisms, respiration, photosynthesis, cell structure, and specialization. Lec.-lab. Qtr I, II.

BSC 211C FUNDAMENTALS OF BIOLOGY II (4)
Cell division, genetics, reproduction and development, physiology. Lec.-lab. Qtr II, III.

BSC 212 FUNDAMENTALS OF BIOLOGY III (4)
Neurophysiology, behavior patterns, genetics, and evolution; ecology. Lec.-dis. Qtr. I, III.
BSC 2933 TOPICS IN BIOLOGY (4)
Lectures, individual reading, movies, classroom discussions, and evaluation of selected biological topics, reflecting biological principles. For non-majors.

BSC 3263 INTRODUCTORY MARINE BIOLOGY (3)
PR: BSC 2010C, BSC 2011C, BSC 2012 or CI. An introduction to the marine environment, the types of organisms found inhabiting a variety of marine habitats, and the adaptations of the organisms to those habitats. Emphasis is placed on shallow water Florida environments. Majors and non-majors.

BSC 4905 INDEPENDENT STUDY (1-4)
PR: CI. Specialized independent study determined by the student's needs and interests. The written contract required by the College of Natural Sciences specifies the regulations governing independent study. May be repeated. (S/U only.)

BSC 4910 UNDERGRADUATE RESEARCH (1-6)
PR: CI. Individual investigation with faculty supervision. (S/U only.)

BSC 4930 SEMINAR IN BIOLOGY (1)
PR: CI. Senior or advanced junior standing. May be repeated once. (S/U only.)

BSC 4933 SELECTED TOPICS IN BIOLOGY (1-4)
PR: CI.

PCB 2670 EVOLUTION (4)
The application of basic principles of evolution with an emphasis upon man through the consideration of scientific and popular literature. For non-majors.

PCB 3063 GENERAL GENETICS (4)

PCB 3183C HISTOLOGICAL TECHNIQUES (5)

PCB 4023 CELL BIOLOGY I (5)
PR: CHM 3211, CHM 3211L and PCB 3063. A discussion of the concept and significance of the cell to biology; biological molecules and metabolic processes within the cell; cellular energy conversion systems; and control of cellular metabolism. Qtr. I, II.

PCB 4043C CELL BIOLOGY II (5)
PR: PCB 4023C. A continuation of Cell Biology I. The structure and function of cells and their organelles: irritability and contraction; cell differentiation, growth and integration of cellular activity. Qtr II, III.

PCB 4043C PRINCIPLES OF ECOCOLOGY (4)

PCB 4064 EXPERIMENTAL GENETICS (4)
PR: PCB 3063 or CI. Experimental analysis of genetic systems. Lec-lab: 2 hour lec.; 2-3 hour labs.

PCB 4674 ORGANIC EVOLUTION (4)
PR: PBC 3063 or CI. An introduction to modern evolutionary theory. Lecture on population genetics, adaptations, speciation theory, phylogeny, human evolution and related areas.

GRADUATE COURSES

BSC 5931 SELECTED TOPICS IN BIOLOGY (1-4)
PR: CI. Each topic is a course in directed study under supervision of a faculty member.

BSC 6907 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

BSC 6910 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

BSC 6912 GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

BSC 6932 SELECTED TOPICS IN BIOLOGY (1-6)
PR: CI.

BSC 6935 GRADUATE SEMINAR IN BIOLOGY (1)
PR: CI. (S/U only.)

BSC 6945 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

BSC 7912 DIRECTED RESEARCH (var.)
PR: GR. Ph. D. level. Repeatable. (S/U only.)

BSC 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

PCB 5115C CYTOGENETICS (4)

PCB 5215C PRINCIPLES OF IMMUNOLOGY (4)
PR: PCB 4023C or CI. Course will emphasize the biological principles involved in the vertebrate immune response. It will present the homeostatic, defense, and detrimental aspects of the immune system in terms of basic cellular and molecular mechanisms. Techniques will be described to familiarize the student with the types of immunological tools available to the cellular and molecular biologist.

PCB 5525C MOLECULAR GENETICS (4)
PR: PCB 3063. Detailed examination of DNA, RNA and protein synthesis; the effects of mutations on proteins, cellular control; selected aspects of viral, bacterial, and fungal genetics. Lec.-lab. Qtr II.

PCB 5615 EVOLUTIONARY GENETICS (4)
PR: PCB 3063 or CI. Examination of factors such as mutation, migration, natural selection, and genetic drift which modify the genetic structure of populations.

PCB 5835C NEUROPHYSIOLOGY (4)
PR: PCB 4743C. A comparative analysis of the physico-chemical basis and evolution of nervous systems and sensory mechanisms. Lec.-lab.

PCB 6176C ULTRASTRUCTURE TECHNIQUES IN ELECTRON MICROSCOPY (6)

PCB 6356 TROPICAL ECOLOGY (4)
PR: PCB 4043C. Graduate Standing or CI. A discussion of a series of related ecological topics to illustrate the features peculiar to the tropics.

PCB 6426C POPULATION BIOLOGY (4)
PR: PCB 5615 and PCB 6456C or CI. Introduction to population dynamics with emphasis on the ecological components of population growth, competition, and predation.

PCB 6456C BIOMETRY (4)
PR: MAC 2242, MAC 2243, MAC 2244 or CI. An introduction to statistical procedures for research in the biological sciences. Experimental design, analysis of data, and presentation of results are emphasized.

Botany

UNDERGRADUATE COURSES

APB 3103 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.

BGT 3010 INTRODUCTION TO BOTANY (5)
PR: BSC 2010C, BSC 2011C, BSC 2012 or equivalent. Knowledge of basic biological principles will be assumed. A presentation of the fundamentals of plant life; structure and
function of flowering plants; history of agriculture, plants and man; plant distribution and ecology; survey of major plant groups, algae, fungi, bryophytes, ferns, gymnosperms and flowering plants.

**BOT 3143C** **FIELD BOTANY**
- **PR:** BSC 2010C, BSC 2011C, BSC 2012 or CI. Identification and classification of native and naturalized flowering plants of Florida including historical, climatic and floristic aspects of plant communities. Conducted largely in the field. Lec.-lab.

**BOT 3713C** **SYSTEMATIC BOTANY**
- **PR:** BOT 3010. Identification and classification of the more interesting vascular plants of Florida; angiosperm evolution; principles of taxonomy. Conducted largely in the field.

**BOT 3823C** **HORTICULTURAL BOTANY**
- **PR:** Course in botany, biology or CI. Application of principles of botany to give an understanding of basic horticultural operations; seed sowing, dormancy growth requirements, vegetative propagation, pruning, and related problems. Lec.-lab.

**BOT 4223C** **PLANT ANATOMY**
- **PR:** BOT 3010. Comparative studies of tissue and organ systems of fossil and present-day vascular plants. Functional and phylogenetic aspects stressed. Lec.-lab.

**BOT 4353C** **MORPHOLOGY OF VASCULAR PLANTS**
- **PR:** BOT 3010. An intensive survey of the morphology, evolution and taxonomy of the various groups of vascular plants, both living and extinct. The course will focus primarily on lower groups such as the ferns and gymnosperms but will conclude with an analysis of the origins and general features of the angiosperms.

**BOT 4434C** **MYCOLOGY**
- **PR:** BOT 3010 or CI. A survey of the fungi with emphasis on their taxonomy, morphology, physiology and economic importance. Lec.-lab.

**BOT 4503** **PLANT PHYSIOLOGY**
- **PR:** PCB 4023C, CR: PCB 4024C. Fundamental activities of plants; absorption, translocation, transpiration, metabolism, growth, and related phenomena. Lec.-lab.

**BOT 4933** **SEMINAR IN BOTANY**
- **PR:** Senior or advanced junior standing and CI. May be repeated once. (S/U only.)

**GRADUATE COURSES**

**BOT 5185** **MARINE BOTANY**
- **PR:** BOT 3010, PCB 4043C, or CI. A field course in marine plants with emphasis on ecology and functional morphology. Field work will stress the ecological aspects of plants in a subtropical marine environment in Florida. Lec.-lab.

**BOT 5405** **PHYSIOLOGY**
- **PR:** BOT 3010 or CI. A detailed survey of the algae emphasizing both taxonomy and morphology of fresh and marine water forms; field and laboratory investigations, including individual projects. Lec.-lab.

**BOT 5495** **PHYSIOLOGY OF THE FUNGI**
- **PR:** BOT 4434C or CI. The biochemical, physiological, and hormonal basis involved in morphogenesis and cellular control in fungi. Lec.

**BOT 5565C** **PHYSIOLOGY OF PLANT GROWTH AND DEVELOPMENT**
- **PR:** BOT 4503, BSC 2010C, BSC 2011C, BSC 2012 and CI. A study of plant development with emphasis on the role of light and growth hormones on the process of flowering, fruit set, ripening, and senescence.

**BOT 5605** **PLANT ECOLOGY**
- **PR:** BOT 3010, PCB 4043C or CI. Distribution and nature of vegetation in relation to climatic, physiographic, edaphic, and biotic factors; field investigations of subtropical Florida plant communities. Lec.-lab.

**BOT 5725C** **TAXONOMY OF FLOWERING PLANTS**
- **PR:** BOT 3713C or CI. A phylogenetic study of Angiosperms; relationships 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.

**Microbiology**

**UNDERGRADUATE COURSES**

**APB 4053C** **APPLIED BACTERIOLOGY**
- **PR:** MCB 3010C. A study of the applications of microbiology to industry, agriculture, medicine, and sanitary engineering. Lec.-lab.

**MCB 3010C** **INTRODUCTION TO MICROBIOLOGY**
- **PR:** BSC 2010C, BSC 2011C, BSC 2012; CHM 2045, CHM 2046, CHM 2047, or CHM 2030, CHM 2031, CHM 2032 (if approved by student's program). One quarter of organic chemistry and a course in genetics is recommended. Introduction to the biology of micro-organisms: structure, physiology, and ecology of bacteria, algae, viruses, protozoa and lower fungi. The laboratory involves preparation of culture media, staining, pure culture methodology, isolation of microbes from nature, enumeration techniques, resistance to infectious disease.

**MCB 4030L** **LABORATORY IN EXPERIMENTAL MICROBIOLOGY**
- **PR:** MCB 3010C, CI; CR: MCB 4404. Course will consist of individually performed exercises to teach major techniques in quantitative, experimental microbiology with emphasis on biochemical and physiological examination of bacteria and viruses, their chemical composition, enzymatic, molecular and physical properties.

**MCB 4115** **DETERMINATIVE BACTERIOLOGY**
- **PR:** MCB 3010C. Survey of bacterial classification; detailed examinations of bacteria important to man in agriculture, in industry and as pathogens. Qtr. II.

**MCB 4163L** **LABORATORY METHODS IN DIAGNOSTIC MICROBIOLOGY**
- **PR:** MCB 3010C; CR: MCB 4115 or MCB 5206. Laboratory procedures necessary to identify pathogenic and commonly encountered bacteria, fungi and other parasites will be individually performed. These procedures will include determinations of morphology, physiological reactions, and immunological responses as appropriate.
ment, regulation, inhibition and death of microorganisms and to the chemical alterations they catalyze.

MCB 4505C VIROLOGY
PR: MCB 3010C or 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.

MCB 4934 SEMINAR IN MICROBIOLOGY
PR: Senior or advanced junior standing and CI. May be repeated. (S/U only.)

GRADUATE COURSES

APB 5575C MEDICAL MYCOLOGY
PR: MCB 3010C 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.

MCB 5115C ADVANCED BACTERIOLOGY
PR: MCB 3010C. Ultrastructure, growth, metabolism, genetics and ecology of the bacterial and related procaryotes.

MCB 5206 PATHOGENIC MICROBIOLOGY
PR: MCB 3010C. A comprehensive survey of pathogenic microbes responsible for disease in man and other animals. These pathogens will be studied with respect to their morphology, cultivation, mechanisms of pathogenicity, infection, laboratory diagnosis, and epidemiology.

MCB 5605 MICROBIAL ECOLOGY
PR: MCB 3010C, CI. A study of the theory and methodology of the quantification of microbial processes in natural habitats with special emphasis on aquatic and terrestrial systems.

MCB 5606 LABORATORY METHODS IN MICROBIAL ECOLOGY
CR: MCB 5605 or CI. A study of the application of laboratory methods of microbiology to assess microbiological activities in natural systems in both qualitative and quantitative terms.

MCB 5936 SELECTED TOPICS IN MICROBIOLOGY
PR: CI. Each topic is a course in directed study under supervision of a faculty member.

MCB 6459 ADVANCED TOPICS IN CHEMICAL MICROBIOLOGY
PR: MCB 4404, Biochemistry or CI. An in-depth study of metabolic and physiological phenomena associated with microorganisms, especially bacteria, including: growth, regulation, unique metabolic traits, morphogenesis, cell division, cell death and survival mechanisms.

MCB 6919 INDEPENDENT STUDY
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

MCB 6971 THESIS: MASTER'S
Repeatable. (S/U only.)

PCB 6236 ADVANCED IMMUNOLOGY
PR: CI. Discussion of the basic immune reaction, nature of antigenicity; basic immunological techniques and their use in biological research and the medical sciences.

PCB 6606 BACTERIAL GENETICS
PR: MCB 4404, PCB 3063 or CI. A survey of the recombinational systems found among the bacterial and 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.

Zoology

UNDERGRADUATE COURSES

ENY 4004 INTRODUCTION TO ENTOMOLOGY
PR: BSC 2010C, BSC 2011C, BSC 2012. An introduction to the general aspects of insect morphology, development, and classification. The identification of local forms will be emphasized. Lec.-lab., Qtr. II (odd numbered years).

PCB 4184C HISTOLOGY
PR: PCB 4253C and/or ZOO 3713C. Comparative approach to the study of tissues and the relation of their structure and function. Lec.-lab.

PCB 4253C DEVELOPMENTAL BIOLOGY
PR: PCB 4023C, PCB 4024C. Structural and functional events involved in differentiation and morphogenesis. Lec.-lab., Qtr. I, III.

PCB 4743C ANIMAL PHYSIOLOGY
PR: PCB 4023C; CR: PCB 4042C. Advanced presentation of mechanisms employed by animals to interact with their environment and to maintain their organization.

ZOO 3203C INTRODUCTORY INVERTEBRATE ZOOLOGY
PR: BSC 2010C, BSC 2011C, BSC 2012. An introduction to the major invertebrate groups, with emphasis on local forms. Field work will be required. Lec.-lab.

ZOO 3713C COMPARATIVE VERTEBRATE ANATOMY

ZOO 3823C BIOLOGY OF TERRESTRIAL ARTHROPODS
PR: BSC 2010C, 2011C, 2012C or CI. An introduction to the biology of insects, spiders, and centipede and millipede groups. Lectures and laboratories will emphasize anatomy, physiology, behavior, and ecology of these organisms. Field work will be required. Majors and non-majors.

ZOO 4303C VERTEBRATE ZOOLOGY

ZOO 4583C ANIMAL SOCIAL BEHAVIOR
PR: CI. An introduction to comparative animal behavior (Ethology), with emphasis on communication, social use of space, and behavioral evolution.

ZOO 4583C PRIMATE SOCIAL BEHAVIOR

ZOO 4893 WILDLIFE AND FISH MANAGEMENT
PR: BSC 2010C, BSC 2011C, BSC 2012, PCB 4043C. 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.

ZOO 4932 SEMINAR IN ZOOLOGY
PR: Upper level. May be repeated once. (S/U only.)

GRADUATE COURSES

ENY 5501 AQUATIC ENTOMOLOGY
PR: ENY 4004. Taxonomy, development, and ecology of aquatic insects with emphasis on local forms. Lec.-lab., Qtr. II (odd numbered years).

PCB 5306C LIMNOLOGY
PR: CI. An introduction to the physical, chemical, and biological nature of fresh-water environments. Lec.-lab., Qtr. III.

PCB 5325C TERRESTRIAL ANIMAL ECOLOGY
PR: PCB 4043C. Field and laboratory investigations of the basic principles of ecology as applied to terrestrial animals. Lec.-lab.

PCB 5725C COMPARATIVE PHYSIOLOGY
PR: PCB 4023C, PCB 4024C. The evolution of physiological mechanisms. Lec.-lab., Qtr. I.

PCB 6376C PHYSIOLOGICAL ECOLOGY
PR: CI. Effect of environmental factors on animal function at the cellular and organ system level with emphasis on control and mechanism. Lec.-lab.

PCB 6756 COMPARATIVE METABOLISM
PR: PCB 4023C, PCB 4024C, CHM 3210, CHM 3210L, CHM 3211, CHM 3211L, BCH 3033, or their equivalents.
Some knowledge of Animal Phylogeny will be assumed. A presentation of various metabolic pathways found in invertebrate animals including specializations related to parasitism and facultative anaerobiosis.

PCB 6776C PHYSIOLOGY OF MARINE ANIMALS (5)
PR: PCB 4025C, PCB 4024C. A study of the physiological mechanisms of animals in the marine environment. Lec.-lab.

PCB 6816 COMPARATIVE ENDOCRINOLOGY (4)
PR: PCB 5725C or CI. An analysis of the similarities and differences between the hormonal mechanisms of mammals, other vertebrates; and invertebrates. Lecture only.

ZOO 5235C PARASITOLOGY (5)
PR: BSC 2010C, BSC 2011C, BSC 2012. Fundamentals of animal parasitology and parasitism; the biology of selected animal parasites, including those of major importance to man. Lec.-lab., Qtr. II.

ZOO 5255C BIOLOGY OF ECHINODERMS (5)
PR: PCB 4024C, ZOO 3203C. A study of the anatomy, physiology and ecology of echinoderms. Lec.-lab., Qtr. I (even numbered years).

ZOO 5415C BIOLOGY OF THE AMPHIBIA (5)
PR: ZOO 3713C or ZOO 4303C and CI. Major aspects of amphibian biology emphasizing fossil history, evolutionary morphology, sensory physiology, life history and reproductive behavior. Lec.-lab. Field trip Qtr. III (even numbered years).

ZOO 5425C BIOLOGY OF THE REPTILIA (5)
PR: ZOO 3713C or ZOO 4303C and CI. Major aspects of reptilian biology emphasizing fossil history, evolutionary morphology, sensory physiology, life history, and reproductive behavior. Lec.-lab. Field trip Qtr. III (odd numbered years).

ZOO 5455C ICTHYOLOGY (5)
PR: ZOO 3713C or ZOO 4303C or CI. Systematics of fishes, including major classification, comparative anatomy, embryology, and general distribution. Lec.-lab. (Also offered under Marine Science.)

ZOO 5475C ORNITHOLOGY (4)
PR: ZOO 3713C or ZOO 4303C or CI. The biology of birds. Field trips emphasize local avifauna. Lec.-lab. Qtr. III.

ZOO 5485C MAMMALOLOGY (5)
PR: ZOO 3713C or ZOO 4303C and CI. The biology of mammals, including systematics, ecology, natural history, and geographical distribution. Lec.-lab.

ZOO 5555C MARINE ANIMAL ECOLOGY (5)
PR: PCB 4043C and ZOO 3203C. Investigation of energy flow, biogeochemical cycles, and community structure in marine environments. Lec.-lab.

ZOO 5815C ZOOGEOGRAPHY (3)

ZOO 5926 SELECTED TOPICS IN ZOLOGY (1-4)
PR: CI. Each topic is a program in directed study under supervision of a faculty member.

ZOO 6506C ADVANCED ANIMAL BEHAVIOR (4)
PR: ZOO 4503C and CI. Recent advances in comparative animal behavior (ethology). Lec.-lab.

ZOO 6616C EXPERIMENTAL EMBRYOLOGY (4)
PR: PCB 4023C, PCB 4024C, PCB 4253C and CI. Lectures, laboratories, readings and discussions relating to contemporary advances in the area of biochemistry of development. Experimental techniques will be studied.

ZOO 6626C INVERTEBRATE REPRODUCTION AND DEVELOPMENT (5)
PR: ZOO 3203C and CI. An analysis of modes of reproduction and patterns of larval development in major invertebrate phyla. Emphasis is on classical descriptive embryology, modern cartilage techniques, and larval ecology. Lec.-lab.

ZOO 6907 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

ZOO 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

CHEMISTRY

Note: Students who do not attend the first class meeting of a chemistry course for which they are registered, without notifying the instructor or department, are subject to being replaced by students who may wish to add the section.

UNDERGRADUATE COURSES

BCH 3033 INTRODUCTORY BIOCHEMISTRY (4)
PR: CHM 3211. Introduction to the chemistry and intermediary metabolism of biologically important substances. Lec. Qtr. I, II, III, IV.

BCH 3033L BASIC BIOCHEMISTRY LABORATORY (3)

CHM 1015 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 2045. Lec. Qtr. I, II, IV.

CHM 2020 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 2030 INTRODUCTION TO GENERAL, ORGANIC AND BIOCHEMISTRY I (3)
PR: Placement exam or CHM 1015. First quarter of a three-quarter sequence. Students enrolling are expected to have performed well in the placement exam or to have satisfactorily completed CHM 1015. This quarter introduces fundamental conceptual and experimental techniques in measurement, atomic and molecular structure, chemical bonding, redox, states of matter, kinetic molecular theory, solutions, equilibrium, reaction kinetics, and acid-base reactions. No credit for science majors.

CHM 2031 INTRODUCTION TO GENERAL, ORGANIC AND BIOCHEMISTRY II (3)
PR: CHM 2030. Second quarter of a three-quarter sequence. This quarter deals with basic principles of organic chemistry with an emphasis on the important functional groups, nomenclature, structure, properties, and reactions. No credit for science majors.

CHM 2032 INTRODUCTION TO GENERAL, ORGANIC AND BIOCHEMISTRY III (3)
PR: CHM 2031. Third quarter of a three-quarter sequence. This quarter deals with the fundamentals of biochemistry, beginning with the structure and function of proteins, nucleic acids, carbohydrates, and lipids, and continuing with the study of the pathways of food-stuff oxidation and synthesis of cell materials in living organisms. No credit for science majors.

CHM 2045 GENERAL CHEMISTRY I* (3)
CHM 2045 students are expected to have performed well in the placement exam* or to have satisfactorily completed CHM 1015. Fundamentals of chemistry; mass and energy relationships in chemical changes, equilibrium, chemical kinetics, atomic and molecular structure, descriptive chemistry of selected elements. Lec.-dis. Qtr. I, II, III, IV.
CHM 2045L GENERAL CHEMISTRY I
LABORATORY (1)
PR: CHM 2045. Laboratory portion of General Chemistry I. Introduction to laboratory techniques; study of properties of elements and compounds; synthesis and analysis of natural and commercial materials. May not be taken concurrently with CHM 2045. Qtr. I, II, III, IV.

CHM 2046 GENERAL CHEMISTRY II
PR: CHM 2045 or equivalent. Continuation of General Chemistry. Lecture.-dis. Qtr. I, II, III, IV.

CHM 2046L GENERAL CHEMISTRY II LABORATORY (1)
PR: CHM 2045L, CHM 2046. Laboratory portion of General Chemistry II. Continuation of chemistry laboratory. May not be taken concurrently with CHM 2046. Qtr. I, II, III, IV.

CHM 2047 GENERAL CHEMISTRY III
PR: CHM 2046 or equivalent. Continuation of General Chemistry. Lecture.-dis. Qtr. I, II, III, IV.

CHM 2047L GENERAL CHEMISTRY III LABORATORY (1)
PR: CHM 2046L. Laboratory portion of General Chemistry III. Continuation of chemistry laboratory. Qtr. I, II, III, IV.

CHM 2055C ACCELERATED GENERAL CHEMISTRY I
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. CHM 2055C-CHM 2056C is equivalent to CHM 2045-CHM 2046-CHM 2047 and CHM 2045L-CHM 2046L-CHM 2047L. Lecture.-lab.-dis. Qtr. I.

CHM 2056C ACCELERATED GENERAL CHEMISTRY II
PR: CHM 2055C. Continuation of Accelerated General Chemistry. Lecture.-lab.-dis. Qtr. II.

CHM 3021 MODERN CHEMICAL SCIENCE
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. III. This course is offered only on WUSF-TV Channel 16 by the O.U. Program.

CHM 3120C ELEMENTARY ANALYTICAL CHEMISTRY
PR: CHM 2047, CHM 2047L or CHM 2056C. Fundamentals of gravimetric, volumetric, spectrophotometric analysis. Lecture.-lab. Qtr. I, II, III, IV.

CHM 3200 ELEMENTARY ORGANIC CHEMISTRY I

CHM 3201 ELEMENTARY ORGANIC CHEMISTRY II
PR: CHM 3200 or equivalent. Structure, nomenclature, properties, preparation and reaction of carbonyl compounds, amines, fats, carbohydrates, amino acids, proteins, nucleic acids, and polymers.

CHM 3210 ORGANIC CHEMISTRY I
PR: CHM 2047, CHM 2047L or CHM 2056C. Fundamental principles of organic chemistry. Lecture. Qtr. I, II, III, IV.

CHM 3210L ORGANIC CHEMISTRY LABORATORY I
PR: CHM 3210. Laboratory portion of Organic Chemistry I. Introduction or organic laboratory principles and techniques. May not be taken concurrently with CHM 3210. Qtr. II, III, IV.

CHM 3211 ORGANIC CHEMISTRY II
PR: CHM 3210 or equivalent. Continuation of organic chemistry. Lecture. Qtr. I, II, III, IV.

CHM 3211L ORGANIC CHEMISTRY LABORATORY II
PR: CHM 3210L. Continuation of organic chemistry laboratory. May not be taken concurrently with CHM 3211L. Dis.-lab. Qtr. I, III, IV.

CHM 3212 ORGANIC CHEMISTRY III
PR: CHM 3211 or equivalent. Continuation of organic chemistry. Lecture. Qtr. I, II, III, IV.

CHM 3212L ORGANIC CHEMISTRY LABORATORY III
PR: CHM 3211L. Continuation of organic chemistry laboratory. Qtr. I, II, IV.

CHM 3400 ELEMENTARY PHYSICAL CHEMISTRY
PR: CHM 2047, CHM 2047L or CHM 2056C, MAC 2243, PHY 2052, PHY 2052L. Introduction to equilibrium properties of macroscopic system. Properties of solutions. Qtr. I, IV.

CHM 3401 ELEMENTARY PHYSICAL CHEMISTRY II
PR: CHM 3400. Kinetic behavior of systems, macromolecular solutions, and colloidal dispersions, nuclear chemistry and spectroscopy. Qtr. II.

CHM 3402C ELEMENTARY PHYSICAL CHEMISTRY LABORATORY
PR: CHM 3400. Physical chemistry laboratory with emphasis on modern techniques and instruments. Lecture.-lab. Qtr. I, II, III.

CHM 3405C INTERMEDIATE INORGANIC CHEMISTRY
PR: CHM 2047, CHM 2047L or CHM 2056C. Fundamental principles of inorganic chemistry. Lecture.-lab. Qtr. II, III, IV.

CHM 4070 HISTORICAL PERSPECTIVES IN CHEMISTRY
PR: CHM 2047 or senior standing, and CI. A study in depth of the historical and philosophical aspects of outstanding chemical discoveries and theories. Lecture.-lab. Qtr. I, III.

CHM 4130C METHODS OF CHEMICAL INVESTIGATION I. ANALYTICAL-PHYSICAL
PR: CHM 3120C, CHM 3121, CHM 3121L. CR: CHM 4410. Introduction to applications of instrumental methods in chemical research with emphasis on electrochemical techniques. Lecture.-lab. Qtr. I, II.

CHM 4131C METHODS OF CHEMICAL INVESTIGATION II. ANALYTICAL-PHYSICAL
PR: CHM 4131C. Continuation of CHM 4131C. Emphasis on spectroscopic techniques. Lecture.-lab. Qtr. II, III.

CHM 4132C METHODS OF CHEMICAL INVESTIGATION III. CHEMICAL SYSTEMS
PR: CHM 4131C. Continuation of CHM 4131C. Emphasis on studies of chemical systems using a variety of techniques. Lecture.-lab. Qtr. III, IV.

CHM 4300 BASIC BIO-ORGANIC CHEMISTRY
PR: CHM 3212 (or CHM 3211 and CI). Nature, structure, elucidation, synthesis and (in selected cases) organic chemical mechanisms of biochemical involvement of the major classes of organic compounds found in living systems. Lecture. Qtr. I.

CHM 4410 PHYSICAL CHEMISTRY I
PR: CHM 3120C and MAC 3283 or MAC 3413. CR: PHY 2052 or PHY 3042. Thermodynamics, the states of matter, solutions. Lecture. Qtr. I, II.

CHM 4411 PHYSICAL CHEMISTRY II
PR: CHM 4410. Introduction to quantum mechanics and molecular spectroscopy. Lecture. Qtr. II.

CHM 4412 PHYSICAL CHEMISTRY III
PR: CHM 4410. Electrochemistry, kinetic theory of gases, chemical kinetics, surface and nuclear chemistry. Lecture. Qtr. III, IV.

CHM 4610 ADVANCED INORGANIC CHEMISTRY
PR: CHM 4410 or CI. An advanced theoretical treatment of inorganic compounds. Lecture. Qtr. III.

CHM 4905 INDEPENDENT STUDY
PR: CI. Specialized independent study determined by the student's needs and interests. The written contract required by the College of Natural Sciences specifies the regulations governing independent study. May be repeated. (S /U only.)
CHM 4931 CHEMISTRY SEMINAR
PR: Senior standing. Discussions of selected significant chemical topics of recent interest. (S/U only.) Qtr. II, III.

CHM 4932 SELECTED TOPICS IN CHEMISTRY
PR: CI. The course content will depend on the interest of faculty members and student demand.

CHM 4970 UNDERGRADUATE RESEARCH
PR: CI. (S/U only.) Qtr. I-IV.

CHS 4100C RADIOCHEMISTRY
PR: CHM 3120. Theory and applications of natural and induced radioactivity. Emphasis on the production, properties, measurement, and uses of radioactive tracers. Lec.-lab. Qtr. I, II.

CHS 4300 FUNDAMENTALS OF CLINICAL CHEMISTRY
PR: BCH 3033. Theoretical and practical aspects of the analysis of various body fluids, with emphasis on the medical significance. Clinical chemistry majors must take CHS 4301L concurrently. Lec. Qtr. I, III.

CHS 4301L CLINICAL LABORATORY
PR: BCH 3033 and CI, CHM 3120C. Laboratory experience in some of the most important clinical determinations. CHS 4300 must be taken concurrently. Lec.-lab. Qtr. I, III.

CHS 4302 CLINICAL CHEMISTRY PRACTICE
PR: CI. Laboratory practice in clinical chemistry laboratories in the Tampa Bay area. Qtr. I-IV. (S/U only.)

CHS 4310C INSTRUMENTAL ANALYSIS
PR: CHM 4412 or CI. Theory and practice of instrumental methods. Clinical Chemistry applications may be elected in the laboratory. Lec.-lab. Qtr. I, II, III, IV.

**GRADUATE COURSES**

**BCH 5065 BIOCHEMISTRY CORE COURSE**
PR: Either CHM 3212, CHM 3212L and CHM 3400 or CHM 4410 or graduate standing. A one-quarter survey course in biochemistry for graduate students in chemistry, biology, and other appropriate fields and for particularly well-qualified undergraduates. Lec. Qtr. I.

**BCH 5105L TECHNIQUES IN BIOCHEMISTRY**
PR: BCH 5065 or BCH 6066. Biochemistry laboratory with emphasis on modern techniques for use in biochemical research. Qtr. III.

**BCH 6066 GENERAL BIOCHEMISTRY I**
PR: BCH 5065 or CI. First quarter of a rigorous three-quarter general biochemistry course for biology graduate students whose primary interests are in this field. Lec. Qtr. I.

**BCH 6067 GENERAL BIOCHEMISTRY II**
PR: BCH 6066. Continuation of General Biochemistry I. Lec. Qtr. II.

**BCH 6068 GENERAL BIOCHEMISTRY III**
PR: BCH 6067. Continuation of General Biochemistry II. Lec. Qtr. III.

**BCH 6506 ADVANCED BIOCHEMISTRY I. ENZYMES**
PR: BCH 6068 or CI. A study of biochemical systems with emphasis on enzymes. Lec. Qtr. I.

**BCH 6706 ADVANCED BIOCHEMISTRY II. BIOORGANIC MECHANISMS**
PR: BCH 6068 or CI. A study of biochemical systems with emphasis on mechanisms of biological reaction. Lec. Qtr. III.

**BCH 6746 ADVANCED BIOCHEMISTRY III. BIOPHYSICAL CHEMISTRY**
PR: BCH 6068 or CI. A study of biochemical systems with emphasis on physical methods of experimentation and interpretation. Lec. Qtr. I.

**CHM 5225 INTERMEDIATE ORGANIC CHEMISTRY**
PR: CHM 3212, CHM 3212L or equivalent. A study of stereochemistry, spectroscopy, theories of bonding, acid-base chemistry, and their application to the understanding of organic reactions. Lec. Qtr. III.

**CHM 5425 APPLICATIONS IN PHYSICAL CHEMISTRY**
PR: CHM 4412. Applications of chemical theory to chemical systems with emphasis on chemical kinetics and molecular spectroscopy. Lec. Qtr. II.

**CHM 5430 CHEMICAL THERMODYNAMICS**
PR: CHM 4412 or CI. The applications of thermodynamic theory to the study of chemical systems with emphasis on the energetics of reactions and chemical equilibria. Lec. Qtr. III.

**CHM 5621 PRINCIPLES OF INORGANIC CHEMISTRY**
PR: CHM 4411 or CI. Chemical forces, reactivity, periodicity, and literature in inorganic chemistry; basic core course. Lec. Qtr. I.

**CHM 5931 SELECTED TOPICS IN CHEMISTRY**
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.

**CHM 6150 ADVANCED ANALYTICAL CHEMISTRY**
PR: CI. A study of complete analytical process, including sample handling, separations, the analysis step, and statistical interpretation of data. Emphasis placed on separations and statistics. Lec. Qtr. II.

**CHM 6153 ELECTROCHEMISTRY**

**CHM 6250 ADVANCED ORGANIC CHEMISTRY I. SYNTHESIS**

**CHM 6260 ADVANCED ORGANIC CHEMISTRY II. PHYSICAL-ORGANIC**

**CHM 6280 ADVANCED ORGANIC CHEMISTRY III. NATURAL PRODUCTS**
PR: CHM 5225 or CI. A study of any of several of the following topics: terpenes, steroids, vitamins, alkaloids, porphyrins, purine, and antibiotics. Qtr. III.

**CHM 6380 ADVANCED ORGANIC CHEMISTRY IV**
PR: CHM 5225. The emphasis will vary from year to year.

**CHM 6440 CHEMICAL KINETICS**
PR: CI. Theory and methods for the study of reaction rates and the elucidation of reaction mechanisms. Lec. Qtr. II.

**CHM 6460 STATISTICAL THERMODYNAMICS**
PR: CI. Application of statistical mechanics to thermodynamics, the relation of molecular structure to thermodynamic properties. Lec.

**CHM 6480 QUANTUM CHEMISTRY**
PR: CI. Introduction to elementary quantum mechanism. Atomic structure and spectra. Lec. Qtr. II.

**CHM 6625 CHEMISTRY OF THE LESS FAMILIAR ELEMENTS**
PR: CI. An integrated treatment of the conceptual and factual aspects of the traditionally less familiar elements, including noblegas elements, unfamiliar non-metals, alkali and alkaline-earth metals and the transition elements. Lec. Qtr. III.

**CHM 6650 STRUCTURAL INORGANIC CHEMISTRY**
PR: CHM 5621 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. III.

**CHM 6907 INDEPENDENT STUDY**
(var.) Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

**CHM 6935 GRADUATE SEMINARS IN CHEMISTRY**
PR: Admission to graduate program in chemistry. Required every quarter (when offered) for all students enrolled in
CHM 6936 CHEMISTRY COLLOQUIUM (1)
PR: Admission to graduate program in Chemistry. Frequent (usually weekly) small-group analysis of current developments. May be repeated up to a cumulative total of 10 hours. (S/U only.)

CHM 6938 SELECTED TOPICS IN CHEMISTRY (1-6)
PR: CI. The following titles are representative of those that are taught under this title: Symmetry and Group Theory, Photochemical Kinetics, Quantum Mechanical Calculations, Advanced Chemical Thermodynamics, Reaction Mechanisms, Advanced Instrumentation, Separations and Characterizations, Spectroscopy, etc.

CHM 6939 CURRENT TOPICS IN CHEMISTRY (1)
PR: Admission to graduate program in chemistry. Required every quarter (when offered) for all students enrolled in chemistry graduate program. Requires participation in and contribution to weekly lecture series in a particular division (analytical, biochemistry, inorganic, organic or physical). Up to 4 credit hours of CHM 6939 may be used to satisfy the level structured course requirement. Must be repeated. (S/U only.)

CHM 6946 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

CHM 6947 GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

CHM 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only)

CHM 6973 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

CHM 7820 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

CHM 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

OCC 6061 MARINE CHEMISTRY (4)
OCC 5050 or CI. Chemical and physical properties of sea water, energy flow in a marine ecosystem, development of the concepts of biogeochemical cycles and master variables, thermodynamics of the carbon dioxide-seawater system, other related topics.

GEOLOGY

UNDERGRADUATE COURSES
GLY 2000 INTRODUCTION TO GEOLOGY (4)
An introduction to the materials, processes, and history of the earth. Students may elect to enroll in GLY 2000L concurrently. No credit for geology majors or students with credit in GLY 3006.

GLY 2000L 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 2000, GLY 2850, or GLY 3006. May not be repeated for credit. No credit for geology majors.

GLY 2016 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. Designed for science majors. Lec.-lab.

GLY 2017 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. Designed for science majors. Lec.-lab.

GLY 2100 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. Designed for science majors. Lec.-lab.

GLY 2850 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 2000L concurrently. No credit for geology majors.

GLY 3005 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 2000, GLY 2850, or GLY 3006 be taken prior to enrollment in GLY 3005. No credit for geology majors.

GLY 3006 GEOLOGY OF OUR NATION'S PARKS (4)
Representative parks used to illustrate current concepts in geology. Students may enroll in GLY 2000L concurrently. For the non-science student. No credit for geology majors or students with credit in GLY 2000.

GLY 3400 STRUCTURAL GEOLOGY (4)
PR: 12 hours of geology. MAC 1114 or equivalent or CI. Study of the origin and development of structural features of the earth's crust. Applications of principles of geology, physics, and mathematics to understanding relationships of strata and interpreting structural features. Lec.-lab.

GLY 3610 PRINCIPLES OF INVERTEBRATE PALEONTOLOGY (5)
PR: GLY 2100 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 3650 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 origins, and scientific value in the rock record. Although no prerequisite is necessary, it is recommended that either GLY 2000, GLY 2850, or GLY 3006 be taken prior to enrollment in GLY 3650. No credit for geology majors.

GLY 3820 INTRODUCTION TO HYDROGEOLOGY (5)
PR: Eight hours of geology. MAC 1114 or equivalent, or CI. Occurrence, circulation and distribution of subsurface water, its chemical and physical properties, relation to the geologic environment, exploration and development. Lec.-field/lab.

GLY 4040 CONCEPTS IN EARTH SCIENCE (5)
Earth's environment in space, including a selected study of its materials, processes, climate, oceans, soils, and history. Lec.-dis.-field trips.

GLY 4200 MINERALOGY (4)
PR: Crystal Chemistry and Crystallography or CI. Properties, origin, and occurrence of geologically and economically important minerals. Laboratory practice in the identification of common minerals on the basis of their physical properties and simple chemical tests. Lec.-lab.

GLY 4210 CRYSTAL CHEMISTRY AND CRYSTALLOGRAPHY (4)
PR: Geology I: Earth's Materials, one year of chemistry and College Trigonometry or equivalent or CI. Principles of crystal chemistry including chemical bonding and coordination, and the fundamentals of crystal structures. Crystal symmetry
and morphology and their recognition. Particular emphasis is placed on mineralogically important examples. Lec.-lab.

GLY 4220 OPTICAL MINERALOGY (4)
PR: Mineralogy or Cl. Theory and use of polarized light microscopy in identification of mineral identification. Special emphasis is placed on the identification of rock forming minerals in thin section. Lec.-lab.

GLY 4511 PRINCIPLES OF STRATIGRAPHY (4)
PR: GLY 4550. 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 4550 DEPOSITIONAL SYSTEMS (4)
PR: GLY 2017, GLY 2100 or equivalent. Study of modern sedimentary environments and their relationships to one another in order to understand environments preserved in the rock record. Physical, chemical, and biological aspects of terrestrial, transitional and marine sedimentary environments will be examined in light of their eventual preservation in rocks.

GLY 4555 SEDIMENTOLOGY (4)
PR: GLY 4950 or Cl. Analysis of sedimentary rocks and sedimentary structures as related to their environments of deposition. Textural and mineralogical study of sediments and statistical applications to sedimentation analysis. Lec.-lab.-field trips.

GLY 4700 GEOMORPHOLOGY (4)
PR: Senior or advanced junior standing and CC. Origin, evolution and distribution of landforms.

GLY 4710 GEOLOGY OF SOILS (4)
PR: Junior standing. Soil genesis, morphology, and mapping. Soil classification, world soil distribution. Applications of soil science to geology, engineering, land use planning, and anthropology.

GLY 4730 MARINE GEOLOGY (4)
PR: 20 hours of geology or Cl. General survey of the geology of the ocean floor from beaches to oceanic trenches including sediments, processes, tectonics and history.

GLY 4750 FIELD METHODS (4)
PR: 20 hours of geology courses or Cl. Fundamentals of geology in the field; compass and plane table mapping, mapping on aerial photos, reconnaissance surveys, interpretation of geologic structure. Lec.-lab.-field trips.

GLY 4816 ECONOMIC MINERAL DEPOSITS (4)
PR: 20 hours of geology or Cl. Principles involved in the origin, occurrence, recovery, and use of mineral resources. Lec.-lab.-field trips.

GLY 4821 HYDROGEOLOGY AND HUMAN AFFAIRS (4)
PR: Open to all junior and senior level students. Geologic analysis 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. No credit for geology majors.

GLY 4905 INDEPENDENT STUDY (1-4)
PR: Cl. Specialized independent study determined by the students' needs and interests. May be repeated. (S/U only.)

GLY 4915 UNDERGRADUATE RESEARCH (1-5)
PR: Senior standing and written permission of department prior to registration. Individual experimental investigations with faculty supervision. (S/U only.)

GLY 4920 GEOLOGY COLLOQUIUM (1)
PR: Senior standing in Geology. Weekly topical lectures by faculty, graduate students and invited speakers. Required of all senior geology majors, to be repeated for a total of 3 credit hours. (S/U only.)

GLY 4930 SELECTED TOPICS IN GEOLOGY (1-6)
Each topic is a course under the direction of a faculty member with the content depending on the interests of the students and faculty involved. All areas of geology included. Departmental permission required prior to registration.

OCE 3001 INTRODUCTION TO OCEANOGRAPHY (3)
Topics in biological, chemical, geological, and physical oceanography presented in lectures by a number of specialists in these fields. (Also listed under Marine Science).

GRADUATE COURSES

GLY 5241 GENERAL GEOCHEMISTRY (4)
PR: One year college chemistry, GLY 4200 or Cl. 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 5245 ANALYTICAL TECHNIQUES IN GEOLOGY (5)
PR: One year college chemistry, GLY 4220 or Cl. 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 5310 IGNEOUS AND METAMORPHIC PETROLOGY (4)
PR: GLY 4220. Systematic study of igneous and metamorphic rocks and complexes, including origin, composition, and classification. Use of the polarizing microscope for thin section analysis will be emphasized, and other modern methods of study will be employed.

GLY 5341 PETROLOGY OF CHEMICAL ROCKS (4)
PR: GLY 3610, GLY 4220 or Cl. 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 5450 PRINCIPLES OF APPLIED GEOPHYSICS (4)
PR: Senior or advanced junior standing, one year of Physics or Cl. Elementary treatment of gravimetric, magnetic, electric, and seismic geophysical techniques as applied to site investigations and mineral deposits. Lec.-lab.-field trips.

GLY 5615 ADVANCED STRATIGRAPHIC PALEONTOLOGY (5)
PR: GLY 3610, GLY 4550 or Cl. Morphology, geologic distribution, and stratigraphic ranges of important invertebrate guide fossils. Lec.-lab.-field trips.

GLY 5825 ADVANCED HYDROGEOLOGY (4)
PR: GLY 3820, MAC 2244 or MAC 3413, or Cl. Flow systems, analytical and numerical solutions to ground water flow problems. Emphasis on the theoretical aspects of ground water flow systems and their interaction with the geologic framework. Lec.-lab.-field trips.

GLY 5932 SELECTED TOPICS IN GEOLOGY (1-5)
PR: Senior or advanced junior standing and CC. Each topic is a course in directed study under supervision of a faculty member. All areas of geology included. Departmental permission required prior to registration.

GLY 6246 CHEMICAL EQUILIBRIA IN THE EARTH (4)
PR: GLY 5241 or Cl. Application of basic solution geochemistry and equilibria concepts to geologic problems with emphasis on geochemical reactions at low temperatures and pressures.

GLY 6250 CLAY MINERALOGY (4)
PR: Graduate standing in geology or Cl. Composition, structures, origin, and diagenesis of clay minerals. Identification of clay minerals by X-ray diffraction techniques.

GLY 6290 SEDIMENTARY GEOCHEMISTRY (4)
PR: GLY 5241 or Cl. Fundamentals of aqueous geochemistry in relation to chemical and biochemical precipitation of sedimentary materials. Geochemistry of fluids with emphasis on diagenesis.

GLY 6349 SANDSTONE PETROGRAPHY (4)
PR: GLY 4220, GLY 4555 or Cl. 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 6351 CARBONATE PETROGRAPHY (4)
PR: GLY 4220, GLY 5341 or equivalent. 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 6575 COASTAL SEDIMENTATION (4)
PR: GLY 4555 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 6660 MARINE PALEOECOLOGY (4)
PR: GLY 3610, GLY 4555 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 6735 SELECTED TOPICS IN GEOLOGY (1-6)
PR: CI. May be repeated for credit.

GLY 6826 DEVELOPMENT OF GROUND WATER RESOURCES (4)
PR: GLY 5825 or CI. Emphasis on ground water exploration, evaluation, and exploitation. Study of well hydraulics, geophysical and geochemical exploration and evaluation, hydrogeologic systems analysis. Lec.-lab.-field trip.

GLY 6905 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

GLY 6910 DIRECTED RESEARCH (var.)
PR: GR. Master’s level. Repeatable. (S/U only.)

GLY 6911 GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

GLY 6931 GRADUATE SEMINAR (1)
PR: CC. May be repeated for credit. (S/U only.)

GLY 6933 ADVANCED TOPICS IN GEOLOGY (2)
PR: Graduate standing in Geology. Study of current topics in Geology. Required of all graduate students in Geology. May be repeated for credit.

GLY 6940 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

GLY 6971 THESIS: MASTERS’S (var.)
Repeatable. (S/U only.)

MARINE SCIENCE


UNDERGRADUATE COURSES

OCE 3001 INTRODUCTION TO OCEANOGRAPHY (3)
Topics in biological, chemical, geological, and physical oceanography presented in lectures by a number of specialists in these fields. (Also listed under Geology.)

GRADUATE COURSES

EOC 6080 SCIENTIST-IN-THE-SEA I, HYPERBARIC OPERATIONS (4)
PR: CI and diver certification (NAVI or equivalent). Basic principles, physiology, and psychology involved in submarine hyperbaric operations, inside and outside habitats. Lec.-lab. (Also listed under Engineering.)

EOC 6081 SCIENTIST-IN-THE-SEA II, MARINE SCIENCES (4)
PR: CI and diver certification (NAVI or equivalent). Research equipment and techniques for underwater work in oceanography presented by practicing research workers in the field. Lec.-lab. (Also listed under Engineering.)

EOC 6082 SCIENTIST-IN-THE-SEA III, UNDERWATER ENGINEERING (4)
PR: CI and diver certification (NAVI or equivalent). 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 under Engineering.)

OCC 5050 BIOLOGICAL OCEANOGRAPHY (4)
PR: Graduate standing or CI. BSC 2010C, BSC 2011C, BSC 2012. 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.

OCC 6671 METHODS IN BIOLOGICAL OCEANOGRAPHY (2)
PR: CI. To acquaint students with field and laboratory equipment and techniques currently used in biological oceanography. Emphasis will be on field problems especially those requiring research at sea.

OCC 5050 CHEMICAL OCEANOGRAPHY (4)
PR: CHM 2047 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.

OCC 6057 METHODS IN CHEMICAL OCEANOGRAPHY (2)
PR: OCC 5050 or CI. An intensive study of the use and limitations of field and laboratory equipment which is a standard part of chemical oceanographic research into the behavior of dissolved and particulate constituents in seawater.

OCE 5085 MARINE POLICY (3)
PR: OCE 3001 or CI. Course explores marine problems and their impact on society. Topics of interest include financing and organization of marine science; regulation (local, state, and Federal) of uses of marine waterways, and the sea; political, social, and legal problems associated with marine pollution and the recovery and development of marine resources; conservation and public decision-making in the marine sphere.

OCE 5934 SELECTED TOPICS IN OCEANOGRAPHY (1-4)
PR: CI. Special topics in biological, chemical, geological, and physical oceanography.

OCE 6908 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

OCE 6934 SELECTED TOPICS IN OCEANOGRAPHY (1-4)
PR: CI. Special topics in biological, chemical, geological, and physical oceanography.

OCE 6939 GRADUATE SEMINAR IN OCEANOGRAPHY (1)
PR: Graduate standing. May be repeated. (S/U only.)

OCE 6942L FIELD STUDIES IN MARINE SCIENCE (4)
PR: One of the following: OCB 5050, OCB 6671, OCB 5050, OCC 6057, OCG 5050, OCG 6075, OCP 5051, OCP 6056 or CI. Combination of classroom study with the collection, analysis, and interpretation of field data to attack specific problems in marine science both for deep sea and nearshore environments.

OCE 6971 THESIS: MASTER’S (var.)
Repeatable. (S/U only.)

OCE 6972 DIRECTED RESEARCH (var.)
PR: GR. Master’s level. Repeatable. (S/U only.)

OCG 5050 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.

OCG 6075 METHODS IN GEOLOGICAL OCEANOGRAPHY (2)
PR: OCG 5050 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 interrated data analysis. Lec.-lab-field trips.

OCP 5051 PHYSICAL OCEANOGRAPHY
(4)
PR: Graduate standing or CI, PHY 3042. The world ocean including its morphology, physical properties, currents, waves, tides, heat budget, and related topics. Lec.-lab.

OCP 6506 METHODS IN PHYSICAL OCEANOGRAPHY
(2)
PR: MAC 3414, OCE 5050 or OCP 5051, 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).

PCB 6476 DYNAMICS OF MARINE BENTHIC COMMUNITIES
(4)
PR: EGN 2210, ZOO 5555C, or CI. Theoretical approach to the study of benthic communities in fluctuating and constant environments. Methods of analysis of benthic data will be evaluated and discussed. Computer programs will be utilized for analysis wherever possible. Lec.-lab.

ZOO 5456C ICTHYOLOGY
(5)
PR: CI or senior or graduate status; BSC 2010C, BSC 2011C, BSC 2012, PCB 4674 (helpful), ZOO 3713C (helpful). The evolution, systematics, and ecology of fishes. (Also listed under Zoology.)

MATHMATICS

UNDERGRADUATE COURSES
COP 3215 COMPUTER APPLICATIONS OF MATHEMATICS
(4)
CR: MAC 3412 or CC. Computer applications to mathematics, especially calculus, with FORTRAN programming.

MAA 4211 ADVANCED CALCULUS I
(3)
PR: MAC 3414, with a grade of "C" or better; M HF 3102 and MAS 3103 or CI. Concepts of limit, continuity, differentiability, and integration of functions in one and several variables. Major topics include partial differentiation, Riemann-Stieltjes integrals, improper integrals, infinite series, uniform convergence, implicit-function theorems, line and surface integrals.

MAA 4212 ADVANCED CALCULUS II
(3)
PR: MAA 4211. Continuation of MAA 4211.

MAA 4213 ADVANCED CALCULUS III
(3)
PR: MAA 4212. Continuation of MAA 4212.

MAC 1104 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 MAC 2242.)

MAC 1114 COLLEGE TRIGONOMETRY
(3)
Angles, Trigonometric functions, properties and graphs of trigonometric functions, right triangles, laws of sines and cosines, polar coordinates.

MAC 2242 PRE-CALCULUS MATHEMATICS
(4)
PR: Two years of secondary school mathematics including one year of algebra or HCC mathematics course taught on USF campus or CC. Students with a strong secondary school mathematics preparation should start with MAC 2243. Basic algebraic concepts, functions, and graphs. The sequence MAC 2242, MAC 2243, MAC 2244 is primarily for students from Biological Sciences, Social Sciences and Business.

MAC 2243 ELEMENTARY CALCULUS I
(4)
PR: MAC 1104 or MAC 2242 or four years of secondary school mathematics or CC. The derivative, techniques of differentiation, curve sketching, applications of the derivative. (No credit for Mathematics majors or students with credit in MAC 3282 or MAC 3412.)

MAC 2244 ELEMENTARY CALCULUS II
(4)
PR: MAC 2243. Antiderivatives, the definite integral, techniques of integration, logarithmic and exponential functions, applications. (No credit for Mathematics majors or students with credit in MAC 3282 or MAC 3412.)

MAC 3281 ENGINEERING CALCULUS I
(4)
PR: Pass diagnostic tests in algebra and trigonometry. Differentiation, limits, differentials, extrema, indefinite integral. (No credit for students with credit in MAC 2243 or MAC 3411.)

MAC 3282 ENGINEERING CALCULUS II
(4)
PR: MAC 3281. Definite integral, trigonometric functions, log, exponential, applications. (No credit for students with credit in MAC 2244 or MAC 3412.)

MAC 3283 ENGINEERING CALCULUS III
(3)
PR: MAC 3282. Techniques of integration, numerical methods, analytic geometry, polar coordinates, vector algebra, applications. (No credit for students with credit in MAC 3413.)

MAC 3284 ENGINEERING CALCULUS IV
(4)
PR: MAC 3283. Multivariate calculus, series, applications. (No credit for students with credit in MAC 3414.)

MAC 3411 CALCULUS I
(5)
PR: MAC 1104, MAC 1114 with a grade of "C" or better or CC. Limits, derivatives, applications. (No credit for students with credit in MAC 2243 or MAC 3281.)

MAC 3412 CALCULUS II
(4)
PR: MAC 3411 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 MAC 2244 or MAC 3282.)

MAC 3413 CALCULUS III
(4)
PR: MAC 3412 with a grade of "C" or better or CC. Integration, polar coordinates, conic sections, vectors, interdeterminate forms and improper integrals. (No credit for students with credit in MAC 3283.)

MAC 4401 NUMERICAL ANALYSIS I
(4)
PR: MAS 3103; ability to program a digital computer. Interpolation and quadrature, finite differences, numerical solution of algebraic and transcendental equations, numerical solution of differential equations, computer techniques.

MAD 4402 NUMERICAL ANALYSIS II
(4)
PR: MAD 4401 and MAP 4302. Continuation of MAD 4401.

MAE 3810 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. (Open only to Elementary Education majors.)

MAE 3811 BASIC ALGEBRAIC CONCEPTS
(4)
PR: MAE 3810. Equations, systems of equations and inequalities. The real numbers as a complete ordered field. Complex numbers. (Open only to Elementary Education majors.)

MAE 4302 DIFFERENTIAL EQUATIONS
(4)
PR: MAC 3414. First order linear and nonlinear differential equations, higher order linear equations, applications.

MAS 3103 LINEAR ALGEBRA
(4)
PR: MAC 3411 or CC. Vectors, matrices, systems of linear equations, linear transformations.
MAS 3114 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. (Credit for all science majors except Mathematics.)

MAS 4156 VECTOR ANALYSIS (3)
PR: MAC 3414. The algebra and calculus of vectors, applications, general coordinates, introduction to tensor analysis. (No credit for both MAA 4123 and MAS 4156.)

MAS 4301 ELEMENTARY ABSTRACT ALGEBRA (3)
PR: MHF 3102 or CC. Groups, rings, integral domains, fields, integers, the rational, real, and complex number systems.

MAT 4906 INDEPENDENT STUDY (1-4)
PR: CI. Specialized independent study determined by the student's needs and interests. The written contract required by the College of Natural Sciences specifies the regulations governing independent study. May be repeated. (S/U only.)

MAT 4930 SELECTED TOPICS IN MATHEMATICS (1-6)
PR: CI. The course content will depend on the interest of faculty members and student demand.

MGF 1113, 1114 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.

MGF 2202 APPLIED FINITE MATHEMATICS (4)
PR: Two years of secondary school mathematics including one year of algebra or MAT 1033 (HCC course taught on USF campus) or CC. The course is designed for students majoring in secondary education, business, accounting, biology, and other areas of study in which some knowledge of matrices, linear programming and probability is desirable.

MHF 3102 SET THEORY (3)
PR: MAC 3411 or CC. Relations, functions, order, cardinal numbers.

MTG 3204 INFORMAL GEOMETRY (4)
Concepts of length, congruence, similarity, transformations in the plane. Ruler and compass constructions, impossible constructions, coordinate systems, graphs, lines and curves. (Open only to Elementary Education majors.)

MTG 4212 GEOMETRY I (3)
PR: MAC 3411. Emphasis on axiomatics, advanced Euclidean geometry, elements of projective geometry, non-Euclidean geometries.

MTG 4213 GEOMETRY II (3)
PR: MTG 4212. Continuation of MTG 4212.

STA 3023 INTRODUCTORY STATISTICS I (3)
Hypothesis testing, estimation; normal, Chi-square, t, F, binomial, multinomial, distributions; ANOVA, CR, RCB designs; single df, regression, correlation, contingency tables. Students who successfully complete this course may not also receive credit for either ECO 4402 and GEB 3121 or STA 3122. (No credit for Mathematics Majors.)

STA 3024 INTRODUCTORY STATISTICS II (3)
PR: STA 3023 or CC. Factorials, ANCOV; multiple curvilinear regression; response surfaces; Latin square, Split Plots, incomplete blocks designs; distribution free methods.

STA 3404 ELEMENTARY PROBABILITY (4)
Counting techniques, probability, expectation, probability distributions, the law of large numbers. (No credit for Mathematics majors. Credit for Department of Biology majors.)

STA 4321 INTRODUCTION TO STATISTICS (4)

STA 4442 INTRODUCTION TO PROBABILITY (4)
PR: MAC 3414, MHF 3102. Introduction to probability theory using calculus. Basic ideas of probability and random variables, discrete probability functions, continuous probability densities including normal, gamma, $x^2$, and Weibull, and transformations of random variables.
Groups, fields, vector spaces as they relate to high school algebra and geometry. (No credit for Mathematics majors.)

MAE 5875 COMPLEX VARIABLES FOR TEACHERS (3)
PR: MAC 3414 and MAS 4301 and bachelor's degree or CC. 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 Mathematics majors.)

MAE 5876 MATHEMATICAL ANALYSIS I FOR TEACHERS (3)
PR: MAC 3414 and bachelor's degree or CC. Advanced consideration of limits, continuity, derivatives, differentials. (No credit for Mathematics majors.)

MAE 5877 MATHEMATICAL ANALYSIS II FOR TEACHERS (3)
PR: MAE 5876 or CC. Advanced considerations of the definite integral, fundamental theorem of calculus, infinite series. (No credit for Mathematics majors.)

MAP 5205 MATHEMATICAL OPTIMIZATION THEORY I (3)

MAP 5316 INTERMEDIATE DIFFERENTIAL EQUATION I (4)

MAP 5317 INTERMEDIATE DIFFERENTIAL EQUATION II (4)
PR: MAP 5316. Topics selected from oscillation and comparison theorems, stability and asymptotic behavior, perturbation theory, nonlinear theory, special functions.

MAP 5345 APPLIED PARTIAL DIFFERENTIAL EQUATIONS (4)
PR: MAS 5312 and CC. Separation of variables, the heat equation, wave equation, Laplace's equation, classification, Green's functions, with emphasis on applications.

MAP 5407 METHODS OF APPLIED MATHEMATICS (4)

MAP 6206 MATHEMATICAL OPTIMIZATION THEORY II (3)

MAP 6216 CALCULUS OF VARIATIONS (4)
PR: MAA 5307 and CC. Maxima and minima of functionals, problems of Lagrange, Bolza and Mayer and other topics.

MAP 6336 THEORY OF ORDINARY DIFFERENTIAL EQUATIONS I (3)
PR: MAP 5316 or MAP 5407 or CC. Advanced topics selected from: existence and uniqueness theory, singularity theory, asymptotics and stability, eigenfunctions, perturbations, topological methods.

MAP 6337 THEORY OF ORDINARY DIFFERENTIAL EQUATIONS II (3)
PR: MAP 6336. Continuation of MAP 6336.

MAP 6356 PARTIAL DIFFERENTIAL EQUATIONS I (3)
PR: MAP 555 or CC. Classification of second order equations, Cauchy problems, Dirichlet and Neumann problems, mixed problems, properties of solutions.

MAP 6357 PARTIAL DIFFERENTIAL EQUATIONS II (3)
PR: MAP 6356. Continuation of MAP 6356.

MAP 6375 NUMERICAL TECHNIQUES FOR PARTIAL DIFFERENTIAL EQUATIONS (3)

MAP 6449 ASYMPTOTIC METHODS (3)
PR: MAA 5403 or MAA 5405, MAP 5316 or MAP 5407. Asymptotic series, applications to differential equations and integrals, and perturbation theory.

MAP 5146 ADVANCED LINEAR ALGEBRA (4)
PR: MAS 3103, MHS 3102 or CC. Vector spaces, linear independence, dimensions, matrices, linear transformations.

MAS 5215 NUMBER THEORY (4)
PR: CC. Congruences, quadratic residues, selected topics.

MAS 5311 ALGEBRA I (4)
PR: MAC 3414, MAS 5146, MHS 3102. An introduction to group theory.

MAS 5312 ALGEBRA II (4)
PR: MAS 5311. An introduction to Galois theory.

MAS 6218 TOPICS IN NUMBER THEORY I (3)
PR: MAS 5312 or CC. Continued fractions, approximations of irrational numbers, lattices, geometric theory, algebraic numbers, density of sequences of integers, analytic number theory, the prime number theorem.

MAT 5932 SELECTED TOPICS (1-6)
PR: Senior or junior standing and CC. Each topic is a course of study. 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.

MAT 6908 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

MAT 6911 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

MAT 6915 GRADUATE RESEARCH METHODS (1-5)
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

MAT 6932 SELECTED TOPICS (1-6)
PR: CC. 01-Topology, 02-Analysis, 03-Algebra, 04-Applications of Mathematics, 05-Graph Theory, 06-Number Theory, 07-Mathematics for Physics, 08-Probability, 09-Statistics, 10-Complex Analysis.

MAT 6938 RECENT ADVANCES IN MATHEMATICS WITH EMPHASIS ON THEIR IMPACT ON COLLEGE-LEVEL COURSES (3-6)
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.)

MAT 6939 GRADUATE SEMINAR (1-6)
Direction of this seminar is by a faculty member. Students are required to present research papers from the literature. (S/U only.)

MAT 6945 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of 5 credits per student. (S/U only.)

MAT 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

MAT 7912 DIRECTED RESEARCH (var.)
PR: GR. Ph.D. level. Repeatable. (S/U only.)

MAT 7980 DISSERTATION: DOCTORAL (var.)
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

MHF 6302 ELEMENTARY MATHEMATICAL LOGIC (3)
PR: CC. Truth tables, tautologies, quantifiers, rules of inference, informal proofs in mathematics.

MHF 6306 LOGIC AND FOUNDATIONS (4)
PR: CC. Propositional calculus, Post's theorem, first order and equality calculi, models, completeness and consistency theorems. Godel's theorem, recursive functions.

MTG 5316 TOPOLOGY I (4)
PR: MAC 3414 and MHS 3102. Metric and topological spaces, continuity, homeomorphisms, connectedness, funda-
mental group, compact spaces, separation axioms, product spaces.

MTG 5317 TOPOLOGY II (4)
PR: MTG 5316. Continuation of MTG 5316.

MTG 5366 CALCULUS ON MANIFOLDS (4)
PR: MAA 5307 and MAS 5146. Calculus of several variables.

MTG 6326 ADVANCED TOPOLOGY (4)
PR: MTG 5317 and CC. Function spaces, compactifications, covering spaces, other topics.

MTG 6356 TOPOLOGICAL ALGEBRA I (4)
PR: MTG 6326 and CC. Topological semigroups, topological groups, topological rings and fields. Haar measure.

MTG 6357 TOPOLOGICAL ALGEBRA II (4)
PR: MTG 6356. Continuation of MTG 6356.

STA 5166 APPLIED STATISTICAL METHODS I (4)
PR: STA 4442 and CC. Statistical inference in physical and engineering sciences utilizing sample probability distributions, point and interval estimation and test of significance. 3 lecture periods and 1 lab period.

STA 5167 APPLIED STATISTICAL METHODS II (4)
PR: STA 5166. Applications of analysis of variance and covariance, regression analysis use of $x^2$ for contingency tables and goodness of fit procedures. 3 lecture periods and 1 lab period.

STA 5206 STOCHASTIC PROCESS I (3)

STA 5226 A MATHMATICAL STATISTICS I (3)
PR: STA 5447. Sample distribution theory, point & interval estimation theory, and theory of hypothesis testing.

STA 5446 PROBABILITY THEORY I (4)
PR: MAA 4212 or MAA 5306. Concepts of probability theory, axioms of probability, random variables, probability distributions and distributions of functions of stochastic variables.

STA 5447 PROBABILITY THEORY II (3)

STA 5526 NON-PARAMETRIC STATISTICS I (3)
PR: STA 5326, CC. Theory and methods of non-parametric statistics, order statistics, tolerance region and their applications.

STA 6208 LINEAR STATISTICAL MODELS (3)
PR: STA 5167 or STA 5326. Distribution theory for linear statistical models. Results applied to multiple regression, polynomial regression, balanced and unbalanced experimental designs, analysis of covariance.

STA 6327 MATHEMATICAL STATISTICS II (3)
PR: STA 5326. Statistical decision theory to include admissibility of Bayes rules, risk functions, minimax invariant rules and most powerful tests.

STA 6446 ADVANCED PROBABILITY THEORY (3)
PR: MAA 6617 or CC. Measure theoretic approach to probability, random variables, distribution functions, expectation and characteristic functions.

STA 6527 NON-PARAMETRIC STATISTICS II (3)
PR: STA 5526 or CC. Theory and applications of advanced non-parametric methods to include order statistics, Kolmogorov-Smirnov, and Cramer statistics.

STA 6748 MULTIVARIATE STATISTICAL ANALYSIS I (3)
PR: STA 6876. The multivariate normal, estimation of mean vector and covariance matrix, correlation analysis, generalized $x^2$-statistics and testing of the general linear hypothesis.

STA 6827 STOCHASTIC PROCESS II (3)
PR: STA 5206 or CC. Continuous parameter Markov chains, martingale theory, stationary processes with discrete and continuous increments.

STA 6876 TIME SERIES ANALYSIS I (3)
PR: STA 5326. Basic concepts of the theory and applications of time series analysis to include filtering, forecasting modeling, spectral analysis of univariate realizations with applications.

STA 6877 TIME SERIES ANALYSIS II (3)
PR: STA 6875. Multivariate time series analysis of stationary process to include the theory of filtering, forecasting and spectral analysis.

MEDICAL TECHNOLOGY
Director: E. D. Olsen; Professors: E. D. Olsen, W. S. Silver; Associate Professors: F. M. Dudley, J. R. Linton; Assistant Professors: D. V. Lim, S. L. Vandor.

UNDERGRADUATE COURSES

MLS 3031 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.

MLS 4215 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.

MLS 4216 CLINICAL MICROSCOPY II (5)
PR: Senior standing and acceptance into an approved affiliated hospital. A continuation of MLS 4215. A hospital internship course for medical technology majors.

MLS 4309 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.

MLS 4405 CLINICAL BACTERIOLOGY (8)
PR: Senior standing and acceptance into an approved affiliated hospital. Instruction in lecture and laboratory on the various aspects of morphology, physiology, and classification of bacteria, especially those related to disease. A hospital internship course for medical technology majors.

MLS 4545 CLINICAL CHEMISTRY I (9)
PR: Senior standing and acceptance into an approved affiliated hospital. A continuation of MLS 4625C, including procedures required for serology, transfusions, blood preservation, and antibody studies. A hospital internship course for medical technology majors.

MLS 4605C CLINICAL LABORATORY INSTRUMENTAL ANALYTICAL TECHNIQUES (2)
PR: Senior standing and acceptance into an approved affiliated hospital. Instruction in the use of special laboratory instruments such as automated instruments, use of radioisotopes, and techniques of measuring basal metabolism. A hospital internship course for medical technology majors.

MLS 4625C CLINICAL CHEMISTRY I (9)
PR: Senior standing and acceptance into an approved affiliated hospital. Instruction in the techniques and procedures for use in clinical chemical analyses. A hospital internship course for medical technology majors.

PHYSICS

UNDERGRADUATE COURSES

PHS 3101 MATHEMATICAL ANALYSIS OF PROBLEMS IN MECHANICS AND ELECTRICITY (3)
PR: One year of non-calculus general physics. CR: MAC 3284 or MAC 3414. 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, III.

PHY 3102 PROBLEMS IN GENERAL PHYSICS I (1)
CR: PHY 3040. 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. Lec. Qtr. I, II, III, IV.

PHY 3103 PROBLEMS IN GENERAL PHYSICS II (1)

PHY 3104 PROBLEMS IN GENERAL PHYSICS III (1)

PHY 4404 SOLID STATE PHYSICS (4)
PR: PHY 3123 or PHY 4124; MAP 4302. 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 PHS 4404, PHS 5405. Qtr. II.

PHY 4802 ACOUSTICS FOR COMMUNICATION (4)
Non-mathematical study of general wave motion and associated phenomena. Acoustic resonance and response of the ear. Introduction to harmonic analysis of complex wave forms with application to testing with pure tones and various types of waves. Acoustic instrumentation. (No credit for science majors.) Qtr. I, III.

PHY 4804 FUNDAMENTAL ACOUSTICS (4)
PR: PHY 3223 or CI. Vibrations of elastic media, sound generation and propagation. Acoustical, electrical, and mechanical energy conversion. Underwater acoustics. Qtr. IV.

PHY 2038 ENERGY AND HUMANITY (4)
This course, which is primarily qualitative and discussion oriented, and designed for students of all disciplines and backgrounds, looks at the social, economic, and political aspects of the U.S. and world energy situations. This down-to-earth course, which tells it like it is, seeks to get students involved, teach them how to conserve energy for profit, and show them how they can personally use solar energy as a complementary energy source for both residential and commercial purposes. Field trips, movies, and current energy-related news articles play important roles in this course. (For non-majors.) Qtr. I, II, III, IV.

PHY 2050, 2050L GENERAL PHYSICS AND LABORATORY (4:1)
First quarter of a three-quarter of a three-quarter sequence of general physics (mechanics, heat, electricity, wave motion, optics, atomic and nuclear physics) and laboratory for science students. Must be taken concurrently and, if dropped, then dropped simultaneously. Qtr. I, II, III, IV.

PHY 2051, 2051L GENERAL PHYSICS AND LABORATORY (4:1)
PR: PHY 2050, PHY 2050L. Second quarter of general physics and lab for science students. Must be taken concurrently and, if dropped, then dropped simultaneously. Qtr. I, II, III, IV.

PHY 2052, 2052L GENERAL PHYSICS AND LABORATORY (4:1)
PR: PHY 2050, PHY 2050L. Third quarter of general physics and lab for science students. Must be taken concurrently and, if dropped, then dropped simultaneously. Qtr. I, II, III, IV.

PHY 3020 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.

PHY 3040, 3040L GENERAL PHYSICS AND LABORATORY (3:1)
PR: MAC 3281 or MAC 3411. First quarter of a three-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 and, if dropped, then dropped simultaneously. Qtr. I, II, III, IV.

PHY 3041, 3041L GENERAL PHYSICS AND LABORATORY (3:1)
PR: MAC 3282 or MAC 3412, PHY 3040, PHY 3040L. Second quarter of general physics and laboratory for physics majors and engineering students. Must be taken concurrently and, if dropped, then dropped simultaneously. Qtr. I, II, III, IV.

PHY 3042, 3042L GENERAL PHYSICS AND LABORATORY (3:1)
PR: MAC 3282 or MAC 3412, PHY 3040, PHY 3040L. Third quarter of general physics for physics majors and engineering students. Must be taken concurrently and, if dropped, then dropped simultaneously. Qtr. I, II, III, IV.

PHY 3123 MODERN PHYSICS I (3)

PHY 3323C ELECTRICITY AND MAGNETISM I (4)
PR: MAC 3284 or MAC 3414. Electromagnetic circuits; resistance, capacitance, inductance, direct- and alternating-current circuits, thermoelectricity, and instrumentation. Laboratory. First quarter of sequence PHY 3323C, PHY 4324, PHY 4325. Qtr. II.

PHY 3324 OPTICS (4)
PR: PHY 3101 or PHY 3042; CR: MAC 3284 or MAC 3414. Reflection, refraction, dispersion, interference, diffraction, polarization, and laboratory. Qtr. I.

PHY 3322L INTERMEDIATE LABORATORY (2)
CR: PHY 2052 or PHY 3042 or equivalent. Experiments in modern physics, including the area of atomic, nuclear, solid state and wave phenomena. Qtr. I, III.

PHY 4124 MODERN PHYSICS II (3)
PR: PHY 3123 or CI, MAP 4302. Special theory of relativity, statistical distribution functions, angular momentum, system of identical particles, and properties of matter. Qtr. I.

PHY 3323C MECHANICS I (3)

PHY 4224 MECHANICS II (3)
PR: MAP 4302 and PHY 3223. Continuation of PHY 3223. 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 4225 MECHANICS III (3)
PR: PHY 4224. Continuation of PHY 4224. 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 4324 ELECTRICITY AND MAGNETISM II (3)
PR: PHY 3323, PHY 3323C or CI. CR: MAP 4302. Electrostatic fields, magnetic fields of steady currents, dielectrics and magnetic materials, Maxwell's equations. Second quarter of sequence PHY 3323C, PHY 4324, PHY 4325. Qtr. III.

PHY 4325 ELECTRICITY AND MAGNETISM III (3)

PHY 4404 HOLOGRAPHY FOR FILM MEDIA (4)
PR: Junior standing in any major or CC. Practical instruction and laboratory experience in the making of holograms. Qualitative theory of lasers and holography. (For non-majors.) Qtr. II, III.

PHY 4526 STATISTICAL PHYSICS (4)
CR: PHY 3123 or PHY 4124. Statistical approach to thermo-
dynamics and kinetic theory and introduction to statistical mechanics. Qtr. II.

PHY 4604 QUANTUM MECHANICS I (3)
PR: PHY 4124 or Cl. Wave-particle duality, uncertainty principles, Schrödinger’s equation, postulates, angular momentum, and central forces. First quarter of sequence PHY 4604, PHY 5624. Qtr. II.

PHY 4744C ELECTRONICS FOR RESEARCH (4)
PR: General Physics or Cl. Direct and alternating current circuits, transients, rectification, amplification; feedback, pulse circuits, and integrated circuits, laboratory. (No credit for physics or mathematics major.) Qtr. I, III.

PHY 4823L ADVANCED LABORATORY (2)
PR: PHY 3822L. Experimental work primarily related to physics. Emphasis on modern physical experimental techniques employing some of the new types of equipment. Qtr. I, III.

PHY 4905 INDEPENDENT STUDY (1-4)
PR: Cl. Specialized, independent study determined by the student’s need and interest. The written contract required by the College of Natural Sciences specifies the regulations governing independent study. May be repeated. (S/U only.) Qtr. I, II, III, IV.

PHY 4910 UNDERGRADUATE RESEARCH (1-6)
PR: Senior or advanced junior standing and CC. An individual investigation in the laboratory or library or both, under the supervision of the instructor. Credit hours and other contractual terms, which may include the preparation of scientific report or thesis, are to be determined by student/instructor agreement. (S/U only.) Qtr. I, II, III, IV.

PHY 4930 PHYSICS SEMINAR (1)
PR: Senior or advanced junior standing or CC. All undergraduate physics majors must enroll in this course at least twice and are expected to attend all Physics Colloquia. (S/U only.) Qtr. I, II, III, IV.

PHY 4936 SELECTED TOPICS IN PHYSICS (1-6)
PR: Senior or advanced junior standing and CC. Each topic is a course in directed study and under the supervision of a faculty member.

GRADUATE COURSES

PHS 5113 METHODS OF THEORETICAL PHYSICS I (3)
PR: MAP 4302 or Cl. 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.

PHS 5114 METHODS OF THEORETICAL PHYSICS II (3)
PR: MAP 4302 or Cl. 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.

PHS 5115 METHODS OF THEORETICAL PHYSICS III (3)
PR: MAP 4302 or Cl. 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.

PHS 5304 NUCLEAR PHYSICS (4)
PR: PHY 4604 or Cl. Nuclear forces, nuclear models, nuclear structure, decay, nuclear reactions, and high energy physics. Qtr. III.

PHS 5405 SOLID STATE PHYSICS II (3)
PR: PHS 4404. Optical, electrical, and magnetic properties of insulators, superconductivity, imperfections in solids. Second quarter of sequence PHS 4404, PHS 5405. Qtr. III.

PHS 5505 PLASMA PHYSICS I (4)
PR: PHY 4325 or Cl. Introduction to Boltzmann, magnetohydrodynamic and orbit approaches to plasmas. Longitudinal and electromagnetic waves in plasmas. Collisions and radiation. Instabilities. Qtr. IV.

PHS 6136 PHYSICAL APPLICATIONS OF GROUP THEORY (4)
PR: PHS 5114 or Cl. 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.)

PHS 6204 ATOMIC AND MOLECULAR SPECTRA (4)
PR: PHY 4604 or Cl. Quantitative study of atomic and molecular structure and spectra. Qtr. IV.

PHS 6426 SOLID STATE PHYSICS III (3)
PR: PHS 5405 or Cl. Advanced course on Solid State Physics covering material of current interest. Qtr. I.

PHS 6525 PLASMA PHYSICS II (4)
PR: PHS 5505 or Cl. 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.

PHS 6607 THEORY OF RELATIVITY (4)
PR: PHS 5113 or Cl. The special and general theory of relativity, including the gravitational field equations, applications of the special theory, experimental tests of the general theory and various topics of current research interest. (Offered alternate years.)

PHS 6524 QUANTUM MECHANICS II (3)
PR: PHY 4604 or Cl. Matrix mechanics, approximation methods, transformations, scattering and identical particles. Qtr. III.

PHS 6522 ELECTRONICS (4)
PR: PHY 3822L and PHY 4324. Vacuum and gas-discharge tubes, semiconductors, transistors, electronic circuit analysis, and laboratory. Qtr. II.

PHS 5937 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.

PHS 6246 CLASSICAL MECHANICS I (3)
PR: PHS 5113 or Cl. Dynamics of particles and systems of particles, Lagrange’s equation, central forces, rigid body dynamics. First quarter of sequence PHS 6246, PHS 6247. Qtr. II.

PHS 6247 CLASSICAL MECHANICS II (3)
PR: PHS 6246 or Cl. Hamilton’s equations, canonical transformations, Poisson brackets, small oscillations, Hamilton-Jacobi theory, continuous systems. Qtr. III.

PHS 6346 ELECTROMAGNETIC THEORY I (4)
PR: PHY 4325 or Cl. Electrostatics, magnetostatics, potential and boundary value problems. Maxwell’s equations. First quarter of sequence PHS 6346, PHS 6347. Qtr. I.

PHS 6347 ELECTROMAGNETIC THEORY II (4)
PR: PHS 6346 or Cl. Electromagnetic waves, wave guides and resonant cavities, diffraction, relativistic-particle kinematics and dynamics, plasmas and magnetohydrodynamics. Qtr. II.

PHS 6536 STATISTICAL MECHANICS (4)
PR: PHS 4526 or Cl. Kinetic theory, configuration and phase space. Boltzmann theorem, Liouville theorem, ensemble theory, quantum statistics. Qtr. III.

PHS 6645 QUANTUM MECHANICS III (3)
PR: PHS 5624 or Cl. Dirac equation, quantized fields, collision theory symmetry, and invariance. Qtr. I.

PHS 6846L 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.

PHS 5909 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

PHS 5911 DIRECTED RESEARCH (var.)
PR: GR. Master’s level. Repeatable. (S/U only.)

PHS 6935 GRADUATE SEMINAR (1)
All physics graduate students are expected to enroll in this course Qtr. I each year. (S/U only.) Qtr. I, II, III, IV.
NURSING


NOTE: The Statewide Course Numbering System Task Force anticipates numerous changes in prefix and/or number of the below courses prior to Fall, 1981.

UNDERGRADUATE COURSES

HUN 3201 NUTRITION (4)
PR: All preceding courses in prescribed curriculum plan or permission of Dean. The study of normal and therapeutic nutrition for all age groups from infancy through senescence. Consider the effects of cultural, religious, and socioeconomic factors in defining and modifying food patterns of individuals and groups.

NUR 3136 NURSING PROCESS III (2)
PR: Permission of faculty. Development of the nursing process as it relates to normal maternity-infant nursing. Integrates psychomotor skills, nutrition, pharmacology and psychosocial aspects.

NUR 3136L NURSING INTERVENTION I (4)
PR: Permission of faculty. Clinical nursing practice focused on healthy parents and infants in a variety of settings (linked to Nursing Process II and III). Incorporates psychomotor skills, nutrition, pharmacology, psychosocial and community aspects.

NUR 3321 NURSING PROCESS V (2)
PR: Permission of faculty. Development of nursing process as it relates to mental health—psychiatric nursing needs of clients. Integrates pathophysiology, nutrition, pharmacology and essential psychomotor skills of all ages.

NUR 3321L NURSING INTERVENTION III (3)
PR: Permission of faculty. Clinical nursing practice course (linked to Nursing Process V). Focuses on meeting the mental health—psychiatric nursing needs of clients of all ages. Includes pathology, nutrition, pharmacology, essential psychomotor skills and community aspects.

NUR 3421 NURSING PROCESS II (2)
PR: Permission of faculty. Development of the nursing process as it relates to family-community health nursing.

NUR 3422 NURSING PROCESS IV (2)
PR: Permission of faculty. Continuation of nursing process as it relates to family-community health nursing with emphasis on well children, adolescents, and their families.

NUR 3422L NURSING INTERVENTION II (1)
PR: Permission of faculty. Family-community nursing experience (linked to Nursing Process IV) emphasizing nursing with well-child, adolescent, and developing family-clients. Includes assessment of community needs and resources.

NUR 3612C NURSING PROCESS I (2)
PR: Permission of faculty. Introduction to the nursing process.

PHYS 6938 SELECTED TOPICS IN PHYSICS (1-15)
PR: CC. Each topic is a course in directed study under the supervision of a faculty member.

PHYS 6940 GRADUATE INSTRUCTION METHODS (1-5)
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

NUR 3722C CLIENT ASSESSMENT I (3)
PR: Admission to nursing major or permission of faculty. Introduces knowledge and skills essential for biopsychosocial assessment of individual clients in primary, secondary, and tertiary care settings with emphasis on history-taking and physical assessment. Includes practice of physical assessment skills.

NUR 3723C CLIENT ASSESSMENT II (3)
PR: All preceding courses in the prescribed curriculum plan or permission of Dean. Expands knowledge and skills essential for biopsychosocial assessment of needs of clients and families in primary, secondary, or tertiary care settings with emphasis on data collection from secondary sources and interpretation of data with respect to clients' nursing needs.

NUR 4431 NURSING PROCESS VI (2)
PR: Permission of faculty. Continuation of the nursing process as it related to family-community health with emphasis on the middle aged and the aged, including common health problems at the primary care level.

NUR 4431L NURSING INTERVENTION IV (1)
PR: Permission of faculty. Continuation of family-community nursing (linked to Nursing Process VI) focusing on the middle aged and aged, including handling of common health problems at the primary care level.

NUR 4635 NURSING PROCESS VII (3)
PR: Permission of faculty. Introduction to nursing process with clients in secondary and tertiary care settings, including fluid and electrolyte balance, pre-operative and post-operative care, disturbances in cell growth and proliferation and introduction to care of high risk mothers and infants. Includes pathophysiology, nutrition, psychosocial aspects, pharmacology, and psychomotor skills.

NUR 4635L NURSING INTERVENTION V (4)
PR: Permission of faculty. Clinical nursing practice in secondary care settings (linked to Nursing Process VII.) Includes essential psychomotor skills, pharmacology, nutrition, and psychosocial health aspects.

NUR 4652 NURSING PROCESS VIII (3)
PR: Permission of faculty. Development of the nursing process for clients of all ages (including mother and infants) with problems arising from disturbances in oxygenation. Integrates pathophysiology, nutrition, pharmacology, psychosocial, essential psychomotor skills and community health aspects.

NUR 4652L NURSING INTERVENTION VI (3)
PR: Permission of faculty. Clinical nursing practice in secondary and/or tertiary care settings (linked to Nursing Process VIII) with clients of all ages with problems arising from disturbances in oxygenation. Includes essential psychomotor skills, pathophysiology, nutrition, pharmacology, psychosocial and community health aspects.

NUR 4653 NURSING PROCESS IX (2)
PR: Permission of faculty. Development of the nursing process for clients of all ages (including mother and infants) with problems arising from metabolic and endocrine disturbances. Integrates pathophysiology, essential psychomotor skills, nutrition, pharmacology, psychosocial and community health aspects.

NUR 4653L NURSING INTERVENTION VII (3)
PR: Permission of faculty. Clinical nursing practice in secondary and/or tertiary care settings (linked to Nursing Process IX) with clients of all ages with problems arising from metabolic and endocrine disturbances. Includes pathophysiology,
nutrition, pharmacology, essential psychomotor skills, psychosocial and community health aspects.

NUR 4654 NURSING PROCESS X (2)
PR: Permission of faculty. Development of the nursing process for clients of all ages (including mothers and infants) with problems arising from genitourinary and fluid/electrolyte disturbances. Integrates pathophysiology, essential psychomotor skills, nutrition, pharmacology, psychosocial and community aspects.

NUR 4654L NURSING INTERVENTION VIII (2)
PR: Permission of faculty. Clinical nursing practice in secondary and/or tertiary care settings (linked to Nursing Process X) with clients of all ages with genitourinary and electrolyte disturbances. Includes pathophysiology, nutrition, pharmacology, essential psychomotor skills, psychosocial and community health aspects.

NUR 4655 NURSING PROCESS XI (2)
PR: Permission of faculty. Development of the nursing process for clients of all ages (including mothers and infants) with problems arising from genitourinary and fluid/electrolyte disturbances. Includes pathophysiology, nutrition, essential psychomotor skills, pharmacology, psychosocial and community aspects.

NUR 4655L NURSING INTERVENTION IX (3)
PR: Permission of faculty. Clinical nursing practice in secondary or tertiary care settings (linked to Nursing Process XI) with clients of all age groups with disturbances in coordination, perception or sensory function. Integrates pathophysiology, essential psychomotor skills, nutrition, pharmacology, psychosocial and community aspects.

NUR 4910C INDEPENDENT STUDY (1-5)
PR: Open to majors and non-majors with faculty permission. Individual or group investigation of special problems relevant to the health of individuals or groups. Direct service to individuals or groups may be involved. Project requirements (e.g., oral and written reports, conferences, etc.) will be determined on an individual basis by faculty perceptors. May be repeated up to a total of five quarter credit hours.

NUR 4930 SELECTED TOPICS IN NURSING (2-4)
PR: Junior or senior standing or permission of faculty. Content will depend upon student demand and faculty interest and may focus on any area relevant to nursing practice. May involve class, seminar, and/or clinical laboratory and may be repeated for different topics. (S/U only.)

* NUR 4935 SEMINAR IN NURSING V (2)
PR: All preceding courses in prescribed curriculum plan or permission of Dean. Description same as NUU 4222, Seminar in Nursing III. (S/U only.)

NUR 4936 SENIOR SEMINAR (2)
PR: Permission of faculty. Seminar related to preceptorship experience and to problems of transition from student to practitioner including reality shock, expectations at beginning staff nurse level, identification and use of supervision, self-evaluation, and professional development. For registered nurse students, the seminar will focus on additional changes in career goals and expectations as a result of preparation.

* NUR 4943C NURSING PRACTICUM III (5-7)
PR: All preceding courses in prescribed curriculum plan or permission of Dean. Individually planned experience in a clinical and/or functional area of professional nursing which is related to student’s professional goals. Associated seminars and/or institutes. (S/U only.)

* NUR 4943L NURSING INTERVENTION IV (7)
PR: All preceding courses in prescribed curriculum plan or permission of Dean. This final course, in a Nursing Intervention sequence of four, will provide opportunity for concentrated clinical nursing experience under faculty guidance. The nature and goals of the experience will be determined collaboratively by students, faculty, and personnel from the clinical settings where students elect to have this experience. (S/U only.)

NUR 4946L NURSING INTERVENTION X (8)
PR: Permission of faculty. Concentrated clinical nursing practice (preceptorship) under faculty guidance. The nature and goals of the experience will be determined collaboratively by students, faculty and personnel from cooperating agencies where students elect experience.

NUS 3210C HUMAN ANATOMY (4)
PR: Admission to nursing major or permission of Dean. A course in basic human anatomy including cellular and organ system relationships as a foundation for normal and abnormal function. Lec.-lab.

NUS 3211C HUMAN PHYSIOLOGY (5)
PR: Admission to nursing major or permission of Dean. 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.

* NUS 3220 BIOPSYCHOSOCIAL PATHOLOGY (4)
PR: Admission to nursing major or permission of Dean. Interferences in biopsychosocial organization and function and the ways in which disruptions manifest themselves in signs, symptoms, physical, and laboratory findings.

NUU 3223 INTRODUCTION TO PROFESSIONAL ROLES (2)
PR: Permission of faculty. Introduction to nursing and nursing education, including standards or performance, principles of organization, ethical-legal concepts, handling stress, setting priorities.

* NUU 3229L NURSING PRACTICUM I (5)
PR: All preceding courses in prescribed curriculum plan or permission of Dean. Clinical practice providing experience in application of the nursing process with selected multi-problem clients in selected distributive and/or episodic care settings. (S/U only.)

* NUU 3240 CONCEPTUAL FRAMEWORK FOR PROFESSIONAL NURSING PRACTICE (4)
PR: Admission to nursing major or permission of Dean. Exploration of the major concepts underlying professional nursing practice, the trends and issues relating to the role and responsibility of nursing in the health care system, and introduction to the nursing process.

* NUU 3241C PLANNING, IMPLEMENTING, AND EVALUATING NURSING INTERVENTION (4)
PR: All preceding courses in prescribed curriculum plan or permission of Dean. Focuses on using assessment skills as basis for planning, implementing, and evaluating nursing intervention for multi-problem clients in both distributive and episodic settings.

NUU 3280 NURSING CORE I (5)
PR: Admission to nursing major or permission of faculty. The first of a series of courses that focus on progressive development of professional nursing roles and responsibilities and relationships to the roles of other health care and related professionals. Includes examination of theories relevant to professional nursing practice, (communication, systems, leadership, scientific methodology, role, learning, change, stress), historical development of nursing and trends in nursing and health care, and ethical-legal aspects of health care.

NUU 3281 NURSING CORE II (2)
PR: Permission of faculty. Continuing of Nursing Core I (NUU 3280).

NUU 3282 NURSING CORE III (2)
PR: Permission of faculty. Continuing of Nursing Core I and II.

* NUU 3340C CLIENT ASSESSMENT (5)
PR: All preceding courses in prescribed curriculum plan or permission of Dean. Expands knowledge and skills essential for biopsychosocial assessment of needs of clients and families in primary, secondary, or tertiary care settings.

* NUU 4220 NURSING CORE II (5)
PR: All preceding courses in prescribed curriculum plan or
permission of Dean. Continuing development of the nursing process with particular emphasis on the evaluation phase. Concepts of leadership and the role of the professional nurse as a change agent are emphasized.

**NUU 4220L NURSING INTERVENTION II**

PR: All preceding courses in prescribed curriculum plan or permission of Dean. Application of theory in a clinical setting with clients of all ages who represent various levels of wellness and illness.

**NUU 4221 NURSING CORE III**

PR: All preceding courses in prescribed curriculum plan or permission of Dean. Students continue development of the nursing process with emphasis on the synthesis of the four phases based on theory in pathophysiology, pharmacology, and epidemiology. Leadership concepts in the total nursing process introduced.

**NUU 4222L NURSING INTERVENTION III**

PR: All preceding courses in prescribed curriculum plan or permission of Dean. Application of theoretical knowledge in a clinical setting that will include care of hospitalized and non-hospitalized individuals of all ages who represent various levels of wellness and illness. Provision made for the development of skills in the synthesis of all phases of nursing process as well as utilizing leadership concepts.

**NUU 4222 SEMINAR IN NURSING III**

PR: All preceding courses in prescribed curriculum plan or permission of Dean. 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 of characteristics 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. (S/U only.)

**NUU 4223 SEMINAR IN NURSING IV**

PR: All preceding courses in prescribed curriculum plan or permission of Dean. Description same as NUU 4222, Seminar in Nursing III. (S/U only.)

**NUU 4283 NURSING CORE IV**

PR: Permission of faculty. Continuation of previous Core courses.

**NUU 4284 NURSING CORE V**

PR: Permission of faculty. Continuation of previous Core courses.

**NUU 4285 NURSING CORE VI**

PR: Permission of faculty. Continuation of previous Core courses.

**NUU 4286 NURSING CORE VII**

PR: Permission of faculty. Synthesis of core theories with emphasis on specific problems relating to professional nursing practice.

**NUU 4422 NURSING PROCESS SYNTHESIS**

PR: All preceding courses in prescribed curriculum plan or permission of Dean. Continuation of NUU 3241C and NUU 3340C with emphasis on the leadership, teaching, and management responsibilities in professional nursing practice.

**NUU 4422L NURSING PRACTICUM II**

PR: All preceding courses in prescribed curriculum plan or permission of Dean. Application of theories developed in NUU 4422 to nursing practice in selected settings. Contract learning experiences of individual students. (S/U only.)

**NUU 4432 NURSING CORE IV**

PR: All preceding courses in prescribed curriculum plan or permission of Dean. Students continue development of the nursing process with emphasis on management of nursing assistance to clients.

**NUU 4630 NURSING INQUIRY I**

PR: All preceding courses in prescribed curriculum plan or permission of Dean. This course will emphasize the relationship between research and the improvement of nursing practice and health care: attention will be directed toward the need for research in nursing, areas currently being investigated, ethical issues, the research process, and the implementation of the results of nursing research.

Courses available only to students currently enrolled.

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**GRADUATE COURSES**

**NUR 6270C COMMON HEALTH PROBLEMS I**

PR: Advanced Physiology, Adult Health Assessment, Foundations of Nursing Theory. Didactic content taught by multidisciplinary faculty to increase student's competency in identifying health-illness status of adults including chronic disease diagnosis and management. Related clinical experience.

**NUR 6271C COMMON HEALTH PROBLEMS II**

PR: Advanced Physiology, Adult Health Assessment, Foundations of Nursing Theory. Didactic content taught by multidisciplinary faculty to increase student's competency in identifying health-illness status of adults, including acute illness diagnosis and management. Related clinical experience.

**NUR 6750C ADULT ASSESSMENT**

PR: Admission to program or permission of faculty. Advanced Physiology prerequisite or concurrent. Emphasizes the advancement and refinement of physical and psychological clinical assessment skills, and includes a theoretical and practical approach that expands the nursing process. Related clinical experience.

**NUR 6751 ADVANCED PHYSIOLOGIC ASSESSMENT**

PR: Admission to Program or permission of faculty. Focus on cellular physiology and the feedback and control mechanism of bodily functions at the cellular, organ and system level of operation.

**NUR 6900 SELECTED TOPICS IN NURSING**

PR: Permission of faculty. Seminars for the analysis and discussion of selected issues in nursing of topical concern to students and faculty. May be repeated with different subject matter. (A maximum of 6 credit hours may be used as elective credit hours for the major.)

**NUR 6350 FOUNDATIONS OF NURSING THEORY**

PR: Admission to program or permission of faculty. Focuses on theory development in nursing, hypothesis testing, relationship between theoretical frameworks and conceptual systems, and analysis of selected conceptual models and theoretical frameworks as a basis for nursing diagnosis.

**NUR 6351 ROLE DEVELOPMENT I**

PR: Admission to graduate program or permission of faculty and completion of Foundations of Nursing Theory. Combined lecture/seminar course that explores role theory and makes application to the role of the nurse and other health care providers in a variety of settings within the health care system. Seminars provide opportunities to explore this with nurses practicing in the role of the students' chosen functional minors.

**NUR 6352 ROLE DEVELOPMENT II**

PR: Role Development I. An interdisciplinary seminar which focuses on an intensive integrated study of the role of specialists from various fields, i.e., psychology, anthropology, social work, communicology, legal services, ministerial services, political science, rehabilitative services, population demography the the utilization of their services in meeting health care needs of patients.

**NUR 6370 NURSING RESEARCH**

PR: Foundation of Nursing Theory, statistics, and permission of faculty. Includes an overview of research in nursing, identification of researchable problems, design and analysis of research proposals, research methods and strategies applicable to nursing.
COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES

AFRO-AMERICAN STUDIES

Director: F. U. Ohaegbulam; Professor: F. U. Ohaegbulam; Assistant Professors: J. W. Dudley, K. R. Glover; Other Faculty: S. A. Garcia, J. Smith, P. Stith.

UNDERGRADUATE COURSES

AFA 2001 INTRODUCTION TO AFRO-AMERICAN STUDIES
Fundamental perspectives on the nature and meaning of the Afro-American experience and the role of Afro-American Studies in articulating major problems in American and world society. (4)

AFA 4150 AFRICA AND THE UNITED STATES
A consideration of the nature and character of African cultural survivals in America including an examination of the historical and current political, economic, and cultural relations between the United States and Africa. (4)

AFA 4331 SOCIAL INSTITUTIONS AND THE GHETTO
A study of social institutions as they relate to the American Black ghetto, with emphasis on social systems operating within and on the ghetto. (4)

AFA 4419 SEMINAR IN TEACHING BLACK STUDIES
An examination of instructional media, resources and approaches relevant to the study and teaching of the black experience. (4)

AFA 4900 DIRECTED READINGS
Independent readings in a particular area of Afro-American Studies, selected by student and instructor. (2-4)

AFA 4931 SELECTED TOPICS IN AFRO-AMERICAN STUDIES
Topics offered are selected to reflect student needs and faculty interests. In depth study in such areas as the Black Student and the American Educational Process; the Black Experience in the Americas; European Expansion in Africa to 19th century; Contemporary Economic Problems in Africa. (1-4)

AFA 4936 SENIOR SEMINAR
In-depth study of a particular topic in the area of Afro-American Studies. Individual research by students required. (4)

AFH 3100 INTRODUCTION TO AFRICAN HISTORY
An outline survey of pre-colonial 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 under History.) (4)

AFH 3200 AFRICAN HISTORY SINCE 1850
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 under History.) (4)

AFS 3311 THE AFRICAN DIASPORA AND PAN-AFRICANISM
An examination of the African Diaspora and the influence of African culture and civilization on the growth and development of world cultures. Emphasis on the extent to which African culture has enriched the development of mankind, the cultural significance of African voyages and migrations to Asia, Europe and the Americas, and the historical quest for racial and continental pan-Africanism including Garveyism. (4)

GRADUATE COURSES

AFH 5205 SEMINAR: AFRICA FROM COLONIAL TIMES TO THE PRESENT
PR: C1. An in-depth examination of Africa’s colonial heritage and post-independence efforts at nation building, economic development and eradication of the remnants of colonialism, and other topics including: historical and contemporary efforts towards African continental unity, African nonalignment and relations between African states and the former colonial powers and other major world powers. (4)

AFH 5295 SEMINAR: AFRICA CONTEMPORARY ISSUES
PR: C1. An in-depth examination of major contemporary so-
cultural and political issues in the African continent including their domestic and international dimensions.

ANTHROPOLOGY

Chairperson: G. Kushner; Professors: R. T. Grange, Jr., G. Kushner, A. Shiloh, W. W. Wolfe; Associate Professors: M. V. Angrosino, J. J. Smith, C. W. Wiener, J. R. Williams; Assistant Professors: E. Chambers, S. J. Gluckman, P. P. Waterman; Visiting Assistant Professor: M. D. Vesperi.

UNDERGRADUATE COURSES

ANT 2000 INTRODUCTION TO ANTHROPOLOGY (4)
An introduction to anthropology, the study of the human species in biological and social perspective. The course surveys the four major branches of anthropology: physical anthropology (human biology), archaeology (the analysis of the prehistoric and historic remains of human cultures), anthropological linguistics (the analysis of language in its cultural context) and cultural anthropology (the comparative study of the cultures of peoples living in the world today, be they in tribal, peasant, or urban societies).

ANT 3100 ARCHAEOLOGY (4)
PR: ANT 2000 or CI. The study of humankind from its beginnings up to and including the historic period through the recovery, description, and analysis of the remains of past cultures and societies. Emphasis on the theory, methods, and goals of archaeology as part of anthropology.

ANT 3410 CULTURAL ANTHROPOLOGY (4)
PR: ANT 2000 or CI. A survey of modern cultural anthropology. The course includes discussion of major methods and orientations to the study of the world’s peoples. Representative case studies are used to demonstrate variations in human adaptations and to encourage an appreciation of diverse values and lifestyles.

ANT 3511 PHYSICAL ANTHROPOLOGY (4)
PR: ANT 2000 or CI. Non-human primates, the fossil record and the biology of races are surveyed in order to understand the human animal as a product of biosocial phenomena. Anatomy, genetics, culture and evolution are emphasized.

ANT 3610 ANTHROPOLOGICAL LINGUISTICS (4)
PR: ANT 2000 or CI. The comparative study of language in its cultural context, especially emphasizing the role of language in the cultural interpretation of physical and social reality.

ANT 4034 HISTORY OF ANTHROPOLOGICAL THEORY (4)
PR: Senior standing with major in anthropology or equivalent. The major concepts that form the anthropological view of humanity are viewed in historical perspective. Basic ideas of the western philosophical tradition are analyzed from the Greeks to the 19th Century when they became incorporated into the new discipline of anthropology. 20th Century anthropological developments on these themes are considered.

ANT 4124 FIELD METHODS IN ARCHAEOLOGY (5)
PR: ANT 2000, ANT 3100 or CI. This course is normally offered as part of a Summer Field Session and students also take Florida Archaeology and Laboratory Methods in Archaeology. Emphasis on appropriate methods of archaeological excavation and recovery and recording of data.

ANT 4133 UNDERWATER ARCHAEOLOGY (4)
PR: ANT 2000, ANT 3100 or CI. This course covers the methods, theory and history of underwater archaeology. Diving history and physiology are considered. Emphasis on underwater archaeology as anthropology and the management of underwater archaeological resources.

ANT 4153 NORTH AMERICAN ARCHAEOLOGY (4)
PR: ANT 2000, ANT 3100 or CI. An examination of the evidence which ties the settlement of North America to people from Asia some 20,000 years ago through the development of aboriginal culture to the period of European conquest. Emphasis is placed upon processual development by examining the material culture at selected sites from all time periods. No field work is involved.

ANT 4165 FLORIDA ARCHAEOLOGY (5)
PR: ANT 2000, ANT 3100 or CI. The content of prehistoric cultures such as Paleoindian, Weeden Island, and Safety Harbor are reviewed and examined in terms of their temporal and spatial relationships to each other and the Eastern U.S. The course is normally offered as part of a Summer Field Session and students also take Field Methods in Archaeology and Laboratory Methods in Archaeology.

ANT 4168 SOUTH AMERICAN ARCHAEOLOGY (4)
PR: ANT 2000, ANT 3100 or CI. This course describes and analyzes the sequence of cultural development in prehistoric South America. Cultures such as the Inca, Chavin, Mochica, Wari, Chimú are included, with emphasis on the environmental setting and the relationship between cultural ecology and the growth of civilization.

ANT 4169 MESOAMERICAN ARCHAEOLOGY (4)
PR: ANT 2000, ANT 3100 or CI. The chronological sequence from its beginnings through Protoliterate development is described and analyzed. Cultures such as the Maya, Aztec, Mixtec, Zapotec, Olmec, and Toltec are included, with emphasis on the environmental setting and the relationship between cultural ecology and the growth of civilization.

ANT 4172 HISTORICAL ARCHAEOLOGY (4)
PR: ANT 2000, ANT 3100 or CI. A survey and analysis of archaeology focused on the historic period. Laboratory research with data recovered from historic sites in addition to classwork.

ANT 4180 LABORATORY METHODS IN ARCHAEOLOGY (5)
PR: ANT 2000, ANT 3100 or CI. This course is normally offered as part of a Summer Field Session and students also enroll in Florida Archaeology and Field Methods in Archaeology. Data recovered in excavation are cleaned, catalogued, identified, and analyzed in the laboratory.

ANT 4181 MUSEUM METHODS (5)
PR: ANT 2000, ANT 3100 or CI. Design, preparation and installation of exhibits in the Department of Anthropology Teaching Exhibit Gallery. Emphasis on theory, research, design and construction. Discussion of museum-related issues such as administration.

ANT 4182 CONTEMPORARY PROBLEMS IN ARCHAEOLOGY (4)
PR: ANT 2000, ANT 3100 or CI. This course focuses on the development and implications of the "new" or "processual" archaeology. The relationship between current activities in archaeology and the philosophy of science will be considered. Theory and method in contemporary archaeology will be compared to theory and method in contemporary anthropology.

ANT 4226 PRIMITIVE ART (4)
PR: ANT 2000, ANT 3410 or CI. An examination of the relationship between the visual arts (sculpture, painting, masks, carving, etc.) and culture in non-Western societies. Emphasis on formal symbolic and functional comparative analysis of specific art styles based on crosscultural materials. Consideration of diffusion and change of art forms, commercial and ethnic arts, and role of the artist.

ANT 4231 FOLKLORE (4)
PR: ANT 2000, ANT 3410 or CI. A survey of the field of folkloristics, the course considers the history of folklore col-
lection and analysis, the major folklore schools, and the techniques of collecting and classifying such materials as myths, folktale, riddles, jokes, games, and items of material culture. African (or African derived), Oceanic and Native American societies will be surveyed.

ANT 4241 ANTHROPOLOGY OF RELIGION (4)  
PR: ANT 2000, ANT 3410 or CI. The study of the social and cultural aspects of religion. Religious activities in primitive and modern societies will be discussed. Ritual behavior, religious practitioners and symbols of belief will be considered in light of their impact on the social, political or economic aspects of peoples’ lives.

ANT 4302 WOMEN IN CROSS-CULTURAL PERSPECTIVE (4)  
PR: ANT 2000, ANT 3410 or CI. A cross-cultural perspective on women. The course focuses on various theories, models and beliefs about male-female behaviors and interactions in human cultures throughout history and in various societies in the world today. (Also offered under Women’s Studies.)

ANT 4305 VISUAL ANTHROPOLOGY (4)  
PR: ANT 2000, ANT 3410 or CI. The use of photographic techniques for the recording and analysis of human activities. The study of ethnographic photography as both art and science, and the production of an anthropological study that expresses the goal of “visual literacy”. Review and evaluation of the uses of photographic techniques and the evidences they provide to the social scientist.

ANT 4312 CULTURES OF NATIVE NORTH AMERICA (4)  
PR: ANT 2000, ANT 3410 or CI. An examination of the evidence for the origin and antiquity of human beings in North America and of patterns of regional development until the period of contact with European Colonists. Emphasis on varieties of ecological adaptation, social, political and religious systems, enculturation and worldview, folklore and visual art.

ANT 4316 CULTURES OF THE CONTEMPORARY UNITED STATES (4)  
PR: ANT 2000, ANT 3410 or CI. An examination of anthropology’s contribution to the study of contemporary United States society. Special concerns include the American community, change and continuity in American values and lifestyles, and the historical background and recent manifestations of human problems in the United States.

ANT 4326 CULTURES OF Mesoamerica (4)  
PR: ANT 2000, ANT 3410 or CI. A review of the peoples of modern Mesoamerica, with emphasis on Mexico and Guatemala. The course includes discussion of the historical development of these two countries, contemporary values and interpersonal relationships, and patterns of rural and urban life.

ANT 4340 CULTURES OF THE CARIBBEAN (4)  
PR: ANT 2000, ANT 3410 or CI. The islands and mainland territories of the Caribbean are studied in social anthropologi­cal perspective. Main themes include: the depopulation of the aboriginal population and the resettlement of the area via slavery, indenture and migration; contemporary ethnic heterogeneity; economic problems of Third World microstates; development of a modern social and political consciousness. Religious diversity, music, the graphic arts and the literature of the contemporary Caribbean will also be surveyed.

ANT 4367 CULTURES OF THE MIDDLE EAST (4)  
PR: ANT 2000, ANT 3410 or CI. This course describes the environment and cultural ecology of the Middle East and analyzes how they have influenced the variety of subcultures of the region. The rise and fall of the “great civilizations” and the “little tradition” of the enduring folk cultures will be delineated. Contemporary culture change will be analyzed in a temporal perspective.

ANT 4432 CULTURE AND PERSONALITY (4)  
PR: ANT 2000, ANT 3410 or CI. The interplay between the individual personality and the social group to which he/she belongs is studied crossculturally. Analysis of descriptive studies from various cultures of child-rearing practices, psychosomatic illness and curing. Discussion of theories and models of personality development with special reference to their applicability to the emerging field of cross-cultural mental health planning.

ANT 4442 URBAN ANTHROPOLOGY (4)  
PR: ANT 2000, ANT 3410 or CI. A course devoted to the anthropological study of urban origins, growth, and current human problems associated with city environments. Particular emphasis is placed on the ethnography of city life and its relationship to the practical applications of urban research.

ANT 4462 MEDICAL ANTHROPOLOGY (4)  
PR: ANT 2000, ANT 3410 or CI. The study of health and human behavior in cross-cultural perspective. Main themes include: the impact of disease on the development of human culture; comparative studies of curing practices; medical systems in their relationship to ideology. Emphasis on understanding the role of medicine, and the behavior of both practitioners and patients, in modern societies.

ANT 4495 RESEARCH METHODS IN CULTURAL ANTHROPOLOGY (4)  
PR: CI. The stages in the development and execution of ethnological research are discussed and practiced. Literature search, hypothesis formation, selection of data collection techniques, elicitation of information, data analysis and report presentation are stressed. Research design models from the case literature are studied and supervised research in the local community is designed and carried out.

ANT 4542 CULTURE AND PHYSICAL ANTHROPOLOGY (4)  
PR: ANT 2000, ANT 3511 or CI. A survey of the many ways in which behavior and technology influence the biology of prehistoric and modern human populations. Phenomena such as mating practices, urbanization and dietary habits are related to humans as animals. Behavior genetics and sociobiology are covered.

ANT 4552 EVOLUTIONARY BIOLOGY OF THE PRIMATES (4)  
PR: ANT 2000, ANT 3511 or CI. A survey of non-human primates focusing on biological and evolutionary patterns. Anatomy, genetics and evolution are stressed; major primate types are surveyed for their biological adaptation. Primate sociobiology is discussed.

ANT 4583 THE PHYSICAL ANTHROPOLOGY OF LIVING HUMANS (4)  
PR: ANT 2000, ANT 3511 or CI. An overview of evolution and biological variations of human races. Anatomical, morphological and physiological patterns are surveyed geographically. Cultural influences on racial biology are explored.

ANT 4586 THE PHYSICAL ANTHROPOLOGY OF PREHISTORIC HUMANS (4)  
PR: ANT 2000, ANT 3511 or CI. A survey of the fossil record from early primates through the ascent of Homo Sapiens Sapiens, focusing on the human lineage. Biosocial patterns and cultures of the past are also covered.

ANT 4620 LANGUAGE AND CULTURE (4)  
PR: ANT 2000, ANT 3610 or CI. An examination of the relationships between language and culture in cross-cultural perspective. The extent to which languages shape the world views of their speakers will be explored in depth. At issue will be the nature and degree of fit between linguistic and cultural systems of knowledge.

ANT 4705 APPLIED ANTHROPOLOGY (4)  
PR: ANT 2000, ANT 3410 or CI. A review of approaches applying the anthropological perspective to contemporary human problems. Particular emphasis placed on public policy issues in United States society. The course includes discussion of the historical development of applied anthropology, problems of economic development in the Third World, and the ethics of applied research and intervention.

ANT 4723 ANTHROPOLOGY AND EDUCATION (4)  
PR: ANT 2000, 3410, or CI. An examination of the processes, formal and informal, conscious and unconscious, by which
human beings learn to become functioning members of a society. Comparative analysis of patterns of education based on crosscultural data. Discussion of problems of minority education and the teaching of anthropology in primary/secondary schools.

ANT 4750 ETHNOGRAPHY OF COMMUNICATION (4)
PR: ANT 2000, ANT 3610 or CI. An exploration of the role of language and other modes of communication in the social settings of speech communities. Reading, discussions, and student field projects will focus on the description and analysis of communicative resources in ethnographic contexts.

ANT 4901 DIRECTED READING (1-6)
PR: CI. Individual guidance in concentrated reading on a selected topic in anthropology.

ANT 4907 INDIVIDUAL RESEARCH (3-6)
PR: CI. Individual guidance in a selected research project.

ANT 4930 SPECIAL TOPICS IN ANTHROPOLOGY (4)
PR: CI. Topics to be chosen by students and instructor permitting newly developing interdisciplinary special interests to be explored. May be repeated as topics vary.

ANT 4935 SENIOR SEMINAR IN ANTHROPOLOGY (4)
PR: Senior standing with major in anthropology, or equivalent. Through seminar discussion of readings and student papers, students rethink and reevaluate the nature of anthropology as a discipline and the integration of its branches and specialty fields. On this basis each student develops and articulates his/her current image and vision of anthropology.

MUH 4521 FOLK MUSIC (4)
PR: ANT 2000, ANT 3410 or CI. An examination of ethnic musics in America, emphasizing the functions of folk music in rural and urban settings. Materials drawn cross-culturally are used in both religious and secular forms. When feasible, classwork is supplemented by live performances. Technical knowledge of music is not required.

GRADUATE COURSES

ANT 5904 DIRECTED READING (1-6)
PR: CI. Individual guidance in concentrated reading on a selected topic in anthropology.

ANT 5915 INDIVIDUAL RESEARCH (3-6)
PR: CI. Individual guidance in a selected research project.

ANT 5937 SEMINAR IN ANTHROPOLOGY (4)
PR: CI. Topics to be chosen by students and instructor.

ANT 6186 SEMINAR IN ARCHAEOLOGY (4)
PR: Graduate standing. One of four core courses required of all students. A critical survey of archaeology emphasizing contributions to applied anthropology. Open to non-majors.

ANT 6196 METHODS IN PUBLIC ARCHAEOLOGY (4)
PR: Three of the core courses, or CI. Field techniques, methods of collection, analysis, and interpretation of data. May be repeated up to 8 credit hours as topics vary. Open to non-majors. Lec-lab, field trips.

ANT 6197 SELECTED TOPICS IN PUBLIC ARCHAEOLOGY (4)
PR: Three of the core courses, or CI. Current topical issues in public archaeology. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6198 REGIONAL PROBLEMS IN PUBLIC ARCHAEOLOGY (4)
PR: Three of the core courses, or CI. Contemporary problems in public archaeology in the context of a specific region. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6446 METHODS IN URBAN ANTHROPOLOGY (4)
PR: Three of the core courses, or CI. Field techniques, methods of collection, analysis, and interpretation of data. May be repeated up to 8 credit hours as topics vary. Open to non-majors. Lec-lab, field trips.

ANT 6447 SELECTED TOPICS IN URBAN ANTHROPOLOGY (4)
PR: Three of the core courses, or CI. Current topical issues in urban anthropology. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6448 REGIONAL PROBLEMS IN URBAN ANTHROPOLOGY (4)
PR: Three of the core courses, or CI. Contemporary problems in urban anthropology in the context of a specific region. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6463 REGIONAL PROBLEMS IN MEDICAL ANTHROPOLOGY (4)
PR: Three of the core courses, or CI. Contemporary problems in medical anthropology in the context of a specific region. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6469 SELECTED TOPICS IN MEDICAL ANTHROPOLOGY (4)
PR: Three of the core courses, or CI. Current topical issues in medical anthropology. May be repeated up to 8 credit hours as topics vary. Open to non-majors.

ANT 6490 SEMINAR IN CULTURAL ANTHROPOLOGY (4)
PR: Graduate standing. One of four core courses required of all students. A critical survey of cultural anthropology emphasizing contributions to applied anthropology. Open to non-majors.

ANT 6508 SEMINAR IN PHYSICAL ANTHROPOLOGY (4)
PR: Graduate standing. One of four core courses required of all students. A critical survey of physical anthropology emphasizing contributions to applied anthropology. Open to non-majors.

ANT 6676 SEMINAR IN ANTHROPOLOGICAL LINGUISTICS (4)
PR: Graduate standing. One of four core courses required of all students. A critical survey of anthropological linguistics emphasizing contributions to applied anthropology. Open to non-majors.

ANT 6737 METHODS IN MEDICAL ANTHROPOLOGY (4)
PR: Three of the core courses, or CI. Field techniques, methods of collection, analysis and interpretation of data. May be repeated up to 8 credit hours as topics vary. Open to non-majors. Lec-lab, field trips.

ANT 6908 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

ANT 6915 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

ANT 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

COMMUNICOLOGY


UNDERGRADUATE COURSES

SPA 2001 SURVEY OF COMMUNICATION DISORDERS (3)
A general survey course concerning the nature and prevention of disorders of communication.

SPA 3020 INTRODUCTION TO SPEECH PATHOLOGY (6)
The scope of speech pathology as a profession and field of study. An introduction to speech and language disorders (ar-
tication, stuttering, voice, aphasia, etc.): etiologies, major treatment approaches, and research findings.

SPA 3080 INTRODUCTION TO RESEARCH PROCEDURES IN COMMUNICOLGY (6)
Perspective 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.

SPA 3101 ANATOMY OF THE SPEECH AND HEARING MECHANISM (6)
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.

SPA 3110 INTRODUCTION TO AUDIOLOGY (6)
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.

SPA 3117 INTRODUCTION TO SPEECH SCIENCE (6)
PR: SPA 2001, SPA 3101. Concentrated study of the acoustic, physiological and perceptual aspects of sound as related to normal and pathological speech communication. Introduction to instrumentation and measurement procedures.

SPA 4050 INTRODUCTION TO SPEECH PATHOLOGY AND AUDIOLoGy PRACTicum (1-12)
Observation and participation in speech pathology and audiology practical in the University clinical laboratory.

SPA 4250 ORGANIC COMMUNICATION DISORDERS (4)

SPA 4255 FUNCTIONAL COMMUNICATION DISORDERS (4)
PR: LIN 3010, LIN 4040, LIN 4710 and admission to program. The scope of speech pathology as a profession and field of study. An introduction to communication disorders associated with the peripheral speech mechanism (articulation, voice, etc.); identification, etiologies, and major treatment approaches.

SPA 4333 BASIC MANUAL COMMUNICATION (3)
An introduction to the American Sign Language (ASL) as used among the adult deaf community. Discussion of ASL and its linguistic features as well as an introduction to other manual communication systems and philosophy with demonstrations. Students will acquire the skill to read receptively at least 600 signs and to use those signs expressively. Demonstrations of sign production will be provided with practice periods and an opportunity for interaction with the local deaf community will be afforded the student.

SPA 4363 NATURE AND NEEDS OF THE HEARING IMPAIRED (6)
A study of the effects of auditory disorders upon the organization and expression of behavioral patterns as they relate to motivation, adjustment and personality.

SPA 4930 DIRECTED READINGS (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.

GRADUATE COURSES

SPA 5002 THE SCIENCE OF COMMUNICATION DISORDERS (6)
PR: SPA 3020 or SPA 3110 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.

SPA 5131 SPEECH PATHOLOGY INSTRUMENTATION (6)
PR: CI. Calibration, usage and specific applications of specialized instruments available in dealing with speech and language disorders. Includes: recording, sonograph, audiofeedback, video equipment, behavior measuring devices.

SPA 5132 AUDIOLOGY INSTRUMENTATION (6)
PR: CI. 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.

SPA 5201 COMMUNICATION DISORDERS: ARTICULATION (4)
PR: CI. An examination of normal and deviant articulatory acquisition and behavior. Presentation of major theoretical orientations and the therapeutic principles based upon them.

SPA 5210 COMMUNICATION DISORDERS: VOICE (4)
PR: CI. A comprehensive study of the medical and physical aspects of voice disorders. Primary emphasis is on therapeutic management.

SPA 5222 COMMUNICATION DISORDERS: STUTTERING (4)
PR: CI. A comprehensive study of the diagnosis and modification of stuttering based on a two-factor model. Other major theories are considered and evaluated.

SPA 5303 AUDIOLOGY: HEARING SCIENCE (6)
PR: Admission to the Program or CI. Introduction to psychoacoustical 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.

SPA 5312 AUDIOLOGY: SPEECH AUDIOMETRY (6)
PR: SPA 5305 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 clinical setting.

SPA 5402 COMMUNICATION DISORDERS: LANGUAGE (4)
PR: 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.

SPA 5550 METHODS FOR ORAL COMMUNICATION DISORDERS (6)
PR: SPA 5552 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.

SPA 5552 EVALUATION OF ORAL COMMUNICATION DISORDERS (6)
PR: Admission to the Program or CI. The administration, evaluation, and reporting of diagnostic tests and procedures used in the assessment of speech and language disorders.

SPA 5557 SPEECH PATHOLOGY AND AUDIOLOGY PRACTICUM (1-12)
PR: CI. Participation in speech pathology and audiology practicum in the University clinical laboratory and selected field settings.

SPA 5600 MANAGEMENT OF COMMUNICATION DISORDERS (4)
PR: CI. The planning of programs for individuals with speech, language, and hearing impairments. Includes administration of programs in public schools, clinics, and private practice.
SPA 5930 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.

SPA 6231 CEREBRAL PALSY (4)
PR: CI. A study of the medical, physical, occupational, speech, language, and hearing problems of the cerebral palsied. Therapy techniques are reviewed and evaluated.

SPA 6245 CLEFT PALATE (4)
PR: CI. 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.

SPA 6305 CHILD AUDIOLOGY (4)

SPA 6307 SPECIAL AUDITORY TESTS (4)
PR: SPA 5312 or CI. 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 audiometry.

SPA 6322 TECHNIQUES OF AUDITORY TRAINING AND SPEEREADING (6)
PR: CI. A careful analysis of the visual and auditory sense modalities as input systems used to facilitate communication in the hearing impaired. Particular attention is given to theories and models which explain the interrelationship of the two modalities. Methods and techniques employed in the habitaton of both modalities for the hearing impaired will be completely delineated.

SPA 6332 COMMUNICATIVE SKILLS FOR THE HEARING IMPAIRED (6)
PR: SPA 3020, SPA 3110, SPA 4363. Application and evaluation of techniques for teaching symbolic functioning to children with hearing impairments. Consideration of developmental and remedial aspects of reading.

SPA 6335 ADVANCED MANUAL COMMUNICATION AND BASIC INTERPRETING (3)
PR: SPA 4333 or equivalent and CI. A continuation of basic course which expands students signing skills and presents a thorough exposition of sign systems aimed at signing in an English language context—Seeing Essential English (SEE I), Signing Exact English (SEE II), Linguistics of Visual English (LVE), and Signed English. Those systems will be compared and contrasted with demonstrations. Interpreting for deaf individuals will be introduced. The introduction will include a discussion of the Interpreter’s Code of Ethics and interpreting in different situations. Opportunity for practice of skills. May be repeated once.

SPA 6345 HEARING DISORDERS (4)
PR: SPA 6307 or CI. 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.

SPA 6354 HEARING CONSERVATION (4)
PR: SPA 5312 or CI. A comprehensive study of all aspects of hearing conservation especially those relating to the detection and prevention of hearing loss in both children and adult populations. Special attention is given to problems encountered by industry.

SPA 6410 APHASIA (4)
PR: CI. A consideration of the neurological and psychological aspects of aphasia as they relate to communication disorders. Specific language therapy approaches are discussed and evaluated.

SPA 6423 LANGUAGE FOR THE HEARING IMPAIRED (6)
PR: SPA 3020, SPA 3110, SPA 4363 or CI. Techniques and materials of teaching language to children with auditory disorders. Evaluation and analysis of contemporary methods.

SPA 6505 PRACTICUM (12)
PR: CI. Participation in speech pathology and audiology practicum in the University clinical laboratory and selected field settings.

SPA 6825 RESEARCH PROCEDURES IN SPEECH PATHOLOGY AND AUDIOLOGY (4)
PR: CI. 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.

SPA 6906 INDEPENDENT STUDY (var.)
Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

SPA 6910 DIRECTED RESEARCH (var.)
PR: GR. Master’s level. Repeatable. (S/U only.)

SPA 6930 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.

SPA 6971 THESIS: MASTER’S (var.)
Repeatable. (S/U only.)

CRIMINAL JUSTICE

UNDERGRADUATE COURSES
CCJ 2030 MAN, CRIME, AND SOCIETY (4)
Designed to give the undergraduate non-major a non-technical survey of the American criminal justice system. The nature of crime, law enforcement, and the court system, and correctional practices and institutions will be covered. Not for major credit.

CCJ 3020 SURVEY OF CRIMINAL JUSTICE SYSTEM (5)
PR: PSY 2012, SOC 2000, or equivalent or CI. An introduction to the major institutions associated with criminal justice, their structure, personnel, objectives, resources, and operation. Course content also includes developing an understanding of criminal law, terminology and procedure. This course is designed to provide a broad overview of the activities, language, concepts and career opportunities of the entire Criminal Justice System. The course may include an exploratory project, encouraging the student to use his or her own initiative to explore, observe and interview in one or more local institutions of criminal justice.

CCJ 3280 LEGAL FOUNDATIONS OF CRIMINAL JUSTICE (4)
PR: CCJ 3020, POS 2041 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.

CCJ 3610 CHARACTERISTICS OF THE OFFENDER (4)
PR: Junior standing plus CCJ 3620 or CI. A four-course series focusing on those individuals being processed through the criminal justice system. Each course will examine the characteristics of a special offender group (e.g., adult, juvenile, victimless), its impact on the system, and the system’s potential to change this class of offender behavior pat-
terms. (May be taken with different subject matter up to 16 hours.)

**CCJ 3620 NATURE OF CRIME** (4)
PR: CCJ 3020. 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.

**CCJ 4110 THEORY AND PRACTICE OF LAW ENFORCEMENT** (4)
PR: Junior standing plus CCJ 3280 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.

**CCJ 4130 THE LAW ENFORCEMENT OFFICER AND THE COMMUNITY** (4)
PR: Junior standing plus CCJ 4110 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.

**CCJ 4330 THE PROBATION AND PAROLE PROCESS** (5)
PR: Junior standing plus CCJ 4360 or CI. The concepts of probation and parole will be thoroughly explored and related to actual and potential treatment situations.

**CCJ 4340 INDIVIDUAL AND GROUP PROCESSES IN CORRECTIONAL TREATMENT I** (4)
PR: Senior standing, CCJ 4540, and CI. Designed to introduce the student to theories and methods underlying treatment modalities currently employed in corrections.

**CCJ 4341 INDIVIDUAL AND GROUP PROCESSES IN CORRECTIONAL TREATMENT II** (4)
PR: Senior standing plus CCJ 4340. The student will be introduced to practical applications within a correctional setting involving both individual and group situations.

**CCJ 4360 THEORY AND PRACTICE OF CORRECTIONS** (4)
PR: Junior standing plus CCJ 3620 or CI. The scope of this 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.

**CCJ 4540 JUVENILE CORRECTIONS** (5)
PR: Junior standing plus CCJ 4360 or CI. Provides an in-depth analysis of the different treatment philosophies and techniques used in the field of juvenile corrections today. Special attention is given to experimental and demonstration programs as well as to traditional and established methods. Students will be required to work in a juvenile corrections agency and to attend field trips.

**CCJ 4604 ABNORMAL BEHAVIOR AND CRIMINALITY** (4)
PR: CCJ 3620, CCJ 3610 (4 hours), or CI. This course will provide a systematic introduction to the relationship between mental illness and criminality. Attention will be given to psychiatric labeling of deviant behavior and its implications for the handling of the criminal offender who may be diagnosed as "mentally ill".

**CCJ 4700 RESEARCH METHODS IN CRIMINAL JUSTICE** (4)
PR: Junior standing plus CCJ 3020 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 STA 3122, Social Science Statistics, GEB 2111, Business and Economic Statistics I, or STA 3023, Introductory Statistics I.

*CCJ 4900 DIRECTED READINGS* (1-5)
PR: CI. This course is specifically designed to enable advanced students the opportunity to do in-depth independent work in the area of criminal justice. Each student will be under the close supervision of a faculty member of the program. No more than five hours of CCJ 4900, CCJ 4910 or any combination of the two will be accepted toward the minimum number of hours required for the major.

**CCJ 4910 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. No more than five hours of CCJ 4900, CCJ 4910 or any combination of the two will be accepted toward the minimum number for the major.

**CCJ 4934 SEMINAR IN CRIMINAL JUSTICE** (3-5)
PR: Senior standing and CI. The seminar (multi-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.)

**CCJ 4940 INTERNSHIP FOR CRIMINAL JUSTICE MAJORS** (3-12)
PR: Senior standing. The internship 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. See requirements for the B.A. degree in Criminal Justice for the number of hours required (SU only.)

**GRADUATE COURSES**

**CCJ 6135 URBAN POLICE PROBLEMS** (3)
This course addresses itself to the major problems confronting urban police departments. Areas of concentration will be racial tensions; police corruption, politicalization, etc. May be repeated up to 9 hours.

**CCJ 6285 LAW AND CRIMINAL JUSTICE** (4)
An exposition of historical and contemporary legal principles, procedures and issues as reflected in Constitutional provisions, statutes and case law.

**CCJ 6345 CORRECTIONAL TREATMENT METHODS** (3)
Designed to acquaint the beginning graduate student with general conditions, skills and techniques required in order to provide satisfactory treatment for both adult and juvenile offenders. Emphasis will be placed on familiarizing the student with those factors and conditions which facilitate treatment and the goals of treatment in a community correctional setting. In addition, several specific and widely used treatment approaches will be extensively covered and practiced during this course. May be repeated up to 9 hours.

**CCJ 6405 POLICE ADMINISTRATION** (3)
This course is designed to cover the major elements of urban police administration including personnel selection and promotion, program development, and management techniques. May be repeated up to 9 hours.

**CCJ 6455 COMMUNITY CORRECTIONAL ADMINISTRATION** (3)
This course consists of an analysis of the complex issues and controversies related to the development and management of modern community-based corrections programs. May be repeated up to 9 hours.

**CCJ 6466 RESOURCE DEVELOPMENT AND ACQUISITION** (3)
Required for Planning and Evaluation tract students, optional for others, this course will survey organizations which provide financial assistance to Criminal Justice agencies. In all cases, an analysis of criteria, limitations and availability will be made. Practical experience in proposal planning and submission will be provided.

**CCJ 6475 SYSTEMS ANALYSIS IN CRIMINAL JUSTICE** (3)
Time will be spent on the design and analysis of both existing

*NOTE: CCJ 4900 & CCJ 4910. (a) Students wishing to enroll must make arrangements with a faculty member during the quarter prior to actually taking the course, (b) a minimum of four (4) CCJ courses must have been completed satisfactorily prior to enrollment, (c) first consideration will be given to Criminal Justice majors, and (d) individual faculty members may add additional requirements at their discretion.*
and student created systems, with emphasis on the role of system analysis as it applies to management information systems, computer based systems. In addition, attention will be directed to retrieval strategies, reducing work loads, simplification, formatting, form design and control, data organization costs. May be repeated up to 6 hours.

CCJ 6605 THEORIES OF DEVIANCE (4)
An introduction and comparison of major historical and contemporary theories as they relate to the explanation of criminal behavior. Attention will be given to developing, on the part of the student, a frame-of-reference by which he can organize and understand the empirical factors operating in the Criminal Justice System.

CCJ 6705 INTRODUCTION TO RESEARCH AND EVALUATION IN CRIMINAL JUSTICE (4)
PR: CCJ 4700 or equivalent. An introduction to research, evaluation, statistics, data management, and management information procedures. Emphasis will be given to the role of each of these topics as monitors and change agents in criminal justice, particularly in police management and corrections. CCJ 6705 must be completed at least one quarter prior to beginning work on the thesis (CCJ 6971).

CCJ 6709 RESEARCH AND EVALUATION METHODS (3)
A detailed coverage of statistical research and evaluation techniques utilized for research and reporting practices in Criminal Justice. Data management, field experimentation and research methodology will be included as they apply. May be repeated up to 6 hours.

CCJ 6725 CORRECTIONAL PLANNING (3)
This course will provide the student with an in-depth examination of urban correctional planning processes. Topics included will deal with the development of personnel, budgets, and facility plans and their implementation. May be repeated up to 9 hours.

CCJ 6726 URBAN POLICE PLANNING (3)
This course will examine contemporary law enforcement planning and will focus on techniques and skills required to forecast future needs of police agencies in rapidly expanding metropolitan areas. May be repeated up to 9 hours.

CCJ 6910 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. A maximum of five hours may be counted toward the minimum number of hours required by the department for the master's degree. (S/U only.)

CCJ 6920 PRO SEMINAR IN CRIMINAL JUSTICE (1-10)
One hour is required for all students. This variable topic listing is a forum primarily for the presentation and discussion of ethical and research ideas by faculty, guests, and students to aid students in linking theory and research, in understanding contemporary, problem oriented research and in developing thesis subjects. Any issue of professional concern may be treated. May be repeated up to five hours. At least one hour should be taken during the first quarter in the program.

CCJ 6930 SEMINAR IN URBAN LAW ENFORCEMENT (3)
Designed to provide an in-depth review of contemporary issues and problems as they relate to urban police administration. May be repeated up to 9 hours.

CCJ 6933 SEMINAR IN COMMUNITY CORRECTIONS (3)
This course will provide a mechanism by which staff and students can focus on the latest events, issues, and problems confronting community corrections programming. May be repeated up to 6 hours.

CCJ 6935 TOPICS IN CRIMINAL JUSTICE (3-6)
PR: Graduate standing in the Criminal Justice Program. The field of criminal justice is characterized by a wide variety of issues and controversies that are of topical concern. This seminar provides a forum for analyzing and discussing these topics as their importance and the accumulation of data warrants. Classics in the criminal justice literature may be included among the topics for treatment in this course. May be repeated with different subject matter.

CCJ 6946 GRADUATE PRACTICUM IN CRIMINAL JUSTICE* (1-4)
Practicum will consist of placement with a criminal justice agency selected by the student in consultation with his committee. This placement will enable the student to gain high level field experience related to their chosen career field. A minimum of 24 graduate hours in Criminal Justice must be completed prior to enrollment. (S/U only.)

CCJ 6947 CRIMINAL JUSTICE INTERNSHIP* (12)
The internship will place the student in a criminal justice position commensurate with his skills so that he may be able to blend theory with experience. Placement, which will be full-time for one year, will be worked out between the agency, the student, and the student's committee. All graduate academic course work must be completed prior to enrollment. (S/U only.)

CCJ 6971 THESIS: MASTER'S (var.)
PR: CCJ 6705. Repeatable. A maximum of nine hours may be counted toward the minimum number of hours required for the Master's degree. (S/U only.)

*Practicum is required of all students who are not selected for or who choose not to participate in the alternative one-year internship. To be completed during the second year in the program.

ECONOMICS — see Business Administration

ENVIRONMENT

UNDERGRADUATE COURSE

IDS 3150 DIALOGUE IN ENVIRONMENTAL SURVIVAL (4)
A multi-disciplinary course dealing with environmental problems. For non-science majors. (S/U only.)

GEOGRAPHY


UNDERGRADUATE COURSES

GEA 3000 WORLD REGIONAL GEOGRAPHY (5)
Comparative and analytical analysis of representative regions of the world with emphasis on cultural, political, economic, and physical diversity.

GEA 3002 GENERAL GEOGRAPHY (5)
Selected topics in regional and topical geography offered as survey courses. Open to all students.

GEA 3194 REGIONAL GEOGRAPHY (5)
Variable title course to systematically study and compare special regions identified by the instructor.

GEA 3202 GEOGRAPHY OF ANGLO-AMERICA (5)
GEA 3260 GEOGRAPHY OF THE SOUTHEAST (5)
GEA 3270 GEOGRAPHY OF FLORIDA (5)
GEA 3300 GEOGRAPHY OF MIDDLE AMERICA (5)
GEA 3360 GEOGRAPHY OF THE GULF OF MEXICO (5)
GEA 3400 GEOGRAPHY OF LATIN AMERICA (5)
GEA 3410 GEOGRAPHY OF SOUTH AMERICA (5)
GEA 3500 GEOGRAPHY OF EUROPE (5)
GEA 3554 GEOGRAPHY OF THE USSR (5)
GEA 3600 GEOGRAPHY OF AFRICA (5)
GEA 3703 GEOGRAPHY OF ASIA (5)

GEO 1930 GEOGRAPHY OF CURRENT EVENTS (5)
Application of basic geographic principles of the analysis of contemporary events in various parts of the world.
GEO 3013 SYSTEMATIC GEOGRAPHY (5)
Principles and concepts of the discipline; maps, earth-sun relationships, weather, and climate.

GEO 3370 SYSTEMATIC GEOGRAPHY (5)
PR: GEO 3013 or Cl. Landforms and conservation of resources. Latter part of course deals with man’s use of the natural environment.

GEO 3402 HUMAN GEOGRAPHY (5)
PR: GEO 3013 or Cl. Systematic treatment of man’s activities on earth; population, settlement, agriculture, industry, trade, transportation, and political aspects are among those considered.

GEO 3901 ELEMENTS OF GEOGRAPHY (1)
An independent study program in the basic elements of physical and cultural geography. 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.)

GEO 3931C WEATHER AND MAN (5)
The interrelationship between the atmospheric environment and man.

GEO 4040C MAP INTERPRETATION (5)
PR: GEO 3013, 3370 or Cl. Analysis and synthesis of various types of maps and map projections.

GEO 4100C CARTOGRAPHY (5)
PR: GEO 3013, 3370 or Cl. Cartographic techniques of map compilation and presentation, including generalization, symbolization, reproduction, and utilization.

GEO 4114C GEOGRAPHIC TECHNIQUES AND METHODOLOGY (5)
PR: GEO 3013, 3370 or Cl. Selected topics in various geographic techniques and methodologies and their application.

GEO 4124C AIR PHOTO INTERPRETATION (5)
PR: GEO 3013, 3370 or Cl. Use of air photos and other remote sensing devices in detecting, identifying, and analyzing objects on the earth’s surface from the perspective of space.

GEO 4164C QUANTITATIVE METHODS (5)
PR: GEO 3013, 3370 or Cl. Use of statistical analysis in geographic research.

GEO 4200C PHYSICAL GEOGRAPHY (5)
PR: GEO 3013, 3370 or Cl. Man’s interaction with the physical environment, including any one or a combination of the following topics: landforms, weather, climate, soils, vegetation, water.

GEO 4210 PHYSIOGRAPHY (5)
PR: GEO 3013, 3370 or Cl. Regional analysis of the physical complex of North America, including a detailed study of landforms and their distribution and processes of landform evolution.

GEO 4280C HYDROLOGY (5)
PR: GEO 3013, 3370 or Cl. An in-depth study of the hydrologic cycle with emphasis on surface water components. Particular topics may include precipitation, evapotranspiration, water budget, streamflow, and probability analysis.

GEO 4340 MAN AND NATURAL HAZARDS (5)
An examination of environmental hazards; their influence on man and man’s attempt to overcome them. Some of the topics considered are hurricanes, tornadoes, earthquakes, tidal waves, fire, freezes and droughts.

GEO 4372 CONSERVATION (5)
The distribution, exploitation, and conservation of physical and human resources, ecology.

GEO 4390 WATER RESOURCES (5)
A general overview of the hydrologic cycle and the impact of cultural development on its various components. May also include a survey of regional water problems.

GEO 4420 CULTURAL GEOGRAPHY (5)
A study of the temporal-spatial relationship of culture and nature. Emphasis is placed on man’s role in using and modifying the landscape and the effect of his global distribution on his economic activities, political development, and cultural differentiation.

GEO 4440 POPULATION GEOGRAPHY (5)
An analysis of contemporary patterns in world and regional distributions of people and geographical factors underlying these patterns and their changes.

GEO 4460 HISTORICAL GEOGRAPHY (5)
Survey of evolving landscapes through time; analysis is made by means of systematic and regional methods in order to reconstruct the changing culture-nature equation.

GEO 4470 POLITICAL GEOGRAPHY (5)
The geographic factors underlying political decisions, those which influence the outcome of political decisions, and the geographic consequences of political decisions and actions. Geopolitical relationships are examined at the local, state, national, and supranational levels.

GEO 4500 ECONOMIC GEOGRAPHY (5)
Location factors and principles, utilizing theoretical and empirical studies. Focus upon the spatial organization of economic production, consumption, and exchange systems.

GEO 4530 GEOGRAPHY OF ENERGY (5)
An examination of the primary sources of energy from the standpoint of systematic and regional geography. Consideration is given to the resource base, production, and consumption. Special attention is given to OPEC and environmental problems.

GEO 4602 URBAN GEOGRAPHY (5)
Analysis of the spatial properties of urban areas. Emphasis is placed on factors of urban growth, location, spacing, and size; examined are the geographic factors supporting urban development, site, situation, the internal structure, the hinterland.

GEO 4700 TRANSPORTATION GEOGRAPHY (5)
Reciprocal relations between freight and passenger transportation and land use organization in terms of site requirements, traffic generation characteristics, circulation problem zones of production-fabrication-consumption.

GEO 4890 COASTAL ZONE MANAGEMENT (5)
PR: GEO 3013, 3370 or Cl. Identification and analysis of various physical, environmental, and cultural elements with emphasis on the impact of economic activities on these elements.

GEO 4990 DIRECTED READING (1-5)
PR: 30 hours in geography and CC prior to registration. May be repeated.

GEO 4991 INDIVIDUAL RESEARCH (1-5)
PR: 30 hours in geography and CC prior to registration. May be repeated.

MET 4002 CLIMATOLOGY (5)
PR: GEO 3013 or Cl. An introductory course which includes an examination of climatic classification systems, problem climates, and the application of climate to selected topics such as world vegetation patterns, agriculture, housing and health.

MET 4010C METEOROLOGY (5)
PR: GEO 3013 or Cl. An introduction to the basic study of the components of the earth’s atmosphere and the interrelated processes involved. Weather elements included are temperature, atmospheric moisture, pressure, winds, clouds, precipitation, and storms. Basic weather forecasting and analysis.

URP 4052 URBAN AND REGIONAL PLANNING (5)
The geographic foundations of the modern city, metropolitan development, and the trend toward megalopolis. Examined are the political problems of conflicting jurisdictions at the local, county, state, national, and international levels.

GRADUATE COURSES

GEO 6195 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.
GEO 5065 GEOGRAPHIC LITERATURE AND HISTORY
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.

GEO 6119 SEMINAR IN ADVANCED TECHNIQUES & METHODOLOGY
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.

GEO 6209C SEMINAR IN ADVANCED PHYSICAL GEOGRAPHY
PR: Graduate standing in geography. Analytic study of a problem selected from one or more aspects of the atmosphere, biosphere, hydrosphere, or litosphere. May be repeated once for credit, but topic may not be repeated.

GEO 6428 SEMINAR IN ADVANCED CULTURAL GEOGRAPHY
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.

GEO 6908 INDEPENDENT STUDY
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

GEO 6918 DIRECTED RESEARCH
PR: GR. Master's level. Repeatable. (S/U only.)

GEO 6919 GRADUATE RESEARCH METHODS
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

GEO 6945 ACADEMIC METHODOLOGY
PR: Graduate standing in geography. Current trends in college geography, with the emphasis on the junior college program. Not available to thesis students.

GEO 6947 DIRECTED TEACHING
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

GEO 6971 THESIS: MASTER'S
Repeatable. (S/U only.)

GERONTOLOGY


UNDERGRADUATE COURSES

GEY 3000 INTRODUCTION TO GERONTOLOGY
This course is designed to be an introduction to the study of aging. The aging process is viewed from a multi-disciplinary perspective including the biological, psychological, and sociological aspects of aging.

GEY 3100 CULTURE, SOCIETY AND AGING
This course is designed to allow the student to consider aging within the context of culture and society. Emphasis will be given to cultural attitudes toward aging in the U.S. and to implications of cultural attitudes for human behavior.

GEY 3200 APPLIED GERONTOLOGY
PR: CI. This course is designed to provide an integration of empirical data in the study of aging with practical experience in working with older people. Students will spend time actually working with older people in an agency or institutional setting and then will use experiences in conjunction with other available data to gain perspective in this field.

GEY 4900 DIRECTED READINGS
PR: CI. A reading program with topics in gerontology conducted under the supervision of a faculty member.

GEY 4930 SEMINAR IN SELECTED TOPICS IN SOCIAL GERONTOLOGY
PR: CI. This course will provide upper level students with a seminar experience in discussing topics of interest and social relevance in the field of aging. Each student will be required to prepare a seminar paper and present it.

GRADUATE COURSES

GEY 5250 LEISURE FOR THE AGING
PR: CI. This seminar consists of general data and observations on trends and research in the leisure field, directed theoretical analysis of these studies as they pertain to the elderly and contact with progress by visits, interviews, and reports.

GEY 5350 AGING AND PERSONALITY
PR: CI. An introduction to personality theory and concepts of adjustment with an emphasis on counseling techniques and rehabilitative efforts with the aged.

GEY 5600 PHYSICAL CHANGE AND AGING
PR: CI. Lectures and discussion concerned with normal functioning of major organ systems of the body, age-related changes, and implications for behavior.

GEY 5610 PSYCHOLOGY OF AGING
PR: CI. Consideration of basic psychological processes as related to the aging process, changes in functioning and perceptual motor and cognitive-areas from the developmental perspective.

GEY 5620 SOCIOLOGICAL ASPECTS OF AGING
PR: CI. Examine, within a sociological frame of reference, the inter-relationships between the aged (or aging) and the structure and function of the social system and its major institutionalized subsystems.

GEY 5630 ECONOMICS AND AGING
PR: CI. A study of the basic processes of macroeconomic thought in the modern mixed economy and what influences these processes have on the subject of aging. The course will include discussions on economic issues pertinent to aging such as income maintenance, problems, theories of consumption and income, and labor force problems.

GEY 5642 PERSPECTIVES ON DEATH AND DYING
PR: CI. An examination of man's attempt to understand the meaning of death, and of his ways of meeting the personal and social crises which death presents. Study of the various psychological, medical, legal, and religious problems caused by dying and death, and of how individuals and groups have responded in the past and present. Emphasis on challenging and assisting the student to develop an objective and creative view of death and loss as it relates to the end of human life.

GEY 5645 MID-LIFE DEVELOPMENT
PR: CI. The life space of middle age is explored through an examination of the physical, social, and psychological forces which influence this period of the human life span.

GEY 5901 DIRECTED READINGS
PR: CI. A reading program with topics in gerontology conducted under the supervision of a faculty member.

GEY 6325 SOCIAL POLICY AND PLANNING FOR GERONTOLOGISTS
PR: CI. This course is intended to enable graduates to be more knowledgeable and hence more effective practitioners in the processes of social policy development and social planning. It is designed to provide an empirical and analytical base for understanding the major issues and trends involved in existing and proposed programs and services in the field of aging at local, state, and federal levels of service planning and provision.

GEY 6390 INTERPERSONAL RELATIONS PRACTICUM
PR: CI. A practicum involving students in group and individual settings in interaction with older persons. Content will
include implications from interviewing, counseling, and current
conceptions of personality in the aged.
GEY 6391 PRACTICUM IN DEATH AND LOSS (4)
PR: GEY 5642 and GEY 6643. This course is offered for
students who have a particular interest in gaining a deeper
insight into the area of death and dying. The student will inter
act with dying patients and bereaved families in local nursing
homes and hospitals. Laboratory and class discussions. Not
restricted to majors. (S/U only.)
GEY 6450 SOCIAL RESEARCH METHODS APPLIED
TO GERONTOLOGY (4)
PR: C1. Systematic study of the methods and techniques em-
ployed in social, psychological, and health studies of popula-
tion groups. Directed toward the consumers of research
findings—persons whose positions call for the ability to inter-
pret, evaluate, and apply the findings produced by others.
GEY 6460 ADMINISTRATIVE APPLICATIONS OF
DEMOGRAPHY (4)
PR: C1. Acquaints the student with various sources of demo-
graphic data and its use. Emphasis is placed upon applicability
in program planning and student experience in locating,
tabulating, and interpreting data from selected publications.
GEY 6643 THE CONCEPT OF GRIEF AND LOSS (4)
PR: GEY 5642. Deals with the concepts of grief and loss, with
particular emphasis on the loss of a significant other. Will pro-
vide the opportunity for the individual to explore his own
orientation toward death and dying.
GEY 6907 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with
instructor. Repeatable. (S/U only.)
GEY 6911 PROJECTS IN AGING I (1-6)
PR: C1. In-depth study of special topics with the objective of
identifying problems for research and developing research
proposals.
GEY 6912 PROJECTS IN AGING II (1-6)
PR: GEY 6911 and C1. A continuation of GEY 6911.
GEY 6930,6931,6932,6933 SEMINAR IN SOCIAL
GERONTOLOGY (2,2,2,2)
PR: C1. Designed to give the graduate student an opportunity
to integrate concepts within the field of gerontology, and relate
to these other fields of study. Guest lecturers from a variety of
disciplines participate in the seminar. (S/U only.)
GEY 6940 FIELD PLACEMENT (12)
PR: C1. Internship in an agency or setting. An assignment to
an agency or organization engaged in planning or administering
programs for older people or in providing direct services to
older people. (S/U only.)

HISTORY

Chairperson: L. A. Perez, Jr.; Professors: C. W. Arnade, C. B.
Currey, G. H. Mayer, L. A. Perez, Jr., R. R. Trask; Associate
Professors: J. M. Belohlavek, T. P. Dilkes, R. P. Ingalls, G. H.
Kleine, S. F. Lawson, K. A. Parker, E. M. Silbert, J. M. Swans-
on; Assistant Professors: D. R. Carr, G. R. Mormino, G. K.
Tipts, R. J. VanNeste; Lecturer: C. J. Wrong; Instructor: S.
Taitshoff; Courtesy Instructor: D. C. Jordan; Professor Emeritus: J.
W. Silver.

UNDERGRADUATE COURSES

AFH 3100 INTRODUCTION TO AFRICAN HISTORY (4)
An outline survey of pre-colonial African history including a
prefatory introduction to the use of primary sources (such as
archaeology, oral tradition, cultural anthropology, compara-
tive linguistics, documents) in reconstructing the African past.
(Also offered under Afro-American Studies.)
AFH 3200 AFRICAN HISTORY SINCE 1850 (4)
Survey of the colonial and post-colonial history of Africa. Em-
phasis 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 offered under Afro-American Studies.)
AMH 2010, 2020 AMERICAN HISTORY I, II (4,4)
A history of the United States with attention given to relevant
developments in the Western Hemisphere. AMH 2010: Euro-
pean origins to 1877; AMH 2020: 1877 to present.
AMH 3110 AMERICAN COLONIAL HISTORY TO
1750 (4)
A study of European interest and involvement in America from
the Age of Reconnaissance to 1750. Attention is given to
imperial conflicts, religious development, economic growth,
and the beginnings of distinctive American views.
AMH 3130 THE AMERICAN REVOLUTIONARY ERA (4)
A study of American development from 1750 to 1789 with
emphasis on institutional development and the establishment
of the American national system as an outgrowth of revolution
and counter-revolution.
AMH 3140 THE AGE OF JEFFERSON (4)
A study of the formation of the American national state, the
development of political parties, continental expansion and
reform movements. Covers the period from 1783 to 1828.
AMH 3160 THE AGE OF JACKSON (4)
A study of the formation of the American national state, the
development of political parties, continental expansion and
reform movements. Focuses upon the years from 1828 to the
Compromise of 1850.
AMH 3170 THE CIVIL WAR AND RECONSTRUCTION
(4)
The events and personalities of the 1850's; the Civil War and
Reconstruction including politics, slavery, reform, and ex-
pansion are examined in addition to the military conflict.
AMH 3201 THE UNITED STATES, 1877-1914 (4)
A study of the transition of American society from the era of
Reconstruction to WWI focusing on industrialization, expa-
sion, and urbanization.
AMH 3231 THE UNITED STATES, 1914-1945 (4)
A comprehensive study of the United States from the begin-
ing of World War I to the end of World War II. Consideration
of social and intellectual, political, economic, diplomatic
developments for the presidency of Woodrow Wilson through
the presidency of Franklin Roosevelt.
AMH 3270 THE UNITED STATES SINCE 1945 (4)
A study of American society from the end of World War II to
the present. Developments in the political, economic, social,
and intellectual spheres will be studied and related to the role
of the United States in international politics.
AMH 3402 THE ORIGINS AND GROWTH OF THE
AMERICAN SOUTH (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.
AMH 3403 THE SOUTH AND THE NATION (4)
The growth of the "New South," and the increasing integra-
tion and assimilation of the South in the nation.
AMH 3421 EARLY FLORIDA HISTORY (4)
A history of colonial Florida under the Spanish and English.
Florida as an area of discovery, colonization, and imperial
dominion; the emergence of Florida within its regional setting.
AMH 3423 MODERN FLORIDA HISTORY (4)
Florida from its acquisition by the United States in 1821 to the
present time. Stressles political, economic, and cultural growth
and the affect of the environment.
AMH 3428 TAMPA HISTORY (4)
A study of Tampa and its inhabitants, with emphasis upon the
post-Civil War period. The course examines the origins of
Tampa and the diverse social, political, and economic factors
which have contributed to the emergence of Tampa as the center of a growing metropolitan area. The Tampa past will be studied against the state, national, and international developments.

AMH 3460 AMERICAN URBAN HISTORY (4)
A study of cities in American history from the colonial period to the present. The course focuses on the process of urbanization and the changing quality of urban life.

AMH 3500 AMERICAN LABOR HISTORY (4)
A study of American workers with emphasis on the period from the 1860's to the present. The course examines the impact of industrial change on workers and their responses as expressed in strikes, unions, and political action.

AMH 3510 AMERICAN FOREIGN RELATIONS TO 1898 (4)
The development of American Foreign Relations in the Agricultural era.

AMH 3511 AMERICAN FOREIGN RELATIONS SINCE 1898 (4)
A history of American Foreign Relations in the Industrial era.

AMH 3520 IMMIGRATION HISTORY (4)
A study of the composition and character of the American people with emphasis on the period from the 1840's to the 1920's. This course examines the diverse old-world backgrounds of the thirty-five million immigrants and their responses to new world social, political and economic conditions.

AMH 3540 UNITED STATES MILITARY HISTORY (4)
A study of United States military history from the American colonial period to the present. The United States military experience is studied within the context of related international and domestic developments and integrated with European antecedents.

AMH 3800 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.

ASH 3403 ANCIENT AND IMPERIAL CHINA (4)
A survey of Chinese history from the earliest agrarian societal forms through the height of Chinese civilization in the Ming Dynasty (ca. 15th-16th Centuries).

ASH 3404 MODERN CHINA (4)
A survey of the 19th and 20th Centuries up to the creation of the Chinese People's Republic in 1949.

EUII 2101, 2102 ANCIENT HISTORY I, II (4,4)
A survey of ancient civilizations. EUII 2101 treats Near Eastern and Greek history to the beginning of the career of Alexander the Great; EUII 2102 treats the career of Alexander, the Hellenistic World, and Rome to the death of Constantine. Attention is drawn to the correlative work in CLA 3000, Ancient Civilizations.

EUII 2121, 2122 MEDIEVAL HISTORY I, II (4,4)
A thematic survey of the Middle Ages. EUII 2121 deals with the nascent, Christian civilization of Europe, circa 300-1050 A.D.; EUII 2122 treats the mature medieval civilization of Europe, circa 1050-1500.

EUII 2200, 2201 MODERN EUROPEAN HISTORY I, II (4,4)
A thematic survey of Europe in the modern age. EUII 2200 treats the period from the Renaissance to the French Revolution; EUII 2201, from the French Revolution to the present.

EUII 3140 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.

EUII 3145 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.

EUII 3188 MEDIEVAL SOCIETY (4)
An investigation into the daily life and attitudes of the medieval peasant and townsmen, and the agrarian-urban economy and society which affected their lives.

EUII 3189 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.

EUII 3204 HISTORY OF THE ENLIGHTENMENT (4)
The history of Europe from the Peace of Westphalia (1648) to the outbreak of the French Revolution.

EUII 3205 HISTORY OF NINETEENTH CENTURY EUROPE (4)
A comparative study of major economic, political and socio-cultural developments in 19th Century Europe.

EUII 3206 HISTORY OF TWENTIETH CENTURY EUROPE (4)
A comparative study of major economic, political, and socio-cultural developments in 20th-century Europe.

EUII 3302 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.

EUII 3303 IMPERIAL BYZANTIUM (4)
A study of the Byzantine Empire during the period 867-1453. Emphasizing causes for its decline and fall.

EUII 3401 HELLENIC GREECE (4)
A study of Greece in the Ancient period focusing on the Pre-Hellenic and Hellenic periods to the death of Philip of Macedonia.

EUII 3402 HELLENISTIC GREECE (4)
A study of the career of Alexander The Great and of major developments in the Hellenistic period.

EUII 3412 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.

EUII 3413 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.

EUII 3431 ITALIAN HISTORY 1861 TO PRESENT (4)
A study of the major developments in Italian History from 1861 to the present.

EUII 3442 FRENCH HISTORY TO 1789 (4)
A study of major developments in French History from the Renaissance to the French Revolution.

EUII 3451 FRENCH HISTORY 1789 TO PRESENT (4)
A study of major developments in French History from the French Revolution to the present.

EUII 3461 GERMAN HISTORY TO 1870 (4)
A study of major developments in German History from the Reformation to 1870.

EUII 3462 GERMAN HISTORY 1870 TO PRESENT (4)
A study of major developments in German History from 1870 to the present.

EUII 3501 BRITISH HISTORY TO 1715 (4)
A study of major developments in British History from the 15th century to 1715.

EUII 3502 BRITISH HISTORY TO 1715 (4)
A study of major historical developments in British History from 1715 to the present.

EUII 3530 BRITISH EMPIRE (4)
British Empire and Commonwealth. A study of the first and second British Colonial Empires, the emergence of the British Commonwealth into the Commonwealth of Nations.

EUII 3571 RUSSIAN HISTORY TO 1855 (4)
A study of major developments in Russian History from pre-Kievan times to 1855.
EIH 3572 RUSSIAN HISTORY 1855 TO PRESENT (4) A study of the major developments in Russian History from 1855 to the present.

EIH 4600 SOCIAL AND INTELLECTUAL HISTORY OF THE ANCIENT WORLD (4) A study of the major social and intellectual developments in the Ancient World.

EIH 4601 SOCIAL AND INTELLECTUAL HISTORY OF MEDIEVAL EUROPE (4) A study of the culture and major intellectual developments of the Medieval World.

EIH 4603 SOCIAL AND INTELLECTUAL HISTORY OF MODERN EUROPE (4) A study of the major social & intellectual developments in Modern Europe.

HIS 3930 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.

HIS 4070 RESEARCH IN HISTORY (4) PR: Cl. 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 HIS 4936.

HIS 4152 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.

HIS 4153 ORAL HISTORY (4) A study of the craft and technique of Oral History. The course focuses on a number of historical studies which have utilized interviews as an instrument for historical research. Students will be expected to complete original field research, preferably in the Tampa area.

HIS 4461 SCIENCE AND CIVILIZATION (4) A thematic study of the interrelationship of science and society in modern history, science as a social institution in history.

HIS 4900 DIRECTED READING (1-4) PR: Cl. Arrangement with instructor prior to registration. Readings in special topics.

HIS 4936 PRO-SEMINAR IN HISTORY (4) PR: Cl. 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.

LAH 3021 SPAIN, PORTUGAL AND THE IBERIAN EMPIRES (4) A study of the peoples of the Iberian peninsula from the late medieval period to 1898 with emphasis on the Spanish Portuguese empires in the Western Hemisphere.

LAH 3022 MODERN LATIN AMERICA (4) A study of the emergence of the Latin American state. Emphasis is on Latin America since the wars of emancipation with special attention to the Third World character of the region, including independence, underdevelopment, imperialism, and revolution.

LAH 3430 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.

LAH 3470 CARIBBEAN HISTORY (4) A thematic study of major political and socio-economic developments in the Caribbean area.

LAH 3480 HISTORY OF CUBA (4) An examination of Cuban history from Columbus to Castro. Emphasis on a thematic study of Cuba, including conquest and colonization, the 19th century struggles for independence, the political-economy of the Republic, and the revolutionary processes of the 20th century.

LAH 3600 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 19th and 20th centuries.

LAH 4730 SOCIAL AND INTELLECTUAL HISTORY OF LATIN AMERICA (4) A study of the origins and development of major social and intellectual trends affecting the histories of the Latin American people.

WOH 4270 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.

GRADUATE COURSES

HIS 6112 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.

HIS 6113 THEORY AND INTERPRETATION (4) A systematic examination and evaluation of various schools of historical interpretation.

HIS 6904 DIRECTED RESEARCH (var.) PR: GR. Master's level. Repeatable. (S/U only.)

HIS 6908 INDEPENDENT STUDY (var.) Independent study in which students must have a contract with an instructor. Repeatable. (S/U only.)

HIS 6920 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.

HIS 6939 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.

HIS 6971 THESIS: MASTER'S (var.) Repeatable. (S/U only.)

HUMAN SERVICES


UNDERGRADUATE COURSES

HUS 3010 INTRODUCTION TO HUMAN SERVICES (4) An introduction to the field of human services. Study of the professions and agencies involved in providing human services. Analysis of the values and ethics of various professional associations.

HUS 3300 SOCIAL POLICY IN THE UNITED STATES (4) PR: HUS 3010 or Cl. Historical development of social policy in the United States. The impact of industrialization and urbanization on the individual and family. The changing roles of family, community, state and nation. Analysis of current issues.

HUS 4020 THE LIFE CYCLE (5) An examination of individuals as they move through the various stages of the life-cycle—from birth until death. Attention is given to the physiological and psychosocial changes which occur during infancy, childhood, adolescence, young adulthood, middle age, old age, etc. Identification of major needs of individuals at different stages of life cycle.

HUS 4500 PLANNING AND EVALUATION OF HUMAN SERVICES PROGRAMS (4) PR: HUS 3010 or Cl. Review of approaches to planning,
coordination, and evaluation of human services programs. Methods of determining efficiency and effectiveness of health, rehabilitation, welfare and community action programs. Application of planning and evaluation techniques to human service fields.

MHT 4302 INTERVIEWING (4)
PR: HUS 3010 or Cl. The principles and techniques of interviewing. Use of interviewing in information gathering, research and helping relationships. Attention given to developing skills in communication across cultural, social, economic and age barriers.

SOW 4332 COMMUNITY ORGANIZATION AND DEVELOPMENT (4)
PR: HUS 3010 or Cl. An interdisciplinary approach to community organization and development. A synthesis of social, cultural, psychological, economic, and political information concerning community structure and change. Approaches to the introduction of community change.

GRADUATE COURSE
HUS 5224 INTERVENTION TECHNIQUES (4)
PR: HUS 3010 or Cl. Attention will be given to techniques of intervention at individual, small group, and community levels. The need for crisis intervention program in modern society.

INTERNATIONAL STUDIES

Director: M. T. Orr; Professors: C. W. Arnade, F. U. Ohaegbulam, M. T. Orr, R. R. Trask; Professor Emeritus: R. A. Warner; Associate Professors: A. Hechiche, H. W. Nelsen; Assistant Professor: J. W. Palm; Lecturer: J. O. Bell.

UNDERGRADUATE COURSES

AREA STUDIES
The following five courses (AFS 3930, ASN 3000, ASN 3030, EUS 3000, and LAS 3001), 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.

AFS 3930 AFRICA (4)
ASN 3000 ASIA (4)
ASN 3012 JAPAN TODAY (4)
An introduction to modern Japan and its world role, drawing upon insights provided by the social and behavioral sciences. Emphasis is placed upon Japan's foreign relations.

ASN 3014 CHINA TODAY (4)
Using a multi-disciplinary approach to study China's nation-building efforts, foreign relations, social system, and culture, the course is intended to provide a basic understanding of contemporary China, (1949-present). Major topics include Maoism, Sino-American and Sino-Soviet relations, and China's economic development.

ASN 3030 THE MIDDLE EAST (4)
EUS 3000 EUROPE (4)
EUS 3022 RUSSIA TODAY (4)
An interdisciplinary approach to understanding Russian life and the makeup of the Soviet citizen today, including the impact of these elements on the current and prospective role of the Soviet Union in world affairs.

INR 2085 WORLD TENSIONS (3)
A study of the major causes and consequences of critical tensions which lead to serious social disturbances between and within the independent states of the world. The analysis covers tensions which are usually relieved by peaceful means and those which often lead to internal and external violence between states and/or other organized groups.

INR 3336 INTELLIGENCE AND U.S. FOREIGN POLICY (4)
An examination of the role of intelligence and the intelligence community in U.S. Foreign policy, with emphasis on the period since World War II. The organization and roles of U.S. intelligence agencies, (CIA, DIA, NSA, and the military intelligence branches), are described. Also presented are the recent history of U.S. covert action abroad and a case study of intelligence as it related to U.S. involvement in the Vietnam conflict.

INR 3333 THE UNITED NATIONS AND PEACE (4)
Study and analysis of the origin, evolution and possible future of the United Nations Organization. After a general survey of major trends in international law leading to the reinforcement of the concept of peaceful settlement of disputes, the League of Nations is studied as a transition to a better structure of international society. Emphasis is put on the principle of sovereignty with regard to the applicability of U.N. resolutions. With 51 members at its creation in 1945 and possibly 150 in the fall of 1978, the U.N. is the best mirror of the dramatic changes in international relations. The course uses major issues, such as decolonization, disarmament, and international economic cooperation to illustrate the role of the U.N. as "a harmonizing forum" for conflicting political and ideological systems.

INR 4083 READINGS SEMINAR IN SINO-SOVIET RELATIONS (4)
A readings seminar on the origin, development, present status, and future possibilities of the Sino-Soviet relations, focusing on the period 1956 to present, i.e., the Sino-Soviet dispute. Political, economic, ideological, and security factors are considered. In addition to the bilateral relationship between Russia and China, the broader international ramifications are also dealt with.

LAS 3001 LATIN AMERICA (4)

SSI 1211 WORLD PERSPECTIVE (4)
Application of the interdisciplinary approach to the study of the international system, major world regions and problems.

SSI 2261 WORLD IDEOLOGIES (4)
A course which details and examines the ideologies of today's 160 independent countries. These are analyzed in their political, social, cultural, and historical context.

SSI 3128 ENERGY AND FOREIGN POLICY (4)
This course consists of an inquiry into the past, present, and future interdependent roles of energy (especially petroleum) policy and foreign policy, with interdisciplinary emphasis considering and integrating political, economic, social, cultural, and military aspects of the subject area.

SSI 3221 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.

SSI 3342 INTERNATIONAL TERRORISM (4)
The study of international terrorism as a social phenomenon of the contemporary world which is increasingly attractive to individuals and groups associating themselves with various causes ranging from national liberation movements to networks of philosophical anarchists.

SSI 3360 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 3930 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.

SSI 3955 OVERSEA 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.

SSI 4250 THE EMERGING NATIONS (4)
PR: Upper division standing or Cl. This course examines the processes and problems involved when an underdeveloped country seeks to develop a modern industrial civilization.

SSI 4900 DIRECTED READINGS (1-5)
PR: Cl plus upper division standing. May be repeated. To provide advanced students with intensive reading of interdisciplinary nature in areas of specific interest.

SSI 4910 DIRECTED RESEARCH (1-5)
PR: CI plus upper division standing. May be repeated. To provide advanced students with interdisciplinary research experience in areas of specific interest.

SSI 4936 SENIOR SEMINAR (4)
PR: Senior standing and Cl. To provide an integrating seminar experience for International Studies' majors.

WST 3275 WOMEN IN THE DEVELOPING WORLD (4)
This course surveys the status of women in Asia, Africa, Latin and Caribbean America as compared to the USA, Canada, West Europe, and Marxist-Leninist countries. (Also offered under Women's Studies).

POLITICAL SCIENCE


UNDERGRADUATE COURSES

CPO 3002 INTRODUCTION TO COMPARATIVE GOVERNMENT AND POLITICS (4)
Analysis of political systems using the concepts and methods of comparative politics.

CPO 3052 POLITICS OF THE DEVELOPING AREAS (4)
An analysis of the ideologies, governmental structures, and political processes of selected nations of the non-Western world.

CPO 4930 COMPARATIVE GOVERNMENT AND POLITICS OF SELECTED COUNTRIES OR AREAS (4)
Studies a single political system or several political systems with common elements. Structure, process, domestic and foreign policies and regional roles are considered. May be repeated for credit as topics vary. Open to majors and non-majors.

INR 3002 INTRODUCTION TO INTERNATIONAL RELATIONS (4)
Study of 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.

INR 3102 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.

INR 3403 INTERNATIONAL LAW AND DIPLOMACY (4)
Contemporary international norms, agreements and negotiations. Their influence on, and response to, a changing international system.

INR 4334 DEFENSE POLICY (4)
Analytic study of contemporary American defense policy. It includes institutional factors contributing to formulation of defense policy and the impact of such policy on international relations.

INR 4502 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.

PAD 3003 INTRODUCTION TO PUBLIC ADMINISTRATION (4)
A comprehensive examination of the field of public administration, with emphasis on the development of important theories and practices within the context of the American political system.

PAD 4204 PUBLIC FINANCIAL ADMINISTRATION (4)
Analysis of problems in the growth and development of public budgets, with emphasis on principal techniques and theories of fiscal administration.

POS 2041 AMERICAN NATIONAL GOVERNMENT (4)
Analysis of basic principles and procedures of the American governmental system with emphasis on current issues and trends.

POS 2112 STATE AND LOCAL GOVERNMENT AND POLITICS (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.

POS 3142 INTRODUCTION TO URBAN POLITICS AND GOVERNMENT (4)
An introductory analysis of governmental structures, political process and problems in metropolitan areas. Open to majors and non-majors.

POS 3145 GOVERNING METROPOLITAN AREAS (4)
Examines current governmental institutions and their operating characteristics in light of the formation and growth of metropolitan areas and the need for regional governance, and identifies and analyzes current governance problems and potential institutions for effective governance. Open to majors and non-majors.

POS 3173 SOUTHERN POLITICS (4)
Comparative analysis of selected political patterns and trends in the eleven southern states since 1950.

POS 3182 FLORIDA POLITICS AND GOVERNMENT (4)
A study of Florida political culture, political parties and elections, the legislative, executive, and judicial systems, and policy patterns. Open to majors and non-majors.

POS 3275 PRACTICAL POLITICS (4)
PR: POS 2041 or POS 3453 or Cl. Field work in local political party activities and election campaigns. Open to majors and non-majors.

POS 3284 JUDICIAL POLITICS (4)
Consideration of selected theories of judicial decision-making. Examination and application to social science methodology to the study of court systems.

POS 3453 POLITICAL PARTIES AND INTEREST GROUPS (4)
Analysis and understanding of the role, functions and processes of political parties and interest groups in American government.

POS 3493 JUDICIAL PROCESS (4)
Studies in the organization, development and function of American court systems, and the roles they play in the process of government. Open to majors and non-majors.

POS 3691 INTRODUCTION TO LAW AND POLITICAL SCIENCES (4)
Survey of important aspects of the study of law in political science. Among topics considered are the nature of law and the legal process and the relationship to political life of constitutional law, administrative law, the judicial process and private law. Understanding is sought in the related dimensions of legal theory, behavior, and impact on public policy.

POS 3713 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.

POS 4165 CITY POLITICS (4)
Analysis of the politics of cities and suburbs: citizen attitudes, voting, participation; ethnic politics; the political machine; community power structures; interest groups. Open to majors and non-majors.

POS 4204 POLITICAL BEHAVIOR (4)
Analysis of economic, psychological and social dimensions of political behavior; political participation; leadership and elites; political attitudes; voting behavior and decision-making processes.

POS 4233 VOTING BEHAVIOR, PUBLIC OPINION, AND ELECTIONS (4)
Critical analysis of mass voting behavior and the role of elections in formally democratic political systems. Special emphasis on American patterns, with secondary attention to cross-national research. Open to majors and non-majors.

POS 4413 THE AMERICAN PRESIDENCY (4)
Examination of the presidency as a political institution. Analysis of constitutional, statutory and informal powers; legislative and political leadership; presidential decision-making processes; administrative responsibilities; White House staffing; limits on power.

POS 4424 THE AMERICAN CONGRESS (4)
Analysis of the American Congress; organization, procedure, committee system, party leadership, relations with governmental and non-governmental organizations and agencies, oversight and decision-making process.

POS 4614 CONSTITUTIONAL LAW I (4)
Examination of the underlying philosophy of the American Constitution, its principal institutions, their legal relationships to each other and the scope of their powers. Analysis of cases and commentaries from the founding period to the present.

POS 4624 CONSTITUTIONAL LAW II (4)
Analysis of the evolution of individual rights in such areas as property rights, rights of the accused, minority rights, and freedom of expression. Examination of Supreme Court cases and scholarly commentaries.

POS 4693 WOMEN AND LAW (4)
Issues concerning the legal aspects of sex and sex-based discrimination as embodied in statutory and case law. Open to majors and non-majors. (Also offered under Women's Studies.)

POS 4905 INDEPENDENT STUDY (1-5)
PR: 3.0 average in Political Science. Specialized independent study determined by the students' needs and interests and with CI. (S/U only.)

POS 4910 INDIVIDUAL RESEARCH (1-8)
PR: 3.0 average in Political Science and CI. Investigation of some aspect of political science culminating in the preparation of an original research paper.

POS 4936 SENIOR SEMINAR (4)
PR: Senior standing and CI. 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.

POS 4941 FIELD WORK (4)
PR: 3.0 average in Political Science and CI. Opportunity for students to obtain practical experience, knowledge and understanding of local government, politics and administration by becoming involved as research and administrative aides to agencies and institutions of local government.

POS 4970 HONOR THESIS (4)
PR: Admission to Honor Plan and CI. Writing of honor thesis under direction of faculty members.

POT 3003 INTRODUCTION TO POLITICAL THEORY (4)
Survey of the various kinds of theory used by political scientists for understanding political phenomena. Examination of the principal distinctions, contributions and problems in such theories as normative theory, empirical theory, historicist theory and analytic theory. Open to majors and non-majors.

POT 3013 CLASSICAL POLITICAL THEORY (4)
Analysis of basic political ideas from the works of Plato, Aristotle, Cicero, and other leading Greek and Roman political philosophers.

POT 4054 MODERN POLITICAL THOUGHT (4)
Analysis of basic political ideas from the works of Machiavelli, Hobbs, Locke, Rousseau, Burke, Bentham, and Mill.

POT 4064 CONTEMPORARY POLITICAL THOUGHT (4)
Analysis of themes and personalities from 19th and 20th century political thought.

POT 4204 AMERICAN POLITICAL THOUGHT (4)
Analysis of American political thought from the colonial period to the present with emphasis on recent contributions.

PUP 4534 HOUSING AND GOVERNMENT (4)
Examines the role of federal, state, and local government in the formulation and implementation of housing policy. Analyzes the political aspects of housing policy formation and the administrative aspects of the housing delivery system. Open to majors and non-majors.

URP 4050 CITY PLANNING AND COMMUNITY DEVELOPMENT (4)
An introduction to the development, role and components of city planning in local government and to the potential and actual policies of state and local government in attempting to regulate or control urbanization. Open to majors and non-majors.

GRADUATE COURSES

CPO 5934 ISSUES IN COMPARATIVE GOVERNMENT (4)
Selected problems and issues in comparative government. May be repeated for credit as topics vary.

CPO 6607 SEMINAR IN COMPARATIVE GOVERNMENT AND POLITICS (4)
Comparative analysis of political systems in terms of processes, institutions and behavior.

CPO 6608 GOVERNMENT AND POLITICS OF SELECTED COUNTRIES OR AREAS (4)
Examination of the government and politics of one country or a group of countries constituting an area. The specific country or area to be determined by the instructor. May be repeated for credit as topics vary.

CPO 6636 POLITICS OF DEVELOPING AREAS (4)
Advanced study of ideologies, governmental structures and political processes of selected nations of the non-Western world.

INR 5086 ISSUES IN INTERNATIONAL RELATIONS (4)
Selected problems and issues in international relations. May be repeated for credit as topics vary.

INR 6007 SEMINAR IN INTERNATIONAL RELATIONS (4)
Investigation of selected phases of international relations in world politics.

INR 6107 AMERICAN FOREIGN POLICY (4)
A study of U.S. foreign policies with emphasis on decision-making processes, structures; policy outcome; and the evaluation of related political and economic issues.

PAD 5035 ISSUES IN PUBLIC ADMINISTRATION AND PUBLIC POLICY (4)
Selected issues and topics in Public Administration and Public Policy. May be repeated for credit as topics vary.

PAD 5333 CONCEPTS AND ISSUES IN PUBLIC PLANNING (4)
Analysis of planning in the public sector and the various important processes involved, such as policy determination, collection of information, decision-making, and other organizational and political processes.

PAD 5417 PUBLIC PERSONNEL ADMINISTRATION (4)
An analysis of recruitment, testing, training, employee and human relations in public service.

PAD 5605 ADMINISTRATIVE LAW (4)
An examination of the constitutional bases and limitations of
the administrative process, administrative adjudication, rule making and the judicial review of such actions.

**PAD 5612 ADMINISTRATIVE REGULATION (4)**
An analysis of the regulatory functions and processes in the American political system. The regulatory commissions, their functions, powers, management, and relations with other branches of government are covered.

**PAD 5807 ADMINISTRATION OF URBAN AFFAIRS (4)**
An analysis of the role of the administrator at the municipal level stressing the division functions, policy formation, alternative governmental structures and their effect on administrative processes.

**PAD 5836 COMPARATIVE PUBLIC ADMINISTRATION (4)**
Analysis of Public Administrative systems or institutions cross-nationally with special emphasis on conceptual developments and empirical knowledge from Western and non-Western types of governments.

**PAD 6037 BUREAUCRACY AND PUBLIC POLICY (4)**
Analysis of the formal, informal and societal characteristics of public bureaucracies and their impact on public policy.

**PAD 6060 SEMINAR IN PUBLIC ADMINISTRATION (4)**
Examination of major conceptual developments, current research interests, issues, and problems in the theory and process of public administration.

**PAD 6207 PUBLIC FINANCIAL ADMINISTRATION (4)**
An examination of the fiscal organization of federal, state and local governments. Current problems in budgeting, revenue and indebtedness are considered.

**PAD 6228 STATE AND LOCAL BUDGETING (4)**
An examination of the budgetary systems and practices of state and local governments with emphasis on preparation, authorization, execution and control.

**PAD 6306 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.

**POS 5094 ISSUES IN AMERICAN NATIONAL AND STATE GOVERNMENT (4)**
Selected issues and topics in Urban Government and politics. May be repeated for credit as topics vary.

**POS 5155 ISSUES IN URBAN GOVERNMENT AND POLITICS (4)**
Selected issues and topics in Urban Government and politics. May be repeated for credit as topics vary.

**POS 5699 RESEARCH IN LAW AND POLITICS (4)**
Application of basic research tools to problems of case law and legislative history. Actual research experiences are employed to develop skills in such tasks as analyzing judicial opinions, finding points of law and researching legislative intent. The use of these skills is illustrated in a variety of settings, including public, governmental and academic research.

**POS 5734 POLITICAL RESEARCH METHODS (4)**
An examination of problems and issues of political research methods, including the formulation of research problems, research design, acquisition of data and analysis.

**POS 5764 COMPUTER APPLICATIONS IN POLITICAL SCIENCE (4)**
An introduction to the applications of computers to the study of politics. Topics include: unit-record equipment, electronic computer, coding of data, statistical packages, data analysis, alternative applications.

**POS 6045 SEMINAR IN AMERICAN NATIONAL GOVERNMENT AND POLITICS (4)**
Advanced study of the institutions and processes of American national government.

**POS 6095 SEMINAR IN INTERGOVERNMENTAL RELATIONS (4)**
Advanced study of the interaction between the various levels of government. Emphasis is given to the counties, special districts, C.O.G.'s interlocal agreements, and new fiscal processes.

**POS 6127 SEMINAR IN STATE GOVERNMENT AND POLITICS (4)**
Advanced study of the institutions and processes of American state government.

**POS 6157 SEMINAR IN URBAN GOVERNMENT AND POLITICS (4)**
Analysis of the literature in urban government and politics, with special emphasis on urban political behavior and the development of various theories and propositions regarding governmental structure and the formation and implementation of public policy.

**POS 6207 POLITICAL BEHAVIOR (4)**
Advanced study of determinants and dimensions of political behavior; political participation, voting, attitudes, public opinion, leadership, and elite behavior.

**POS 6246 POLITICAL SOCIALIZATION (4)**
Seminar in selected phases of the political socialization process.

**POS 6415 THE AMERICAN PRESIDENCY (4)**
Analysis of problems of modern presidency, with emphasis on staffing and decision-making.

**POS 6427 THE LEGISLATIVE PROCESS (4)**
Analysis of formal and informal decision-making processes in House and Senate; executive-legislative conflict and cooperation; input/output analysis.

**POS 6455 POLITICAL PARTIES AND INTEREST GROUPS (4)**
Analysis of role, functions and various special characteristics of political parties and interest groups as well as their interactions with other political institutions in the political process.

**POS 6607 CONSTITUTIONAL LAW (4)**
Advanced study of legal, political and methodological problems related to constitutional law.

**POS 6698 SEMINAR IN LAW AND POLITICS (4)**
Advanced study of institutions and processes in the field of law and politics.

**POS 6706 SCOPE AND METHODS OF POLITICAL SCIENCE (4)**
Advanced study of the scope and methodologies of political science, including their applications to different research areas.

**POS 6909 INDEPENDENT STUDY (1-5)**
PR: 3.0 average in Political Science. Specialized independent study determined by the student's needs and interests and with the consent of the instructor. (S/U only.)

**POS 6919 DIRECTED RESEARCH (var.)**
PR: GR. Master's level. Repeatable. (S/U only.)

**POS 6934 SELECTED TOPICS IN POLITICAL SCIENCE AND PUBLIC ADMINISTRATION (4)**
Selected topics, issues, and problems in political science and public administration for advanced graduate students. May be repeated for credit as topics vary.

**POS 6942 FIELD WORK IN POLITICAL SCIENCE AND PUBLIC ADMINISTRATION (1-8)**
PR: 3.0 average in Political Science and Cl. Application of research models now employed in governmental agencies, including developing a structured research proposal. Designed to give students practical experience in the administrative and political processes. Required for MPA students.

**POS 6971 THESIS: MASTER'S (var.)**
Repeatable. (S/U only.)

**POT 5626 ISSUES IN POLITICAL PHILOSOPHY AND LAW (4)**
Selected topics in political philosophy and law. May be repeated for credit as topics vary.

**POT 6007 SEMINAR IN POLITICAL THEORY (4)**
This course will deal with the major contributions to political theory through the ages. An analysis, both critical and analytical, of the major works will be attempted.
EXP 6007 SEMINAR IN PUBLIC POLICY
An analysis of the background and interpretation of various approaches which influence the formulation and execution of public policy.

PUP 6538 GOVERNMENTAL HOUSING POLICY
This course examines government involvement in housing, with special emphasis on the development and analysis of certain housing programs.

URP 6056 CITY AND REGIONAL PLANNING
An investigation of regional planning and a review of goals, objectives, and interrelationships between regional and city planning, and intergovernmental and policy issues in the regional planning process.

PSYCHOLOGY


CBH 4004 COMPARATIVE PSYCHOLOGY
PR: EXP 4404, PSB 4013C, PSY 2012, PSY 3013, PSY 3213, PSY 3214. 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 pri­ mates including man.

CLP 3003 PSYCHOLOGY OF ADJUSTMENT
Genetic, organic, and learned factors involved in the processes of personal adjustment: applications for mental health principles to everyday living. Not for major credit.

CLP 4143 PSYCHOPATHOLOGY

CLP 4433 PSYCHOLOGICAL ASSESSMENT
PR: PSY 2012, PSY 3013, PSY 3213, PSY 3214. A consideration of the instruments for intellectual and personality assessment including their applications, development, and potential abuses. Students may not receive credit for both CLP 4433 and EDF 3430. Introduction to Measurement and Evaluation.

DEP 3103 CHILD PSYCHOLOGY
Developmental and psychosocial aspects of childhood, including hereditary, maturational, psychological, and social determinants of child behavior. Not for major credit.

DEP 4005 DEVELOPMENTAL PSYCHOLOGY

EXP 4204 PERCEPTION
PR: PSY 2012, PSY 3013, PSY 3213, PSY 3214. How man perceives his environment. Topics include sensory basis 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.

EXP 4304 MOTIVATION
PR: EXP 4404, PSY 2012, PSY 3013, PSY 3213, PSY 3214. An examination of human and animal motivations from both physiological and psychological viewpoints.

PSY 3213 RESEARCH METHODS IN PSYCHOLOGY I
PR: PSY 3013 or CI. Designed to provide an introduction to the methods employed in psychological research, this course considers the logic of experimental design, the concept of control, and the analysis of experimentally obtained data. Following the discussion of factors common to all experimental designs, the course focuses on one and two group designs, control problems specific to these designs, and the methods of data reduction and evaluation typically applied to these designs. The laboratory section provides experience applying the concepts discussed in the lecture.

PSY 3214 RESEARCH METHODS IN PSYCHOLOGY II
PR: PSY 3213. A continuation of the introduction to the methods of psychological research begun in PSY 3213. Consideration of multiple treatment designs and data analysis. Discussions of small-N designs, correlational designs, non-parametric data evaluation, and measurement of sensation. The laboratory section provides experience applying the concepts discussed in the lecture.
PSY 4205 EXPERIMENTAL DESIGN AND ANALYSIS (4) PR: PSY 2012, PSY 3013, PSY 3213, PSY 3214. 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 4604 SYSTEMATIC PSYCHOLOGY (4) PR: PSY 2012, PSY 3013, PSY 3213, PSY 3214. The historical roots of modern psychological theories, investigation of the various schools of psychology such as behaviorism. Gestalt psychology, psychoanalysis, and phenomenological psychology.

PSY 4904 DIRECTED 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 4913 DIRECTED 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 4931 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 4932 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 12 hours credit.

PSY 4970 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.

SOP 4004 SOCIAL PSYCHOLOGY (4) PR: PSY 2012, PSY 3013, PSY 3213, PSY 3214. Survey of methods, empirical findings, and theoretical interpretations in the study of an individual’s behavior as it is affected by others.

SOP 4714C ENVIRONMENTAL PSYCHOLOGY (4) PR: PSY 2012, or PSY 3013 or Cl. This course will explore the influence of environment on behavior. Topics considered will include crowding, privacy, territorial behavior, environmental design, and pollution effects. This course is designed for both psychology majors and non-majors.

SOP 4742 PSYCHOLOGY OF WOMEN (4) An examination of theories of female personality in historical perspective. Current research on sex differences, socialization, sexual psychology, and reproductive cycles. Emerging roles of women as related to social change and developmental tasks of the life cycle. (Also offered under Women’s Studies.)

SOP 4772 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 under Women’s Studies.)

GRADUATE COURSES

CLP 6438 PSYCHOLOGICAL ASSESSMENT (5) PR: Cl. Courses cover theory, research, and applications of psychological assessment in areas such as interviewing, intellectual and cognitive functioning, neuropsychological, and personality testing. May be repeated for credit with different subject matter.

CLP 6477 BEHAVIORAL DISORDERS OF CHILDREN (5) PR: Cl. Causal 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.

CLP 6937 TOPICS IN CLINICAL-COMMUNITY PSYCHOLOGY (5) PR: Cl. Courses on topics such as humanistic psychology, community psychology, and clinical neuropsychology. May be repeated for credit with different subject matter.

CLP 7188 PSYCHOTHERAPY AND BEHAVIOR CHANGE (5) PR: Admission to graduate degree program in psychology and Cl. Courses to cover the theoretical, empirical, and applied foundations of various systems of psychotherapy. Traditional relationship therapy, client-centered approaches, operant technique, group psychotherapy, and other varieties of therapeutic intervention. May be repeated for credit with different subject matter.

CLP 7379 GRADUATE SEMINAR IN CLINICAL-COMMUNITY PSYCHOLOGY (1-5) PR: Cl. Seminars on topics such as psychopathology, community psychology, clinical issues, personality, and developmental psychology. May be repeated for credit with different subject matter.

DEP 6058 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.

EAB 6717 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.

EXP 6208 PERCEPTION (5) PR: Admission to M.A. program in psychology or Cl. Current data and theoretical principles of perceptual processes. Consideration of physiological and psychological variables in perception, and applications of information theory and signal detection theory. M.A. core course.

EXP 6307 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.

EXP 6406 LEARNING (5) PR: Admission to M.A. program in psychology or Cl. Habituation, sensitization, classical and instructional conditioning, generalization, discrimination, trial and error learning, problem solving. M.A. core course.

EXP 6526 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.

EXP 6930 TOPICS IN EXPERIMENTAL PSYCHOLOGY (5) PR: Cl. Courses on topics such as operant behavior, electrophysiological methods, psychophysiology, and memory. May be repeated for credit with different subject matter.

EXP 7099 GRADUATE SEMINAR IN EXPERIMENTAL PSYCHOLOGY (1-5) PR: Cl. Seminars on topics such as learning, perception, physiological psychology, cognitive processes, and quantitative methods. May be repeated for credit with different subject matter.
INP 6056 INDUSTRIAL PSYCHOLOGY
PR: Admission to M.A. program in psychology or CI. 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.

INP 6935 TOPICS IN INDUSTRIAL-ORGANIZATIONAL PSYCHOLOGY
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.

INP 7097 GRADUATE SEMINAR IN INDUSTRIAL-ORGANIZATIONAL PSYCHOLOGY
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.

PPE 6058 PERSONALITY
PR: Admission to M.A. program in psychology or CI. Neural and traditional and current theory and research in the area of personality. M.A. core course.

PSB 6056 PHYSIOLOGICAL PSYCHOLOGY
PR: Admission to M.A. program in psychology or CI. Neural and physiological foundations of behavior. Structure and function of the central nervous system and autonomic nervous system. Physiological basis of learning, motivation in subhumans and humans. M.A. core course.

PSY 6217 RESEARCH METHODS AND MEASUREMENT
PR: Admission to graduate degree program in psychology or CI. 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 6218 GRADUATE RESEARCH METHODS
Special course to be used primarily for the training of graduate research assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

PSY 6907 INDEPENDENT STUDY
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

PSY 6917 DIRECTED RESEARCH
PR: GR. Master’s level. Repeatable. (S/U only.)

PSY 6946 PRACTICUM AND INTERNSHIP IN CLINICAL PSYCHOLOGY
PR: CI. Supervised training in community and university settings in the application of psychology. May be repeated for credit.

PSY 6947 GRADUATE INSTRUCTION METHODS
Special course to be used primarily for the training of graduate teaching assistants. Variable credit, repeatable. Limited to a cumulative total of five credits per student. (S/U only.)

PSY 6971 THESIS: MASTER'S
Repeatable. (S/U only.)

PSY 7098 DIRECTED READINGS IN PSYCHOLOGY
PR: CI. An advanced reading program of selected topics in Psychology under the supervision of a psychology faculty member. The reading program is designed to meet the individual requirements and interest of graduate students in Psychology, with selected topics chosen by the student in close collaboration with a faculty member. May be repeated for credit.

PSY 7919 DIRECTED RESEARCH
PR: G.R. Ph.D. level. Repeatable. (S/U only.)

PSY 7931 SEMINAR IN ETHICS AND PROFESSIONAL PROBLEMS
PR: Second year in Ph.D. program in psychology or CI. Ethical issues and professional problems in the practice of psychology.

PSY 7980 DISSERTATION: DOCTORAL
PR: Must be admitted to Doctoral Candidacy. Repeatable. (S/U only.)

SOP 6059 SOCIAL PSYCHOLOGY
PR: Admission to M.A. program in psychology or CI. Overview of theory and research in social psychology. Attitudes, values, group processes, leadership, conformity, social learning and motivation. M.A. core course.

SOP 6669 TOPICS IN SOCIAL-ORGANIZATIONAL PSYCHOLOGY
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.

SOP 7609 GRADUATE SEMINAR IN SOCIAL-ORGANIZATIONAL PSYCHOLOGY
PR: CI. Seminars on topics such as social psychology, scientific communication, and decision making. May be repeated for credit with different subject matter.

REHABILITATION COUNSELING
Chairperson: C. M. Pinkard, Jr.; Associate Professors: J. F. Dickman, P. Gross, M. J. Landsman, C. M. Pinkard, Jr.; Assistant Professor: J. D. Rasch.

GRADUATE COURSES

EGC 5065 REHABILITATION: CONCEPTS AND THEORETICAL ISSUES
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.

EGC 5376 MEDICAL ASPECTS OF DISABILITY
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.

EGC 5493 SEMINAR IN PRINCIPLES AND PRACTICES OF REHABILITATION COUNSELING I
PR: CI. Procedures appropriate in meeting the needs of handicapped individuals in the rehabilitation process. Must be taken concurrently with EGC 5493. (S/U only.)

EGC 5496 THEORETICAL ISSUES IN APPLIED ALCOHOL ABUSE IN REHABILITATION COUNSELING

EGC 5725 INTERPERSONAL ASPECTS OF REHABILITATION COUNSELING I
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.

EGC 5850 PRACTICUM I
PR: CI. Supervised observation experience and participation in counseling services in various rehabilitation agencies. Must be taken concurrently with EGC 5493. (S/U only.)

EGC 5905 DIRECTED STUDIES
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.
EGC 6205 EVALUATION IN THE REHABILITATION PROCESS
PR: EGC 5725. Examine the evaluation procedure from the point of view of providing reliable and valid information for use in the counseling process. (5)

EGC 6374 VOCATIONAL EVALUATION, ADJUSTMENT SERVICES, AND PLACEMENT OF THE HANDICAPPED AND DISADVANTAGED
Methods and techniques employed to assess the mental, social, physical, and vocational problems of handicapped and disadvantaged persons. Diagnosis, evaluation, and placement in relation to vocational potential. (2-5)

EGC 6375 PLACEMENT METHODS AND PROCESSES
An in-depth examination of placement methods and processes with the handicapped. Includes a survey of work requirements in different occupations and how these relate to specific functional limitations. (5)

EGC 6417 APPLICATIONS OF LEARNING PRINCIPLES
PR: Prior course in learning or CI. Application of various learning principles and procedures to problems in specialized settings. (5)

EGC 6468 PSYCHOSOCIAL DISABILITY IN REHABILITATION COUNSELING
PR: EGC 5725. Personal, social, and vocational consequences of emotional and social disabilities. (5)

EGC 6470 PRACTICUM IN APPLIED ALCOHOL ABUSE IN REHABILITATION COUNSELING
PR: EGC 5496 and EGC 6497. An extension of EGC 5496 and EGC 6497 with emphasis on field work in alcoholism and alcoholism treatment. (5)

EGC 6494 SEMINAR IN PRINCIPLES AND PRACTICES OF REHABILITATION COUNSELING II
PR: EGC 5493 and EGC 5850. Continuation of EGC 5493. Must be taken concurrently with EGC 6851. (S/U only.) (4)

EGC 6497 THEORETICAL AND EXPERIENTIAL APPROACHES TO COUNSELING THE ALCOHOL ABUSER
PR: EGC 5496 and CI. An extension of EGC 5496 with emphasis on experiential approaches to counseling the alcohol abuser. (5)

EGC 6566 GROUP WORK IN REHABILITATION COUNSELING
PR: CI. Examination of group processes as applicable to rehabilitation counseling. (5)

EGC 6567 ADVANCED GROUP WORK IN REHABILITATION COUNSELING
PR: CI. Extension of EGC 6566 with emphasis on field work. (5)

EGC 6727 INTERPERSONAL ASPECTS OF REHABILITATION COUNSELING II
PR: EGC 5725. An extension and intensification of skills developed in EGC 5725. (5)

EGC 6767 RESEARCH METHODOLOGY IN REHABILITATION
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. (5)

EGC 6851 PRACTICUM II
PR: EGC 5493 and EGC 5850. Continuation of EGC 5850. Must be taken concurrently with EGC 6494. (S/U only.) (2)

EGC 6885 INTERNSHIP IN REHABILITATION
PR: EGC 6494 and EGC 6851. Student placement in an approved intern setting for a minimum of 400 hours of supervised experience. (S/U only.) (10-15)

EGC 6906 INDEPENDENT STUDY
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.) (var.)

EGC 6915 DIRECTED RESEARCH
PR: GR. Master’s level. Repeatable. (S/U only.) (var.)

EGC 6934 SEMINAR IN REHABILITATION COUNSELING
PR: CI. 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. (2-5)

EGC 6971 THESIS: MASTER’S
Repeatable. (S/U only.) (var.)

SOCIAL SCIENCES (INTERDISCIPLINARY)


UNDERGRADUATE COURSES

LEI 4163 LEISURE IN SOCIETY
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. (4)

LEI 4167 SPORT IN SOCIETY
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. (4)

SSI 3151 PSYCHOLOGY AND THE SOCIAL ORDER
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. (4)

SSI 3152 COMMUNICATION
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. (4)

SSI 3153 HUMAN RELATIONS AND PRODUCTIVITY
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. (4)

SSI 4162 THE CITY AND MAN
Topics to be selected from the following: the city and its ills; 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. (4)

SSI 4164 SOCIAL ISSUES OF OUR TIME
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. (4)

SSI 4168 SOCIAL VALUES AND SOCIAL ORDER
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. (4)

STA 3122 SOCIAL SCIENCE STATISTICS
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 GEB 2111, Business and Economic Statistics I or STA 3023, Introductory Statistics I. (4)
SOCIOLOGY

Chairperson: P. L. Smith; Associate Professor: P. L. Smith; Assistant Professors: W. S. Hutchison, P. A. Maass, B. L. Yegidis; Visiting Assistant Professor: R. L. White; Visiting Instructors: H. L. Cohen, A. J. Floyd, D. Whittlock, M. Harmon; Courtesy Instructors: E. Damon, J. Frankel, S. Lardieri; C. McCandless, J. Moore, A. Thal.

UNDERGRADUATE COURSES

SOW 3203 INTRODUCTION TO SOCIAL WELFARE (4)
An introductory course in social welfare policy, emphasizing the conceptual basis of social policy formulation, the historical development of social welfare organizations, and various processes related to social policy implementation. Attention is given to economic, political, and social analysis of the development of American social welfare institutions.

SOW 3302 THEORY & PRACTICE OF SOCIAL WORK I (4)
An introductory course to the profession and practice of social work, emphasizing the theoretical and value bases of social work practice. Required prerequisite for admission to the Social Work Program. Some agency volunteer experience required.

SOW 3403 RESEARCH METHODS IN SOCIAL WORK (4)
PR: STA 3122. Restricted to social work majors, others by Program permission. Methods and techniques of social research, specifically for social work majors, emphasizing design of studies, collection of data, and interpretation of results. Attention is given to understanding and analyzing specific pieces of research relating to social work.

SOW 4102 BEHAVIOR, ENVIRONMENT, AND PRACTICE (4)
PR: HUS 4020. Restricted to social work majors, others by Program permission. An integrating human behavior-social environment course emphasizing dynamics of behavior and environmental factors as they relate to social work practice. Attention is given to application of knowledge of behavioral phenomena to the practice situation.

SOW 4232 SOCIAL WELFARE: SYSTEMS AND POLICIES (4)
PR: SOW 3203. Restricted to social work majors, others by Program permission. Advanced social welfare policy course emphasizing contemporary social welfare policies, structures, functions, and programs.

SOW 4341 MULTI-METHODS OF SOCIAL WORK PRACTICE I (5)
PR: HUS 4020, SOW 3203, SOW 3302. SOW 4303 and SOW 4102 may be taken as CR or PR. Restricted to social work majors, others by Program permission. First in a sequence of three practice courses emphasizing the beginning development of skills from practice knowledge. Interventive methods with individuals, families, and small groups are emphasized. Some agency field work required.

SOW 4343 MULTI-METHODS OF SOCIAL WORK PRACTICE II (5)
PR: SOW 4341. SOW 4232 may be taken as a CR or PR. Restricted to social work majors, others by Program permission. Second practice course emphasizing interventions at the community and institutional levels. Builds upon a theoretical and practical content of SOW 4341. Some agency field work required.

SOW 4361 THEORY AND PRACTICE OF SOCIAL WORK II (4)
PR: Completion of all social work core courses (or concurrent with completion). Restricted to social work majors in Senior year. Others by permission. A course exploring the contributions of the social/behavioral sciences to social work. Attention is given to various components of social work as objects of analysis in the context of various social science disciplines.

SOCIAL WORK


UNDERGRADUATE COURSES

DHE 4101 POPULATION (4)
PR: SOC 2000 or CI; upper division standing. Sociological determinants of fertility, mortality, and migration; theories of population change.

MAF 2001 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.

MAF 3501 THE FAMILY (4)
PR: SOC 2000 or CI. Principles of family organization, social adjustment, and control. Maturation, socialization, and stability of the family.

SOC 1020 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.

SOC 2000 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 2484 CAREERS IN SOCIOLOGY (2)
PR: One course in sociology. An examination of sociology as a career base and as a basis for general education. Employment opportunities, occupational skills taught in the several
courses, and other useful aspects of sociology will be discussed. Description of the several subfields of specialization and a brief introduction to the courses taught in the department will lead to the student’s making a tentative program schedule for his major. The value of sociology to the individual as a self-actualizing person of unique worth will be stressed. (S/U only.)

SOC 3211 SOCIOLOGY OF RELIGION (4)
PR: SOC 2000 or CI. Types, sources, and functions of religious behavior. Religious behavior in relation to other aspects of personality.

SOC 3410 SOCIAL STRATIFICATION (4)
PR: SOC 2000 or CI. Social status and social stratification, social class as a factor in behavior, social mobility.

SOC 3422 SOCIAL ORGANIZATION (4)
PR: SOC 2000 or CI. Social organization in the broadest sense, including institutions and associations, as well as variations in role and status.

SOC 3500 SOCIAL INVESTIGATION (4)

SOC 3612 FOUNDATIONS OF THEORY (4)
PR: SOC 2000 or CI. Consideration of selected theories in sociology and procedures of systematic theory construction.

SOC 3695 COMMENTARY FILM MAKING IN THE SOCIAL SCIENCES (4)
PR: Major in the College of Social and Behavioral Sciences or CI. Types, sources, and functions of religious behavior. Religious behavior in relation to other aspects of personality.

SOC 3696 LABORATORY WORK IN COMMENTARY FILM MAKING IN THE SOCIAL SCIENCES (2)
PR: SOC 3695, CR in a course in the social and behavioral sciences with instructor’s approval to enable student to make a film in lieu of some other course requirement. A continuation of lab and field work in the making of commentary films. Camera, editing, and problems of independent sound solved in the context of a film in one of the social sciences. Does not count for major credit. May be repeated for credit.

SOC 3745 RACIAL AND ETHNIC RELATIONS (4)
PR: SOC 2000 or CI. Comparative study of interracial relations, social tensions, attitudes, and modes of adjustment in various areas of the world.

SOC 3800 SOCIAL PSYCHOLOGY (4)
PR: PSY 2012 or SOC 2000. Behavior of the individual human being as affected by social and cultural influences of modern society.

SOC 4130 JUVENILE DELinquENCY (4)
PR: SOC 2000 or CI; upper division standing. Theories of delinquency, patterns of delinquent behavior, methods of control and treatment.

SOC 4150 CRIMINOLOGY (4)
PR: SOC 2000 or CI; upper division standing. Etiology of criminal behavior; law enforcement, crime in the United States; penology and prevention.

SOC 4221 POLITICAL SOCIOLOGY (4)
PR: SOC 2000 or CI. An examination of the social factors that affect government, politics, and political behavior.

SOC 4261 SOCIOLOGICAL IMPLICATIONS OF INDUSTRIALIZATION (4)
PR: SOC 2000 or CI. Socio-cultural elements which define and accompany the process of industrialization as observed in mature industrial nations.

SOC 4316 URBAN SOCIOLOGY (4)
PR: SOC 2000 or CI; upper division standing. The social structure of the community in modern industrial societies. Analysis of community change.

SOC 4402 SOCIETY IN TRANSITION (4)
PR: Introduction to Sociology and upper level standing. An analysis of the forces for change in contemporary society, utilizing a sociological perspective.

SOC 4531 COMPUTERS IN SOCIOLOGICAL RESEARCH (3)
PR: SOC 3300 and STA 3122 or equivalent. Introduction to the uses of computers in sociological research. Major emphasis is upon the use of statistical packages (principally SPSS) in data analysis.

SOC 4651 SOCIOLOGY OF THE ARTS (4)
PR: SOC 2000 or CI; upper division standing. The creation, distribution, and use of arts from a sociological perspective; the social roles involved.

SOC 4850 COLLECTIVE BEHAVIOR (4)
PR: SOC 2000 or CI; upper division standing. Study of the development of group and mass behavior—crowds, social movements.

SOC 4910 INDIVIDUAL RESEARCH (1-4)
PR: Four courses in sociology, including SOC 3500, upper division standing, at least 3.0 overall GPA, or CI. Content depends upon interest and competence of student. A contract specifying the work to be done must be completed and signed by both the student and the chairperson of the department before registration for this course will be permitted. May be repeated for credit. Up to 4 credits may be counted towards meeting major electives requirement.

SOC 4930 TOPICS IN SOCIOLOGY (4)
PR: 16 quarter hours in Sociology and upper CI. May be repeated for credit. See class schedule for content.

SOC 4935 SENIOR SEMINAR (4)
For seniors majoring in sociology or other social sciences. Major issues in sociology: stressing theory and research.

GRADUATE COURSES

MAF 6621 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 5265 INDUSTRIAL SOCIOLOGY (4)
PR: SOC 2000 or CI; upper division standing. Interaction, communication and authority in economic organizations; the factory as a social system.

SOC 5405 SOCIAL CHANGE (4)
PR: SOC 2000 or CI; upper division standing. Major theories of social and cultural change, and mechanisms of change in various societies.

SOC 5804 SOCIAL INTERACTION (4)
PR: SOC 3800 or CI; upper division standing. Interpersonal influence, complex behavior, role, conflict, and social situational factors.

SOC 5825 SOCIOLOGY OF SMALL GROUPS (4)
PR: SOC 2000 or CI; upper division standing. Theory of small group structure; mechanics of interaction, observation of small groups.

SOC 6106 DEVIANCE & CONTROL (4)
PR: Course in criminology or juvenile delinquency or CI. Theories of control and deviance with research application in problem areas.

SOC 6302 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 6426 COMPLEX ORGANIZATIONS (4)
PR: Course in Social Organization or CI. Organizational
theory, bureaucratic models, authority, power legitimation, and types of formal organization.

SOC 6502 METHODS OF RESEARCH (4)
PR: Course in Social Investigation or Cl. Logic and practice of research; problems of observation and data collection, data processing, and evaluation.

SOC 6526 SOCIOLOGICAL STATISTICS (5)
PR: STA 3122 or Cl. Logic and application of parametric and nonparametric statistical analysis for sociological data.

SOC 6606 CONTEMPORARY SOCIOLOGICAL THEORY (4)
PR: Undergraduate course in sociological theory or Cl. Emphasizes logical and conceptual dimensions of theory and theory construction.

SOC 6699 THE COMMUNICATION OF SOCIOLOGY (2)
PR: SOC 6502, SOC 6526, SOC 6606, or Cl. Designed to help students define and formalize more effective efforts at communicating sociology. Majors only.

SOC 6805iler PERSPECTIVE IN SOCIOLOGY SEMINAR (4)
PR: Course in Social Psychology or Cl. Stresses contemporary developments in social psychological theory and empirical research.

SOC 6909 INDEPENDENT STUDY (var.)
Independent study in which student must have a contract with an instructor. Repeatable. (S/U only.)

SOC 6912 DIRECTED RESEARCH (var.)
PR: GR. Master's level. Repeatable. (S/U only.)

SOC 6923 SPECIAL TOPICS SOCIOLOGY (4)
PR: CI. Content varies according to interests of students and instructor. May be repeated for credit.

SOC 6971 THESIS: MASTER'S (var.)
Repeatable. (S/U only.)

SPEECH COMMUNICATION - see Communication

WOMEN'S STUDIES PROGRAM

Director: J. Ochshorn; Professor: J. H. Williams; Associate Professors: J. Ochshorn, J. B. Snook; Assistant Professor: M. Myerson.

UNDERGRADUATE COURSES

ANT 4302 WOMEN IN CROSS-CULTURAL PERSPECTIVE (4)
PR: ANT 2000, ANT 3410, or Cl. A cross-cultural perspective on women. The course focuses on various theories, models, and beliefs about male-female behaviors and interactions in human cultures throughout history and in various societies in the world today. (Also offered under Anthropology.)

EDF 4801 WOMEN AND THE EDUCATIONAL PROCESS (4)
PR: Junior standing recommended. Covers both the role women played in education in the U.S. and the way schools have helped to shape the role women play in American society. Topics include development of sex-role stereotypes through classroom interactions and curriculum materials, the status of women in public and higher education and laws affecting it, and the role of the schools in forming educational and career aspirations of girls and women. Emphasis is placed on ways parents and teachers may counteract the sex-typing which schools, as they are currently structured, perpetuate. (Also offered under Education.)

LIT 3414 THE IMAGE OF WOMEN 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 under English.)

LIT 3415 THE IMAGE OF WOMEN 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 under English.)

POS 4693 WOMEN AND LAW (4)
Issues concerning the legal aspects of sex and sex-based discrimination as embodied in statutory and case law. Open to majors and non-majors. (Also offered under Political Science.)

REL 3145 WOMEN AND RELIGION (4)
An analysis of the status and roles of women as compared to men in the Judeo-Christian tradition. Contemporary issues raised by feminist theologians and scholars and the controversies surrounding them, including the ordination of women; type of language and imagery used in religious literature; religious attitudes toward sex roles and female sexuality; implications of the religious tradition for men as well as women. (Also offered under Religious Studies.)

SOP 4742 PSYCHOLOGY OF WOMEN (4)
An examination of theories of female personality in historical perspective. Current research on sex differences, socialization, sexuality, psychology of reproduction. Emerging roles of women as related to social change and developmental tasks of the life cycle. (Also offered under Psychology.)

SOP 4772 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 under Psychology.)

WST 2010 INTRODUCTION TO WOMEN'S STUDIES I (4)
A survey of major issues relevant to the female experience: the women's movement; social, historical, and psychological implications.

WST 2011 INTRODUCTION TO WOMEN'S STUDIES II (4)
PR: WST 2010 or Cl. A survey of major issues relevant to the female experience, marriage and the family, sexuality, the economy and professions, art and creativity.

WST 3210, 3220, 3240 WOMEN IN WESTERN CIVILIZATION (4)
PR: WST 2010 or Cl. Comparative survey of women in Western civilization, with particular emphasis on those cultures, attitudes and practices which have emerged as most influential for the status of women as compared to men. WST 3210: Pre-Biblical period, ancient Near East, polytheism and monotheism; ancient Greece, Rome, early Middle Ages. WST 3220: Late Middle Ages, Renaissance, Reformation; Persecution of witches. WST 3240: The Enlightenment; colonization and political revolution and its impact on women; nineteenth and twentieth centuries.

WST 3270 CONTEMPORARY WOMEN IN THE UNITED STATES (4)

WST 3275 WOMEN IN THE DEVELOPING WORLD (4)
This course surveys the status of women in Asia, Africa, Latin and Caribbean America as compared to the USA, Canada, West Europe, and Marxist-Leninist countries. (Also offered under International Studies Program.)

WST 3310 HISTORY OF FEMINISM (4)
PR: WST 2010 or Cl. 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.

**WST 3320 WOMAN’S BODY/WOMAN’S MIND (4)**  
PR: Introduction to Women’s Studies or CI. The influence of the health care system on the process which socializes people to traditional sex roles.

**WST 3360 MEN AND SEXISM (4)**  
This course deals with the ways in which sex role conditioning affects the lives of men. The factors involved in the development of this conditioning will be studied and alternatives to these sex role models will be discussed as well.

**WST 4900 DIRECTED READINGS (1-4)**  
PR: CI plus upper division standing. To provide advanced students with intensive reading of interdisciplinary nature in areas of specific interest. May be repeated up to eight credit hours.

**WST 4910 DIRECTED RESEARCH (1-4)**  
PR: CI plus upper division standing. To provide advanced students with interdisciplinary research experience in areas of specific interest. May be repeated up to eight credit hours.

**WST 4930 SELECTED TOPICS (1-5)**  
PR: WST 2010 or CI. Study in special areas such as Women and Health, The Aging Woman, and the Professions, Women in the Arts.

**WST 4935 SEMINAR IN WOMEN’S STUDIES (4)**  
PR: WST 2010 or CI. In-depth study of research in one or more areas of topical interest to students and staff. Research involvement by students required.
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301
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Science and Health Education: H. EDWIN STEINER
Social Science/Letters: ROGER JOHNSON

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Computer Science: OSCAR N. GARCIA

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Coordinator of Advising: JOHN SMITH

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Dance: BETTY SUE MOEBLLENKAMP
Music (Acting): MARTHA REARICK
Theatre: NANCY COLE

Director:
Fine Arts Events: JOHN COKER

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Associate Dean for Veterans Affairs: JOHN T. RIGGIN
Associate Dean for Graduate Studies (Acting): CARLTON H. BAKER
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Assistant Dean for Student Affairs: GREGORY R. NICOLosi
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Family Medicine (Acting): CHARLES E. AUCREmann
Internal Medicine: ROY H. BEHNKE
Medical Microbiology: HERMAN FRIEDMAN
Obstetrics and Gynecology: JAMES M. INGRAM
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Pathology (Acting): JOHN U. BALIS
Pediatrics: LEWIS A. BARNES
Pharmacology (Acting): DONN L. SMITH
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Psychiatry: ANTHONY READING
Radiology: ARTHUR D. GRAHAM
Surgery: ROGER T. SHERMAN

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Medical Center Library: FRED BRYANT

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Assistant Dean: WALTER E. WILLIAMS
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Chemistry: JEFFERSON C. DAVIS, JR.
Geology: RICHARD A. DAVIS, JR.
Marine Science: WILLIAM M. SACKETT
Mathematics: MANOUG N. MANOUGIAN
Physics (Acting): HARRY W. KENDALL

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Planetarium: JOE A. CARR
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ROSEMARY M. MORLEY

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Assistant Dean for Graduate Education and Research: ONA Z. RIGGIN

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Assistant Dean: EDWARD SILBERT
Coordinator of Advising: EDWARD SILBERT

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Communicology: STEWART KINDE
Criminal Justice: HAROLD VETTER
Economics: JOHN ROWE
Geography: ROBERT FUSON
Gerontology: THOMAS RICH
History: LOUIS PEREZ
Interdisciplinary Social Science: MARK ORR
Political Science (Acting): ROBERT CATLIN
Psychology: JAMES ANKER
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International Studies Program ........ MARK ORR
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Director, Computer Research Center ........ CHARLES E. FISHER
Director, Environmental Health and Safety .......... JOSEPH S. WARNER
Director, Physical Plant .............. CHARLES E. BUTLER
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Director, Physical Education, Recreational Sports and Athletics .......... RICHARD T. BOWERS
Director, Student Health Service .......... LARRY E. STEVENS
Director, University Center .......... PHYLLIS P. MARSHALL
Director, University Studies ........ MAX C. DERTKE
Academic Advising Coordinator ........ JANE G. REED
Admissions .................. ROBERT LEVITT
New Student Relations ............. LINDA ERICKSON
Director, Sun Dome ................... MICHAEL R. BARBER
Director, Auxiliary Services .......... TOMMY R. BERRY

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Director, Alumni Affairs ........... JOSEPH M. TOMAINO
Director, Development ............. TBA
Director, Governmental and Community Relations .......... BETTY B. CASTOR
Director, Information Services .......... JAMES J. BRUSS
Director, Publications ................ FRANK E. SPEAR

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Assistant Administrator .......... HERMAN J. BRAMES

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Associate Dean/Director ........... ROY I. MUMME
Assistant Director .................. DAVID C. JORDAN
Librarian ................... JEAN R. ANDERSON

Sarasota Campus
Associate Dean/Director .......... ROBERT V. BARYLSKI
Director, Administrative Affairs .......... CHARLES C. HARRA
Director, Student Affairs (Acting) .......... JANET POLF
Director, New College Admissions ........ MILDRED P. ELLIS
Director, Records and Registration .......... NANCY E. FERRARO
Director, Public Affairs .......... FURMAN C. ARTHUR
Director, Library .................. EDMON LOW
Coordinator, Academic Affairs .......... SARA SIMPSON

New College of USF
Provost .................. EUGENE LEWIS

Chairpersons:
Humanities .................. JAMES G. MOSELEY, JR.
Natural Sciences .................. PETER A. KAZAKS
Social Sciences .................. LASZLO DEME

Coordinator:
Environmental Studies Program .......... TBA

St. Petersburg Campus
Associate Dean/Director .......... JOHN HINZ
Director, Administrative and Student Affairs .......... DONALD A. HANEY
University Librarian ................ TBA
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, 1979. (A semicolon between degrees indicates different institutions.)

Achernbach, Karl E. ............ Assistant Professor

Abram, Jacques ................. Professor (Music), 1963

Achenbach, Karl E. .............. Assistant Professor

(Architecture, 1938)

Adams, Patricia B. ............. Assistant Professor

Adams, Patricia W. ............. Counselor and Adviser

Adams, W. Lee, Jr. .............. Assistant Professor

(Engineering), 1966

Aldrich, Bradley G. .............. Assistant Professor

Agresti, David L. ............... Instructor (Criminal Justice), 1973

Ahrens, Vicki W. ............... Student Affairs Coordinator

Ankerson, Robert L. .......... Associate Professor

Akins, Daniel L. ............... Associate Professor

(Acoustical Engineering, 1968)

Anker, James M. ................. Professor—Chairperson

(Appraiser), 1974

Anton, William D. .............. Director (Counseling Center, Student Affairs), 1972

Applegate, Minerva I. .......... Assistant Professor (Nursing), 1976

Arnaud, Charles W. ............ Professor (Interdisciplinary Social Science), 1964

Arndt, Donal J. ................. Director (Institutional Research), 1967

Ashford, Theodore A. .......... Professor (Chemistry) and Dean Emeritus (Natural Science), 1960

Aldrich, Bradley G. ............ Assistant Professor (Space Utilization and Analysis), 1964

APPLEGATE, Minerva I. .......... Assistant Professor (Marketing), 1971

B.S., M.S.; Ph.D., Carnegie-Mellon University, 1967, P.E.

B.S., M.S., Ph.D., North Texas State University, 1971

B.S., M.A., University of California, Berkeley, 1968

B.A.; M.A., Ohio State University, 1966

B.A.; M.S.; Ph.D., University of Florida, 1975

B.S., M.A., Ph.D., Ohio State University, 1972

B.S.; M.S., Ph.D., University of Notre Dame, 1979

B.S.; M.D., Hahnemann Medical College, 1970

B.S., M.A., Ohio State University, 1974

B.S., M.A., University of South Florida, 1971

B.S., M.S., Ph.D., University of Florida, 1964

B.A., M.A., Ph.D., University of Florida, 1964

B.S., M.S., Ph.D., University of Florida, 1964

B.S., M.A., University of Notre Dame, 1979

A.B.; M.D., State University of New York, Upstate Medical Center, 1971

A. B.; M.D., University of South Florida, 1977

A. B.; M.A., University of South Florida, 1971

A. B.; M.S.; Ph.D., University of Notre Dame, 1979

A. B.; M.S., University of Chicago, 1926
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<td>Aubel, Joseph L.</td>
<td>Associate Professor (Physics)</td>
<td>B.S., Ph.D., Michigan State University</td>
<td>1964</td>
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<td>Aucemann, Charles E.</td>
<td>Associate Professor - Acting Chairperson (Family Medicine)</td>
<td>A.B.S., M.S.D., Emory University School of Medicine</td>
<td>1943</td>
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<td>Austin, Bruce A.</td>
<td>Student Affairs Coordinator (Veterans Affairs, Student Affairs)</td>
<td>B.A., University of South Florida, 1978</td>
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<td>Austin, Martha L.</td>
<td>Professor (Reading Education)</td>
<td>B.S., M.F.A., Ohio University, 1958</td>
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<td>Baker, Carleton H.</td>
<td>Professor-Chairperson (Physiology)</td>
<td>B.A.; M.A.; Ph.D., Princeton University, 1955</td>
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<td>Balis, Gene A.</td>
<td>Assistant Professor (Surgery)</td>
<td>A.B.A.; M.D., Hahnemann Medical College, 1967</td>
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<td>Balis, John U.</td>
<td>Professor (Pathology)</td>
<td>M.D., University of Athens, Medical School, Greece</td>
<td>1957</td>
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<td>Banes, Ruth A.</td>
<td>Visiting Assistant Professor (American Studies)</td>
<td>B.A., Ph.D., University of New Mexico, 1978</td>
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<td>Barber, Sotirios A.</td>
<td>Associate Professor (Political Science)</td>
<td>B.A., M.A.; Ph.D., University of Chicago, 1972</td>
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<td>Barco, James M.</td>
<td>Counselor to Students (Housing and Food Services, Student Affairs)</td>
<td>B.A., M.S., Florida State University, 1979</td>
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<td>Barker, Edwin N.</td>
<td>Clinical Psychologist (Counseling)</td>
<td>B.S., Ph.D., Columbia University, 1958</td>
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<td>Barkholz, Gerald R.</td>
<td>Assistant Professor (Library, Media and Information Studies Education)</td>
<td>B.S., M.Ed.; Ed.D., University of Florida, 1976</td>
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<td>Barnard, James W.</td>
<td>Professor (Exceptional Child Education)</td>
<td>A.B.; M.A.; M.S., Ph.D., Yale University, 1963</td>
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<td>Barnes, Lewis A.</td>
<td>Professor - Chairperson (Pediatrics)</td>
<td>B.A., M.D., Harvard Medical School, 1944</td>
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<td>Barr, Carolyn L.</td>
<td>Student Affairs Coordinator (Physical Education, Student Affairs)</td>
<td>B.S.; M.A., Appalachian State Teachers College</td>
<td>1962</td>
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<td>Barry, Patricia P.</td>
<td>Assistant Professor (Internal Medicine)</td>
<td>B.S., M.D., University of South Florida, 1975</td>
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<td>Bartlett, Alan C.</td>
<td>Professor (Management)</td>
<td>B.S.; M.D., University of Wisconsin, 1964</td>
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<td>Bartlett, Patricia R.</td>
<td>Assistant Professor (Comprehensive Medicine)</td>
<td>M.B., Ch.B., University of Cape Town, South Africa</td>
<td>1969</td>
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<td>Barylski, Robert V.</td>
<td>Associate Dean/Director (Sarasota Campus)</td>
<td>B.A.; M.A.; Ph.D., Harvard, 1972</td>
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<td>Bassuk, Daniel E.</td>
<td>Assistant Professor (Religious Studies)</td>
<td>B.S.; M.A.; Ph.D., Drew University, 1974</td>
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<td>Bates, Margaret L.</td>
<td>Professor (Social Sciences), New College of USF, 1975</td>
<td>B.A.; M.A.; Ph.D.; L.D., Ohio Wesleyann University, 1974</td>
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<td>Battle, Jean A.</td>
<td>Professor (Psychological and Social Foundations Education)</td>
<td>B.A., M.A., Ed.D., University of Florida, 1953</td>
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<td>Baudoing, Larry A.</td>
<td>Associate Business Manager (Medical Center)</td>
<td>B.S.; M.S., Nicholls State University, 1968</td>
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<td>Baumgarten, Steven A.</td>
<td>Associate Professor (Marketing)</td>
<td>B.A.; M.S., Purdue University, 1971</td>
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<td>Beach, Dorothy R.</td>
<td>University Counseling Psychologist (Counseling Center, Student Affairs)</td>
<td>B.A.; M.A.; Ed.D., Nova University, 1975</td>
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<td>Bean, Charles F.</td>
<td>Coordinator (Engineering)</td>
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<td>Beasley, Bob L.</td>
<td>Associate Professor (Physical Education, Education)</td>
<td>B.S.; M.Ed.; Florida State University, 1968</td>
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<td>Beasley, W. Wayne</td>
<td>Associate Professor (Educational Leadership Education)</td>
<td>B.S.; M.S., Ed.D., Indiana University, 1964</td>
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<td>Bedard, Lindley, G.</td>
<td>Visiting Assistant Professor (Theatre)</td>
<td>B.A.; M.M.A., University of Oregon, 1976</td>
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<td>Beenhakker, Arle</td>
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<td>B.S.; M.Ed.; Ph.D., Purdue University, 1964</td>
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<td>Behrens, William W., Jr.</td>
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<td>Belknap, Daniel F.</td>
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<td>Bell, James A.</td>
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<td>A.B.; M.A., Ph.D., Boston University, 1969</td>
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<tr>
<td>Bell, John O.</td>
<td>Lecturer (Interdisciplinary Social Science)</td>
<td>B.S.; J.D., George Washington University, 1939</td>
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<td>Bell, Susan S.</td>
<td>Assistant Professor (Biology)</td>
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<td>Belohlawek, John M.</td>
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<td>Belsole, Robert J.</td>
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<td>Belt, Jack W.</td>
<td>Associate Professor (Theatre Arts)</td>
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<td>Bennedetti, Robert</td>
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<td>Benjamin, William F.</td>
<td>Professor (Educational Leadership Education)</td>
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<td>Bennett, Charles A.</td>
<td>Systems Coordinator (Computer Research Center)</td>
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<td>Bennett, G. Kemble</td>
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<td>Bennett, Gordon L.</td>
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<td>B.S.; M.A., Texas A&amp;M University, 1977</td>
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<td>Benson, Andre W.</td>
<td>University Physician (Student Health Service, Student Affairs)</td>
<td>B.A.; M.D., University of Florida, 1973</td>
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<td>Bentley, Joseph G.</td>
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<td>Bentley, Mary Ann M.</td>
<td>Lecturer (Theatre)</td>
<td>B.A., University of South Florida, 1962</td>
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<td>Bently, Robert E.</td>
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<td>Berggren, Douglas C.</td>
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<td>B.A.; M.A.; Ph.D., Yale University, 1959</td>
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<td>Berkley, Richard J.</td>
<td>Assistant Professor (Physics)</td>
<td>B.A., M.S., New Mexico Institute of Mining &amp; Technology, 1955</td>
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<td>Betz, John V.</td>
<td>Associate Professor (Biology)</td>
<td>B.S.; Ph.D., St. Bonaventure University, 1963</td>
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<td>Betzer, Peter</td>
<td>Professor (Marine Science) — Affiliated Professor (Chemistry)</td>
<td>B.S.; Ph.D., University of Rhode Island, 1971</td>
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<td>Beulig, Alfred J.</td>
<td>Assistant Professor (Natural Sciences), New College of USF, 1975</td>
<td>B.S., M.S.; Ph.D., City University of New York, 1974</td>
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<td>Bevilacqua, Jeanette W.</td>
<td>Assistant Professor (Nursing)</td>
<td>B.S.; M.A.; M.E., Columbia University, 1977</td>
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<td>Biddot-Lopez, Pascual</td>
<td>Assistant Professor (Medicine)</td>
<td>B.S.; M.D., University of Puerto Rico School of Medicine, 1972</td>
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<td>Biersdorf, William R.</td>
<td>Professor (Ophthalmology)</td>
<td>B.S.; M.S.; Ph.D., University of Wisconsin, 1954</td>
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<td>Binford, Jesse S., Jr.</td>
<td>Professor (Chemistry)</td>
<td>B.A., M.A.; Ph.D., University of Utah, 1955</td>
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<td>Birkin, Stanley J.</td>
<td>Associate Professor (Management)</td>
<td>B.S., M.C.; Ph.D., University of Alabama, 1969</td>
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<td>Blackshear, William M. Jr.</td>
<td>Assistant Professor (Surgery)</td>
<td>B.S.; M.D., Tulane Medical School, 1970</td>
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<td>Blair, Raymond C.</td>
<td>Visiting Assistant Professor (Measurement and Research Education), 1975</td>
<td>B.A., M.A.; University of South Florida, 1972</td>
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<td>Blake, Norman J.</td>
<td>Associate Professor (Marine Science)</td>
<td>B.S.; M.S.; Ph.D., University of Rhode Island, 1972</td>
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<td>B.S.; M.S.; Ph.D., Florida State University, 1976</td>
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<td>Blau, Lili R.</td>
<td>Clinical Psychologist — Counselor/Adviser (Counseling Center, Student Affairs), 1967 (Part time)</td>
<td>B.S.; M.S.; Ph.D., United States International University, 1975</td>
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<td>Blenkorn, George H.</td>
<td>University Physical Planning Consultant (Facilities Planning), 1977</td>
<td>B.C.N., University of Florida, 1954, P.E.</td>
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<td>Bloch, Sylvan C.</td>
<td>Professor (Physics)</td>
<td>B.S., M.S.; Ph.D., Florida State University, 1962</td>
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<td>Blomquist, Allen J.</td>
<td>Associate Professor (Psychology), Coordinator (Campus-wide Scheduling), St. Petersburg Campus 1972</td>
<td>B.S., M.S., Ph.D., University of Wisconsin, 1960</td>
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<td>Blount, Merry L.</td>
<td>Athletic Coach (Physical Education, Student Affairs), 1979</td>
<td>B.S.; M.S., Pennsylvania State University, 1975</td>
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<td>Blount, William R.</td>
<td>Associate Professor (Criminal Justice)</td>
<td>B.A.; M.A.; Ph.D., George Peabody College, 1969</td>
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<td>Bluds, Peter A.</td>
<td>Assistant Professor (Humanities), New College of USF, 1977 Sarasota Campus</td>
<td>B.S.; M.A.; Ph.D., Princeton University, 1976</td>
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<td>Bole, David B.</td>
<td>Visiting Assistant Professor (Natural Sciences), New College of USF, 1979 Sarasota Campus</td>
<td>B.S.; M.S., Ph.D., University of Oregon, 1979</td>
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<td>Bolivar, Juan C.</td>
<td>Professor (Surgery), 1972 (Part time)</td>
<td>B.S.; M.D.; University of Paris, Sorbonne, 1940</td>
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<td>Bolton, Steven E.</td>
<td>Professor (Finance), 1978</td>
<td>B.S.; M.B.A., Ph.D., New York University, 1969</td>
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<td>Borden, Arthur R.</td>
<td>Professor (Humanities), New College of USF, 1975 Sarasota Campus</td>
<td>B.A.; M.D., Ph.D., Harvard University, 1950</td>
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<td>Boren, Hollis G.</td>
<td>Professor (Internal Medicine), 1973</td>
<td>B.S.; M.S.; M.D., Baylor University College of Medicine, 1946</td>
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<td>Borch, Eunice R.</td>
<td>Visiting Instructor (Childhood Education), 1972 (Part time)</td>
<td>B.S.; M.A., E.S., University of Illinois, 1967</td>
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<td>Bostow, Darrel E.</td>
<td>Associate Professor (Psychological and Social Foundations Education, 1970</td>
<td>B.S., M.S.; M.A., University of South Florida, 1971</td>
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<td>Boulis, Pierre J., Jr.</td>
<td>Assistant Professor (Obstetrics and Gynecology), 1967</td>
<td>B.S., M.S.; M.D., Louisiana State University, 1971</td>
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<td>Bowers, Richard T.</td>
<td>Director and Professor (Physical Education, Student Affairs), 1963</td>
<td>B.S., M.S., Ed.D., George Peabody College, 1961</td>
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<td>Bowden, Ada M.</td>
<td>Assistant Director (Medical Library), 1965</td>
<td>B.S., M.S.; M.A., University of South Florida, 1971</td>
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<td>Boyce, Henry W., Jr.</td>
<td>Professor (Internal Medicine), 1975</td>
<td>B.S.; M.S.; M.D., Bowman Gray School of Medicine, 1955</td>
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<td>Boyd, Herbert F.</td>
<td>Professor (Exceptional Child Education), 1965</td>
<td>B.S., M.S., Ph.D., University of Illinois, 1958</td>
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<td>Boyd, Sarah E.</td>
<td>Assistant Professor (Nursing), 1977</td>
<td>B.S.; M.A.; M.P.S., Long Island University, 1977</td>
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<td>Assistant Professor (Internal Medicine), 1979 (Part time)</td>
<td>B.S., M.D., University of South Carolina, 1972</td>
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<td>Bradley, Robert V.</td>
<td>Associate University Librarian (Libraries), 1959</td>
<td>B.S., M.A., Florida State University, 1957</td>
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<td>Brady, Henry G.</td>
<td>Associate Professor (Adult and Vocational Education), 1969</td>
<td>B.S.; M.S., Ed.D., Florida State University, 1969</td>
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<td>Braman, Robert S.</td>
<td>Professor (Chemistry), 1967</td>
<td>A.B.; M.D., New Jersey College of Medicine, 1968</td>
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<td>Brames, Herman J.</td>
<td>Assistant Administrator (Regional Campus Affairs), 1964</td>
<td>B.S.; M.S., Indiana State University, 1964</td>
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<td>Brandmeyer, Gerard A.</td>
<td>Associate Professor (Sociology), 1969</td>
<td>B.S., M.A.; Ph.D., University of California, Los Angeles, 1962</td>
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Cameron, William Bruce ............ Professor (Sociology), 1964
B.A., M.A., Ph.D., University of Wisconsin, 1952
Camp, John B. ............ Associate Professor (Communication),
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Clark, William E. ............ Professor (Mathematics), 1970
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Clarke, Barbara K. ............ Assistant Professor (Reading Education), 1977 Sarasota Campus
B.A.; M.A.; Ph.D., Florida State University, 1977
Clayback, Jean B. ............ Assistant Professor (Childhood Education), 1977 Sarasota Campus
B.S.; Ed.M., Ed.D., State University of New York, Buffalo, 1977
Clayton, Glennndon E. ............ Assistant Vice President (Administration and Finance), 1966
B.S.; M.A., University of South Florida, 1973
Cleafy, Lynn F. ............ Associate Professor — Chairperson (Educational Leadership Education), 1970
B.A.; M.S.; Ph.D., Florida State University, 1970
Cleaver, Frank L. ............ Professor (Mathematics), 1960
B.S.; M.S.; Ph.D., Tulane University, 1960
Cline, Ralph ............ Assistant Professor (Exceptional Child Education), 1971 St. Petersburg Campus
Clingman, Joy M. ............ Associate Professor (Psychology),
1970 St. Petersburg Campus
B.A.; M.S.; Ph.D., Florida State University, 1971
Clough, W. Lynndon ............ Professor (Humanities),
New College of USF, 1975 Sarasota Campus
B.A., M.A., Queen’s College, Cambridge, 1938
Coker, John W. ............ Director (Fine Arts Events), 1969
B.S.; M.M., College — Conservatory of Music, Cincinnati, 1956
Cole, Nancy B. ............ Associate Professor — Chairperson (Theatre), 1976
A.B.; M.F.A. in Acting, State University of Iowa, 1964
COLE, ROGER W. ............ Professor (Communication), 1969
B.A., M.A.: Ph.D., Auburn University, 1968
COLUMBIA, JOHN .......... Associate Professor (Adult and Vocational Education), 1968
B.S., M.E., University of Georgia, 1965
COLLIER, CLARENCE H. .... Associate Professor (Adult and Vocational Education), 1971
B.S.; M.A.: Southern Methodist University, 1971
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
COLOMBO, JORGE A. .... Associate Professor (Anatomy), 1977
B.S.; M.D., Medical School of the University of Buenos Aires, 1964
COOKE, JOHN A. .......... Assistant Professor (Music), 1974
COPPOLI, FRANCIS .......... Associate Professor (Economics), 1968
B.S.; M.B.A., Ph.D., University of Colorado, 1967
COOKE, NANCY S. ....... Counselor/Advisor (Student Personnel Office), 1974 (Part time)
B.S.; M.B.A., University of Denver, 1960
COOPER, CLARA B. ........ Associate Professor (Humanities), 1969
B.A., M.A., Ph.D., Florida State University, 1969
COPPOLETTI, FRED .......... Visiting Assistant Professor (Natural Sciences), New College of Sarasota Campus
B.S.; M.S., Ph.D., Case Western Reserve University, 1971
CORY, JOSEPH G. .......... Professor — Chairperson (Biochemistry), 1966
B.S.; Ph.D., Florida State University, 1963
COVINGTON, HARRISON W. Dean — Professor (Fine Arts), 1961
COWELL, BRUCE C. .... Associate Professor (Biological Sciences), 1967
B.A., M.A., Ph.D., Cornell University, 1963
Cox, barbara c. .......... Assistant to Dean (Arts and Letters), 1974
B.A., William and Mary, 1958
Cox, ernest l., III ........ Professor (Visual Arts), 1962
B.A.; M.F.A., Cranbrook Academy of Art, 1961
Cox, ROBERT G. .......... Dean — Professor (Business Administration), 1975
B.S.; M.B.A.; Ph.D., University of Pennsylvania, 1956, C.P.A.
Craig, calvert j. ......... Associate Professor (Educational Leadership Education), 1967
B.S., M.S., University of Illinois, 1951
Craig, Charles p. ........ Professor (Internal Medicine, 1969 (Part time)
B.A.; M.D., University of Pittsburgh School of Medicine, 1961
CRAINE, ROGER A. ........ Associate Professor (Engineering), 1974
B.S.; M.S.; Ph.D., Auburn University, 1973
Crittenden, jerry .......... Associate Professor (Communicology), 1971
B.S.; M.A., Ph.D., Michigan State University, 1969
Croft, James e. .......... Associate Professor (Art and Music Education), 1972
Crosby, John O. .......... University Physical Planning Consultant (Facilities Planning), 1977
B.Arch., University of Florida, 1969
Croft, James W. .......... Student Affairs Coordinator (Student Organizations, Student Affairs), 1973
B.A.; M.A., Indiana University, 1971
Crowther, philip e. ...... Assistant in Research (Pathology), 1977
B.S.; M.S., University of Connecticut, 1975
Cruse, C. Wayne .......... Assistant Professor (Surgery), 1979
B.S.; M.D., University of Louisville, 1972
Cummings, yvonne e. ...... Assistant Professor (Internal Medicine), 1978
B.S.; M.D., Howard University College of Medicine, 1973
Cunningham, Virginia P. .. Assistant University Librarian (Libraries), 1976
B.A.; M.A., University of South Florida, 1976
Cupola, Michael .......... Assistant Professor (Pediatrics), 1977
B.S.; M.D., Georgetown Medical School, 1971
Curran, John S. .......... Associate Professor (Pediatrics), Director (Neonatal Service), 1972
A.B.; M.D., University of Pennsylvania, 1966
Currey, Cecil B. ........ Assistant Professor (History), 1967
A.B., M.Sc., Ph.D., University of Kansas, 1964
Curtis, Thomas D. ........ Professor (Economics), 1974
B.S.; M.A., Ph.D., Indiana University, 1965
Cyzewski, Paul V. .......... Associate Professor — Chairperson (Art & Music Education), 1974
B.S.; M.S., Indiana University, 1966
Cursley, Joseph J. ....... Assistant Professor (Natural Sciences), New College of Sarasota Campus
B.A.; M.A., Ph.D., Ohio State University, 1974
Daly, Richard J. .......... Assistant Professor (Psychiatry), 1979
B.A.; M.D., Yale University, 1969
Daly, Suzanne T. ......... Assistant in Learning Disabilities (Communicology), 1979
B.S., M.S., Indiana University, 1977
Danenburg, William P. .... Professor (Adult and Vocational Education), 1964
A.B.; M.Ed.; Ed.D., University of Tennessee, 1970
Daugherty, George G. .... Lecturer (Mass Communications), 1972
B.S.; M.L.S., University of South Florida, 1978
Davey, Kenneth W. ....... Assistant Professor (Economics), Coordinator of Advising, Undergraduate (Business Administration), 1966
B.A.; M.A., St. Mary's University, 1965
Davis, Darrell L. .......... Professor (Physiology), 1971
B.S.; M.A.: Ph.D., St. Louis University, 1956
Davis, Jefferson C., Jr. .... Professor — Chairperson (Chemistry), 1965
B.S.; M.S.; Ph.D., University of California, Berkeley, 1959
Davis, Mack, III .......... Coordinator (Project Thrust), 1977
B.A., University of South Florida, 1972
Davis, Richard A., Jr. .... Professor — Chairperson (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 (Biological Sciences), 1964
B.S., M.A., Ph.D., University of California, Los Angeles, 1961
Dean, Stanley R. .......... Professor (Physics), 1967
B.S.; M.S.; Ph.D., Vanderbilt University, 1967
Deats, Sara M. .......... Associate Dean — Associate Professor (Arts & Letters), 1970
B.A.; M.A., Ph.D., University of California, Los Angeles, 1970
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
M.A., University of Oklahoma, 1964
Deer, Irving .......... Professor (English), 1966
B.S.; M.A., Ph.D., University of Minnesota, 1956
Deiter, John C. .......... Associate Professor (Finance), 1965
B.S.; M.B.A., Ph.D., Western Reserve University, 1965
Espinosa, Luis R. ............................ Associate Professor (Internal Medicine), 1978
M.D., Peru University of Medical and Biological Sciences, Lima, Peru, 1969

Essig, Frederick B. ........................... Assistant Professor (Biology),
Director (Botanical Gardens), 1975
A.B.; Ph.D., Cornell University, 1975

Essig, Yau Ping Hu ...................... Assistant in Research
(Pediatrics), 1977
B.S.; M.S., Cornell University, 1975

Estler, William T. .......................... Associate Professor (Natural Sciences), New College of USF, 1975 Sarasota Campus

Fabry, Donna P. ............................. Continuing Education Coordinator
(Continuing Education), 1977
B.S., University of Miami, Florida, 1959

Fabry, Francis J. ............................ Professor (English), 1964
A.B., M.A., Ph.D., University of Texas, 1964

Factor, Regis A. .............................. Assistant Professor (Political Science), 1971 St. Petersburg Campus
B.A.; M.A.; Ph.D., University of Notre Dame, 1974

Fager, Charles J. ............................. Professor (Visual Arts), 1963
B.A.; M.F.A., University of Kansas, 1963

Fanning, Kent A. ............................ Associate Professor (Marine Science), 1973 St. Petersburg Campus
B.S.; Ph.D., University of Rhode Island, 1973

Farre, Robert V. ............................. Professor (Internal Medicine), 1973
M.D., Georgetown University, 1958

Farrell, Frances ............................... Associate Professor (Nursing), 1977
B.S.; M.S., University of California, San Francisco Medical Center, 1966

Feller, James F. .............................. Assistant Professor (Finance), 1974
B.A.; Ph.D., University of Florida, 1979

Felder, Rickard C. ........................... Director (University Budgets), 1968
B.A., University of South Florida, 1969

Fenderson, Kendrick E., Jr. ........................ Associate Professor (Mass Communications), 1973
B.S.; M.S., Boston University, 1951

Fenske, Neil A. ............................... Assistant Professor (Internal Medicine), 1977 (Part time)
B.A.; M.D., St. Louis University School of Medicine, 1973

Ferguson, Donald G. ........................ Professor (Guidance Education), 1970
B.S.; M.A.; Ed.D., Western Reserve University, 1956

Fernandez, Jack E. ........................... Professor (Chemistry), 1960
B.S., M.S., Ph.D., University of Florida, 1954

Fernandez, Raymond J. ........................ Assistant Professor (Pediatrics), 1977
B.A.; M.D., Tulane University School of Medicine, 1968

Fernandez, Robert C. ........................ Assistant Professor - Associate Chairperson (Psychiatry), 1977
B.S.; M.D., University of Tennessee, 1969

Fernandez, Susan J. .......................... Counselor / Adviser (Academic Advising, Student Affairs), 1974
B.A., M.A., University of South Florida, 1975

Ferraro, Nancy E. ............................ Director (Records and Registration), 1975 Sarasota Campus
B.S., B.A., University of Florida, 1959

Ferris, Mary W. .............................. Associate University Librarian
(Libraries), 1971 (Part time) St. Petersburg Campus
B.A.; M.L.S., Emory University, 1956

Fields, Mary A. ............................. Assistant University Librarian
(University Libraries), 1971
B.A.; M.M.; M.A., University of South Florida, 1977

Figg, Robert M., III ........................ Associate Professor (English), 1965
B.S., M.A., Ph.D., University of North Carolina, 1965

Filskov, Susan B. ............................ Assistant Professor (Psychology), 1975
B.A., Ph.D., University of Vermont, 1975

Finelli, Patrick M. ........................... Coordinator (Fine Arts Events), 1976
B.A., M.A., University of California at Berkeley, 1975

Finley, Robert L. ............................ Assistant Professor (Business Administration), 1974 Ft. Myers Campus
B.B.A., M.A., Ph.D., University of Oklahoma, 1974

Finney, Roy P. ............................... Professor (Surgery), 1974
(Part time)
B.D., Medical University of South Carolina 1952

Finster, Joseph L. ............................ Associate Professor (Comprehensive Medicine), 1977
A.B.; M.D., Georgetown School of Medicine, 1964

Fiore, Silvia R. ............................. Professor (English), 1969
B.Ed., M.A.; Ph.D., University of Pittsburgh, 1970

Fisher, Arthur W., Jr. ........................ Lecturer (Accounting and Law), 1970
B.S.; M.S.N.; S.C.N., Indiana University, 1978

Flynn, Robert W. ............................. Professor (Physics), 1968
B.S.; S.M., Sc.D., Massachusetts Institute of Technology, 1968

Follman, John C. .............................. Professor - Chairperson (Psychological and Social Foundations Education), 1966
B.A.; M.A.; Ph.D., Indiana University, 1969

Ford, Edward J., Jr. ............................ Associate Professor (Economics), 1971
B.A.; M.A.; Ph.D., Boston College, 1971

Forseth, Sonia D. ............................ Assistant Professor (Art and Music Education), 1971 St. Petersburg Campus
B.A., M.A., Ph.D., University of Minnesota, 1976

Fortes, Francis G. ........................... Systems Coordinator (Computer Research Center), 1965

Foster, Larry J. ............................... Assistant Professor (Medicine), 1977 (Part time)
B.S., M.D., University of Tennessee, 1970

Fowler, Robert L., Jr. ........................ Associate Professor (Psychology), 1969 St. Petersburg Campus
B.A., M.A., Ph.D., University of Tennessee, 1963

Francis, Roy G. .............................. Professor - Chairperson (Sociology), 1973
B.A.; M.A.; Ph.D., University of Wisconsin, 1950

Frankel, Jack W. ............................. Associate Professor (Microbiology), 1976
B.A.; Ph.D., Rutgers University, 1951

Franklin, Betty J. ............................ Student Affairs Coordinator
(Cooperative Education and Placement, Student Affairs), 1978
B.A., University of Florida, 1972

Franques, John T. ............................ Assistant Professor (Engineering), 1971
B.S., M.S., Ph.D., Louisiana State University, 1971, P.E.

Fraze, Henry S. .............................. Visiting Lecturer (Engineering), 1978 (Part time)
B.S.; M.S., Pennsylvania State University, 1965

French, Diana G. .............................. Assistant Professor (Nursing), 1978
B.S., M.S.N., Medical College of Georgia, 1976

Frenchman, Stuart M. ........................ Assistant Professor (Radiology), 1977 (Part time)
B.A.; M.D., Temple University School of Medicine, 1967

Fresen, Frank W. ............................. Associate Professor (Reading Education), 1969
B.S.; M.Ed.; Ed.D., University of Florida, 1970

Friedl, Frank E. ............................. Professor (Biology), 1960
B.A.; Ph.D. University of Minnesota, 1958
FRIEDMAN, HERMAN .............. Professor - Chairperson (Medical Microbiology), 1978
A.B., M.A.; Ph.D., Hahnemann Medical College, 1957

FROELICH, RALPH O............... Associate Professor (Music Arts), 1974
B.S., Juilliard School of Music, 1958

FUSON, ROBERT H................. Professor - Chairperson (Geography), 1960
A.B.; M.A.; Ph.D., Florida State University, 1975

GAGG! , SILVIO.................. Associate Professor (Humanities), 1972
B.S., Ph.D., Duquesne University, 1972

GARDNER, MELVIN J............. Professor (Internal Medicine), 1974
B.A.; M.A.; M.D., University of Minnesota, 1968

GELINAS, ROBERT.................. Assistant Professor (Library, 1970
B.S., Ph.D., University of Maryland, 1969

GELPI, CARLOS F............... Associate Professor (Health Service), 1977
B.S., University of Puerto Rico, 1972

GIBBONS, GORDON.................. Professor (Library, 1970
B.A.; M.A.; MA.; Ed.D., Nova University, 1968

GLASS, HARVEY................. Professor (Systems Engineering), 1969
B.S., M.S., D.Sc., Washington University, 1965

GLASSER, STEPHEN P............. Associate Professor (Medicine), 1976
M.D., University of Miami Medical School, Florida, 1964

GLOVER, JEAN P............... Instructor (Communicology), 1968
B.S., Eastern Illinois University, 1949

GLOVER, KOFI R. A............ Assistant Professor (Afro-American Studies), 1972
B.A.; M.A., Ph.D., Indiana University, 1975

GLOVER, JEAN.................. Assistant Professor (Anthropology), 1977
B.A., M.A.; Ph.D., The Catholic University of America, 1973

GOFF, ANNE L................. Counselor/Advisor (University Studies, Student Affairs), 1978
A.B., M.Ed., Ohio University, 1971

GOFFORT, FRANÇOIS.......... Associate Professor (Childhood and Language Arts Education), 1967
B.S., M.Ed.; Ed.D., Indiana University, 1966

GOLDING, LOIS A............. Associate Professor (Music Arts), 1962

GOLDMAN, ALLAN L............ Associate Professor (Internal Medicine), 1974
B.A., B.S., M.D., University of Minnesota, 1968

GOLDSMITH, GEORGE H............ Director (Financial Aids, Student Affairs), 1970
B.A., B.S., Temple University, 1967

GOMES, OSMAR R................. Professor (Psychology), 1969
B.A.; M.A., University of Puerto Rico, 1975

GOODING, LOLORES K........... Instructor — Program Director (Engineering), 1975
M.S.E., University of South Florida, 1975

GOODMAN, ADOLPH W........... Distinguished Service Professor (Mathematics), 1964
B.S.; M.A., Ph.D., Columbia University, 1947

GORDON, CHARLES A........... Coordinator (Undergraduate Advising, 1968
B.A.; M.S.; Ed.D., Nova University, 1977

GORDON, HORACE C............ Visiting Instructor (Electrical Engineering), 1973
B.S.E.E., M.S.E., University of South Florida, 1970

GOWEN, ALDEN S.................. Associate Professor (Gerontology), 1972
B.A.; M.A., Florida State University, 1957

GRAF, ROBERT J................. Associate Professor (Medical Microbiology), 1971
B.S., Ph.D., State University of New York at Buffalo, 1968

GREATBERG, LEON C............. Associate Professor (Childhood and Language Arts Education), 1970
B.S., M.S., Ed.D., Syracuse University, 1969

GREENE, JAMES A.............. Assistant Professor (Psychiatry), 1979
B.S., M.D., University of Tennessee, 1963

GREGORY, S. JOAN............. Associate Professor — Assistant Dean for Student Personnel and Outreach (Nursing), 1977
B.S.; M.S.; Ph.D., University of Florida, 1977 RN.

GRIFFITH, JOHN E.............. Professor (SMF-Engineering), 1964
B.S., M.S., Ph.D., Pennsylvania State University, 1955

GRIMES, MAXYNE M............. Assistant Director (Medical Center Library), 1972
B.S., M.S., Ph.D., Florida State University, 1953
HINSCHEK, RICHARD E. ........................... Professor - Assistant Director (Physical Education, Student Affairs), 1962
B.S.; M.S., Ph.D., Florida State University, 1974
HEILOS, LAWRENCE J., JR. .......................... Associate University Librarian (Libraries), 1974
B.S.; M.S.L.S.; M.A., University of South Florida, 1978
HEIM, WILLIAM J. .......................... Associate Professor - Chairperson (English), 1970
A.B.; M.A., Ph.D., Indiana University, 1974
HENDERICKS, MARK P. .......................... Visiting Lecturer (Music), 1977
B.A., M.M., University of South Florida, 1977
HENDRY, CAROLE F. .......................... Lecturer (Biology), 1967
B.A., M.A., University of South Florida, 1968
HENLEY, ELTON F. .......................... Professor (English), 1963
B.A., M.A., Ph.D., Florida State University, 1962
HENNING, ROGER E. .......................... Associate Dean - Professor (Engineering), 1971
B.S.E.E., M.S.E.E., Sc.D., Columbia University, 1954, P.E.
HENSEL, JAMES S. .......................... Associate Professor - Marketing, 1976
B.A.; M.B.A.; Ph.D., Ohio State University, 1970
HERANDER, MARK G. .......................... Assistant Professor (Economics), 1979
A.B., Rutgers University, 1975
HERMAN, WALTER J. .......................... Professor (Economics), 1960
B.S., M.B.A., Ph.D., University of Florida, 1965
HERZ, GILMAN W. .......................... Professor (Physical Education, Student Affairs), 1960
B.S., M.S., P.E.D., University of Indiana, 1956
HES S, E DWARD V., III .......................... Student Affairs Coordinator (Cooperative Education and Placement, Student Affairs), 1976
B.S.; M.Ed., Trenton State College, 1972
HESS, JEFFREY E. .......................... Assistant Professor (Ophthalmology), 1979 (Part time)
B.A.; M.D., Baylor College of Medicine, 1971
HEWITT, CHARLES F. .......................... Assistant Vice President (Student Affairs), 1972
B.S.; M.A.; Ed.D., Western Michigan University, 1972
HEWITT, CRAIG B. .......................... Visiting Instructor (Economics), 1979
B.A., M.S., Florida State University, 1978
HICKMAN, JACK W. .......................... Professor (Internal Medicine), 1970
B.S.; M.D., Indiana University, 1955
HICKS, DALE A. .......................... Clinical Psychologist (Counseling Center, Student Affairs), 1977
B.S.; M.A., Ph.D., Bowling Green State University, 1977
HIGGINS, JAMES J. .......................... Associate Professor (Mathematics), 1974
B.S.; M.S.; Ph.D., University of Missouri, 1970
HILL, RAYMOND .......................... Associate Professor - Chairperson (Adult and Vocational Education), 1971
B.S.; M.A., Ed.D., University of Alabama, 1975
HILL, ROSALIE A. .......................... Director for Equal Opportunity Affairs (Equal Opportunity Affairs), 1975
B.S.; M.Ed., Florida A&M University, 1971
HINDE, WILL M. .......................... Associate Professor (Visual Arts), 1972
HINE, ALBERT C. .......................... Assistant Professor (Marine Science), 1979 St. Petersburg Campus
A.B.; M.S.; Ph.D., University of South Carolina, 1975
HINNENBUSCH, MARK T. .......................... Systems Coordinator (Regional Data Center), 1979
B.S., Ohio State University, 1972
HINSCHEK, GERTRUDE W. .......................... Associate Professor (Biology), 1974
B.S.; M.S., Ph.D., Iowa State University, 1957
HINZ, JOHN .......................... Associate Dean/Director (St. Petersburg Campus), 1979
B.A.; M.A., Ph.D., Columbia University, 1959
HIRSCHBERG, EDWIN W. .......................... Professor (English), 1960
B.A.; M.A., Ph.D., Yale University, 1951
HOFFMAN, DENNIS E. .......................... Assistant Professor (Criminal Justice), 1979
B.A.; M.A.; Ph.D., Portland State University, 1979
HOFFMAN, HUBERT A. .......................... Professor - Associate Dean (Education), 1966
B.S., M.Ed., P.E.D., Indiana University, 1969
HOFFMAN, THEODORE B. .......................... Professor - Chairperson (Humanities), 1962
A.B., M.A., Ph.D., University of the Pacific, 1959
HOLCOMB, DAN L. .......................... Associate Professor - Athletic Coach (Physical Education, Student Affairs), 1965
B.Ed., M.S., Florida State University, 1962
HOLLAND, MARGARET S. .......................... Assistant Professor (Social Science and Letters Education), 1966
B.A., M.A.T.; Ph.D., Union Graduate School, 1977
HOLLEY, JOHN W. .......................... Assistant Professor (Sociology), 1971
B.A., M.S., Ph.D. Florida State University, 1971
HOLLOWAY, KENNETH E. .......................... Student Affairs Coordinator (Student Affairs), 1977 Sarasota Campus
B.S., M.S., Florida State University, 1977
HOLM, KATHRYN C. .......................... Assistant Professor (Music Arts), 1977 (Part time)
B.M.; M.M., Cleveland Institute of Music, 1975
HOLMES, ROLAND C. .......................... Assistant Professor (Geography), 1974 St. Petersburg Campus
A.B., M.S.; Ph.D., University of Chicago, 1979
HOMAN, SUSAN P. .......................... Visiting Assistant Professor (Reading Education), 1978
B.A.E.; M.A.E.; Ph.D., University of Florida, 1978
HORNER, H. ANDREW .......................... Associate Professor - Assistant Director (Physical Education, Student Affairs), 1969
B.S.; M.S., University of Illinois, 1965
HOPKINS, THOMAS L. .......................... Professor (Marine Science), 1967 St. Petersburg Campus
B.A., M.A., Ph.D., Florida State University, 1964
HOPPER, ALAN T. .......................... Instructor (Music), 1972 (Part time)
B.A., University of South Florida, 1970
HORACEK, MARGARET B. .......................... Associate University Librarian (Medical Library), 1974
B.A.; M.S.L.S., Kansas State Teachers College, 1974
HORNEY, NICHOLAS F. .......................... Associate in Research (Social and Behavioral Sciences), 1978
B.S.; M.A., University of North Florida, 1976
HORRIGAN, FREDERICK J. .......................... Associate Professor (Political Science), 1968
B.A., M.A., Ph.D., Indiana University, 1938
HORSMAN, DAVID A. E. .......................... Associate Professor (Mass Communications), 1970
B.A.; M.A., Ph.D.New York University, 1970
HOUGHTON, LEA M. .......................... Academic Administrator (Graduate Studies, Academic Affairs), 1968
HOUK, C. WESLEY .......................... Associate Professor (Fine Arts), 1961
B.A.; M.F.A., University of Iowa, 1950
HUBBARD, CONRADE F. .......................... Assistant Professor (Accounting), 1962
B.S., M.B.A., University of Kentucky, 1957, C.P.A.
HUCKABEE, ROBERT H. .......................... Student Affairs Coordinator (Physical Education, Student Affairs), 1978
B.A.; M.Ed., Ohio University, 1973
HUG, WILLIAM G. .......................... Professor (Dance), 1969
B.S., M.A., University of Illinois, 1960
HULBARY, WILLIAM E. .......................... Associate Professor (Political Science), 1976
B.A., M.A., Ph.D., University of Iowa, 1972
HUMM, HAROLD J. .......................... Professor (Marine Science), 1966 St. Petersburg Campus
B.S.; M.S., Ph.D., Duke University, 1945
KARP, JOSEPH P. .......................... Assistant Director
(University Budgets), 1974
B.S., M.A., University of South Florida, 1973
KARTSATOS, ATHANASSIOS G. Professor (Mathematics), 1971
Diploma, Ph.D., University of Athens, Greece, 1969
KASAN, E. LEE............................. Speech and Hearing Clinician- 
Lecturer (Communicology), 1967
B.A., M.A., University of Florida, 1956
KASE, JUDITH B. .......................... Associate Professor (Social
Science and Letters Education), 1969
B.A.; M.A., Case Western Reserve University, 1956
KASHNID, GLADYS S. ................. Professor (Humanities), 1965
B.A.; M.A., Ph.D., Florida State University, 1965
KATZENMEYER, WILLIAM G.  ............. Dean - Professor (Education), 1978
KAUFMANN, CAROLINE L. .............. Assistant Professor (Sociology), 1978
B.A.; M.S.; M.A., Ph.D., University of Pittsburgh, 1979
KAUFMANN, DONALD L. .................. Professor (English), 1968
B.A., M.L., Ph.D., University of Iowa, 1966
KAZAKS, PETER A. ....................... Associate Professor— Chairperson (Natural Sciences), New College of USF, 1975
Sarasota Campus
B.S.; M.S.; Ph.D., University of California, 1968
KANZANIS, BARBARA W. .............. Associate Professor (Art and Music Education), 1973
B.S.; M.Ed.; D.Ed., Pennsylvania State University, 1973
KEARNEY, KEVIN E. ..................... Director-Associate
Professor (Bachelor of Independent Studies), 1964
B.S., M.S.; Ph.D., University of Florida, 1960
KEENE, T. WAYNE ....................... Associate Professor—
(Individual Studies Education), 1963
B.S.; M.Ed.; Ed.D., University of Florida, 1963
KEITH, JOHN E. .......................... Department Head-
University Librarian (Libraries), 1968
B.A., M.L.S., Louisiana State University, 1969
KLEGER, MILTON G. ................. Professor (Academic Leadership), 1969
B.S., M.S.; Ph.D., University of Alabama, 1969, C.P.A.
KELLER, RONALD K. ................. Assistant Professor (Biochemistry), 1975
B.S.; Ph.D., Vanderbilt University, 1973
KELLEY, ANNE E. ......................... Associate Professor (Political Science), 1963
B.S., M.S.; Ph.D., Florida State University, 1961
KELLEY, JOHN E. .......................... Associate Professor
(Mathematics), 1964 St. Petersburg Campus
B.S., M.S.; Ph.D., University of Michigan, 1960
KENDALL, HENRY W. ..................... Professor—Acting
Chairperson (Physics), 1960
B.A., M.S.; Ph.D., University of Florida, 1961
KENNERSON, DAVID R .................. Associate Professor
(Management), 1966 St. Petersburg Campus
B.S., M.C.S., Drexel College, 1938
KENT, CHARLES H. ....................... Assistant Professor (Radiology), 1978
M.D., University of Heidelberg, 1966
KERN, ALLEN F. ......................... Instructor (Adult and
Vocational Education), 1974
B.A.; M.S.T.; M.S.Ed.; Ed.D., Nova University, 1979
KERN, ROBERT L. .......................... Associate Professor
(Mass Communications), 1972
B.A.; M.A., Syracuse University, 1970
KETCHERSID, ARTHUR L. .............. Assistant Director (Libraries), 1973
B.S.; M.S.L.S., Florida State University, 1961
KHORSANDIAN, JAN K. .................. Assistant Professor
(Music Arts), 1971
B.S., M.S., University of Illinois, 1970
KIEFER, H. CHRISTIAN .................. Professor (English), 1960
A.B.; M.A., Ph.D., Columbia University, 1961
KIMMEL, ELLEN B. ....................... Professor (Psychological
and Social Foundations Education), 1968
B.A.; M.A., Ph.D., University of Florida, 1965
KIMMEL, HERBERT D. ................. Professor (Psychology), 1968
B.S., M.A., Ph.D., University of Southern California, 1958
KING, GEORGE M. ....................... Associate Professor (Psychological
and Social Foundations Education), 1967
A.B.; M.R.C., Ed.D., University of Florida, 1965
KINDE, STEWART W. ..................... Professor—Chairperson
(Communicology), 1965
B.S., M.A., Michigan State University, 1972
KINDER, BILLY N. ....................... Assistant Professor (Psychology), 1976
B.S.; Ph.D., University of South Carolina, 1975
KING, ARLINE T. ......................... Assistant Department Head—
Associate University Librarian (Libraries), 1964
B.A., M.A.; M.S.L.S., Florida State University, 1970
KING, RAYMOND C. ..................... Director (Housing and
Food Service, Student Affairs), 1963
B.S.; M.A., Columbia University, 1961, Prof. Diploma
KING, SYLVIA C. ......................... Counselor /Adviser
(University Studies, Student Affairs), 1974
B.S.; M.A.T.; M.S., University of Washington, 1965
KLEG, MILTON G. ......................... Professor (Social Science
and Letters Education), 1970
B.A., M.A., Ed.D., University of Georgia, 1970
KLEIMAN, MICHAEL B ................. Assistant Professor (Sociology), 1978
B.A.; M.A., Pennsylvania State University, 1979
KLEIN, THOMAS W. ....................... Assistant Professor (Medical
Microbiology), 1973
B.S., Ph.D., Creighton University, 1972
KLEINE, GEORG-HELMUT ............... Associate Professor (History), 1968
Ph.D., University Erlangen-Nurnberg, 1967
KLESSIS, JANELL P. ................. Instructor (Reading Education), 1972
B.S.; M.A., University of South Florida, 1972
KLESSIS, STEPHEN E. .................. Professor (Physical
Education, Education), 1969
B.S., M.A.; Ph.D., Louisiana State University, 1968
KLUKICH, MARK C. ....................... Clinical Psychologist—
(Counseling Center, Student Affairs), 1978
B.A., M.A., Ph.D., Catholic University of America, 1978
KLOPFENSTEIN, CONNIE B. .......... Assistant Professor (Nursing), 1976
B.S.N.; M.N., University of Florida, 1974
KNEEBURG, DON W. ..................... Associate Professor
(Music Arts), 1968
B.A.; M.M., Indiana University, 1962
KNEGO, JOHN M. ......................... Associate Professor (Library, 
Media, and Information Studies, Education), 1975
M.A., Ph.D., Indiana University, 1974
KNEPPER, EDITH G. ..................... Department Head—University
Librarian (Libraries), 1975
B.A.; M.S.L.S., University of Kentucky, 1960
KNIPTEN, JAY T. ....................... Associate Professor (Management), 1970
KNOX, ROBERT H. .......................... Professor (Humanities),
New College of USF, 1975 Sarasota Campus
A.B., Ph.D., Harvard University, 1959
KNUPPEL, ROBERT A. ..................... Associate Professor
(Obstetrics-Gynecology), 1979
B.S.; M.P.H.; M.D., New Jersey College of Medicine, 1973
KOELER, JERRY W. ....................... Assistant to the President
(Office), 1976
B.S.; M.A.; Ed.D., Pennsylvania State University, 1968
KOLDNER, HARRY ......................... Assistant Professor
(Ophthalmology), 1979
B.A., M. D., Boston University School of Medicine, 1971
KOSINSKI, MARK K. ..................... Visiting Assistant Professor
(American Studies), 1978
B.A.; M.A., Ph.D., Bowling Green State University, 1978
KRANC, STANLEY C. ..................... Professor (Engineering), 1972
B.S.S.E., Ph.D., Northwestern University, 1968
LOW, EDMON ................ Director (Sarasota Library), 1975
Sarasota Campus
B.A.; M.A.S., University of Michigan, 1938
LOWE, ALVIN J. .................. Professor—Chairperson
(Reading Education), 1966
B.A.; M.A.; Ed.D., University of Virginia, 1967, D.A.G.S.
LUCOFF, MANNY .................. Associate Professor (Mass
Communications), 1963
B.S.; M.A.; Ph.D., University of Iowa, 1971
LUDWIG, DALE R. .............. Visiting Lecturer (Music), 1979
(B.A.)
B.M.; M.M., Yale University, 1978
LUDWIG, WILLIAM E. .......... Assistant Professor (Music), 1979
B.M.; M.M., Yale University School of Music, 1977
LUPTON, D. KEITH ............. Program Director
(Interdisciplinary Social Science), 1967
B.S.; LL.B.; M.A., Dartmouth College, 1951
LUTHER, ANITA B. ........... Assistant in Research (Medicine), 1975
(Part time)
LYMAN, CHARLES P. .......... Associate Professor (Visual Arts), 1972
B.A.; M.S., Institute of Design, Illinois Institute of Technology,
Lyman, Illinois, 1973
LYMAN, GARY H. ............... Assistant Professor (Internal
Medicine), 1977
B.A.; M.D., State University of New York at Buffalo, 1972
LYNDE, ROBERT H. ............ Assistant Professor (Neurology), 1978
B.S.; M.D., Medical College of Virginia, 1964
MAASS, PHYLLIS A. ......... Assistant Professor (Social
Work), 1976
B.A.; M.S.W., University of America, 1960
MACCULLOUGH, DOUGLAS B. .. University Registrar
(Registrar), 1977
B.S.; M.A., University of Florida, 1965
MACDONALD, GWENDOLINE R. .. Dean—Professor
(Nursing), 1973
B.S.; M.A., Ed.D., Columbia University, 1963
MACK, GREGORY A. .......... Assistant in Research
(Internal Medicine), 1978
B.A.; M.S., University of South Florida, 1977
MACK, JEFFREY A. ........... Area Administrator (Housing
and Food Service, Student Affairs), 1975
A.B.; M.A., University of South Florida, 1976
MACKAY, E. MAXINE .......... Professor (Humanities), 1961
A.B.; LL.B., M.A., Ph.D., Emory University, 1958
MACKENZIE, BERNARD A. ... Assistant to Vice President
(Academic Affairs), 1972
B.F.A.; M.A.; Ph.D., University of Florida, 1977
MALONE, JOHN L. ............. Associate Professor (Pediatrics), 1972
B.S.; M.D., University of Pennsylvania School of Medicine, 1967
MAMEL, JAY J. ............... Assistant Professor (Internal
Medicine), 1979
B.A.; M.D., University of Wisconsin Medical School, 1974
MANDLOW, MARTHA ....... Counselor /Advisor (Business), 1972
B.Ed.; M.A., University of Chicago, 1948
MANGUM, WILEY P. .......... Associate Professor
(Gerontology), 1972
B.A.; M.A., Ph.D., University of Southern California, 1971
MANKER, CHARLES C., JR. .. Professor (Psychological
Science, Social Foundations Education), 1966
B.A., M.R.E., Ph.D., University of Kentucky, 1956
MANN, MARIA L. .......... Associate Professor—Program Director
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B.A.; M.Ed.; Ph.D., University of Nebraska, 1970
MANOHGAN, MANOOG N ....... Professor—Chairperson
(Mathematics), 1968
B.A.; M.A., Ph.D., University of Texas, 1968
MANSELL, RICHARD L. ....... Professor (Biology)—Affiliate
Professor (Chemistry), 1967
A.B., M.A., Ph.D., Indiana University, 1964
MARIN, GERALD S. ........ Instructor (Student Personnel
Office, Education), 1969
B.S.; M.A., University of South Florida, 1970
MARLOW, LARRY C. ......... Assistant in (Math Education), 1979
B.A., University of South Florida, 1974
MASH, BRUCE L. .......... Professor (Visual Arts), 1969
B.A.; M.A., California State University, 1965
MARSHALL, PHYLLIS P. ...... Director (University Center), 1960
B.A., M.A., Marshall University, 1954
MARVIN, DEAN F. ........... Professor (Chemistry), and
Affiliate Professor (Biology), 1964
A.B., Ph.D., Pennsylvania State University, 1958
MARTIN, RICHARD L. ....... Associate Professor (Pathology), 1978
B.S., M.D., University of Kansas, 1960
MASON, FRANK T. .......... Assistant Professor (English), 1969
B.A.; M.A., Ph.D., Michigan State University, 1974
MASHIE, PAUL ............. Associate Professor (Theatre Arts), 1974
MATHENEY, ARTHUR R. ... Visiting Assistant in (Biology), 1979
B.S.; M.S., Purdue University, 1971
MAUSERT, STEVEN .......... Director (Records and
Registration), 1975
B.S., M.S., Florida State University, 1972
MAYBURY, P. CALVIN ...... Professor (Chemistry), 1961
B.S.; Ph.D., Johns Hopkins University, 1952
MAYE, GEORGE H. .......... Associate Professor (History), 1969
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B.A.; M.A.; Ph.D., University of Minnesota, 1948
MAYESON, EVELYN W. .... Visiting Assistant Professor
(Psychiatry), 1977
B.A.; M.A., Ph.D., University of South Florida, 1973
B.A.; M.A., University of Iowa, 1972
MAZUR, JOSEPH L. ........... Professor—Program Director
(Measurement and Research Education), 1970
A.B.; M.A., Ph.D., Case Western Reserve University, 1968
MCCLELLAN, LESLIE S. ........... Professor (Childhood and
Language Arts Education), 1964
B.S., M.Ed.; Ed.D., University of Missouri, 1961
MCCLENDON, PAUL E. ........ Associate Professor
(Educational Leadership Education), 1969
B.S.; M.A., Ed.D., Florida State University, 1963
MCCLOWRY, DANNY P. ...... Assistant Professor
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B.S.; M.Ed., Ph.D., Ohio State University, 1978
MCCLOUGH, GENE E. ........ Professor (Accounting), 1960
St. Petersburg Campus
B.B.A., M.A., Hardin-Simmons University, 1957, C.P.A.
MCCLOUGH, NORVEL M. .. Professor (Biology), 1966
B.A.; M.S., Ph.D., University of Michigan, 1949
MCNELLOR, JAMES W. .......... Counselor to Students
(Housing and Food Services, Student Affairs), 1979
B.A.; M.A., University of South Florida, 1976
MCCORMICK, ROBERT M. .......... Assistant Professor
(Music Arts), 1974
B.A.; M.A., San Jose State University, 1973
MCCOY, EARL D. ........... Assistant Professor
(Biology), 1978
B.S.; M.S., Ph.D., Florida State University, 1977
MCCROSSAN, JOHN A. .......... Associate Professor—
Chairperson (Library, Media and Information Studies,
Education), 1977
B.A.; M.A., Ph.D., University of Illinois, 1966
MCDONALD, NANCY H. ........ Assistant Professor (Electrical
-Engineering), 1978
A.B.; M.S., Ph.D., University of California at Berkeley, 1975
MCINTOSH, CHARLES A., JR. . Associate Dean and Director,
Graduate Studies (Business Administration), 1976
B.S.; M.B.A., Syracuse University, 1956
MCKEE, HAZEL G. .... Visiting Instructor (Adult
and Vocational Education), 1977
B.S.; M.A., University of South Florida, 1975
MCNABB, THOMAS E. .... Assistant Professor (Visual Arts), 1978
B.A.; M.F.A., Indiana University, 1976
Nelson, Louis R. Director (Laboratory Animal Medicine) Associate Professor (Medical Microbiology), 1971
B.S.; M.S.; DVM, Auburn University, 1955

Nesman, Edgar G. Associate Professor (Sociology), 1968
B.S., M.S.; Ph.D., University of Florida, 1969

Nesman, Marjorie P. Counselor/Advisor (Student Personnel Office, Education), 1969 (Part-time)
B.S., Michigan State University, 1952

Ness, Gene C. Assistant Professor (Biochemistry), 1974
B.S.; Ph.D., University of North Dakota, 1971

Ness, Thomas E. Associate Professor - Chairperson (Marketing), 1971
A.B.; B.S.E.; M.S.I.A., Ph.D., Purdue University, 1968

Neugard, Edward J. Professor (Foreign Languages, 1964
B.A.; M.A., Ph.D., University of North Carolina, 1964

Neville, Donald D. Professor (Reading Education), 1972
B.S., M.Ed.; Ed.D., University of Florida, 1961

Newcombe, P. Judson Professor (Social Science and Letters Education), 1970
B.A.; M.A., Ph.D., Northwestern University, 1963

Nicgorski, Eugene J. University Physician (Student Health Service, Student Affairs), 1977 (Part-time)
Ph.B., M.D., Boston University, 1931

Nichols, Patricia M. Assistant in Research (Pediatrics), 1978
B.S.; M.S., University of Colorado Medical Center, 1978

Nickels, Bradley J. Associate Professor (Visual Arts), 1970
B.S.; M.A., Ph.D., University of Indiana, 1966

Nickerson, Deborah A. Assistant Professor (Biology), 1979
Ph.D., University of Tennessee, 1979

Nicolosi, Gregory R. Associate Professor (Physiology), Assistant Dean (Student Affairs, Medicine), 1972
B.S.; Ph.D., Ohio State University, 1971

Nienhaus, Harry A. Associate Professor (Electrical Engineering), 1967
B.S.; M.S., University of St. Louis, 1964

Nixon, Robert L. Assistant Professor (Management), 1977

Nolan, Michael F. Assistant Professor (Anatomy), 1975
B.S.; Ph.D., Medical College of Wisconsin, 1975

Noonan, John D. Assistant Professor (Foreign Languages), 1975

Nord, Heinz J. Associate Professor (Internal Medicine), 1973
M.D.: University of Frankfurt and Freiburg Medical Schools, 1964

Norman, Arthur Clinical Psychologist - Counselor/Advisor (Counseling Center, Student Affairs), 1977 (Part-time)
B.A.: Ph.D., University of Houston, 1966

Northcutt, Travis J., Jr. Dean - Professor (Social and Behavioral Sciences), 1972
B.S., M.S., Ph.D.; M.P.H., University of North Carolina, 1959

Norton, Bryan G. Associate Professor (Humanities), New College of USF, 1975 Sarasota Campus
A.B., Ph.D., University of Michigan, 1970

Ober, Richard L. Professor (Educational Leadership Education), 1969
B.S.; M.A.T.; Ph.D., Ohio State University, 1966

Oberhofer, Signe W. Associate University Librarian (Libraries, 1974 St. Petersburg Campus
B.A.; M.L.S., Rutgers University, 1967
OCHSHORN, Judith ................ Associate Professor - Program Director (Women's Studies Program), 1969
B.A.; M.A.; Ph.D., The Union Graduate School, 1978

OCHSHORN, Myron G. .......... Associate Professor (English), 1963
B.A.; M.A., Ph.D., University of New Mexico, 1963

O'DONNELL, Maurice E. ....... Associate Professor (Political Science), 1966
B.S.; M.A., Ph.D., University of Wisconsin, 1954

O'TOSCHER, Jack W. ............ Instructor (Marketing), 1968
B.S.; M.A., University of South Florida, 1968

O'HAEGRABAL, Festus U. ....... Professor - Program Director (Afro-American Studies), 1972
B.A.; M.A., Ph.D., University of Denver, 1967

O'HARA, Robert C. ............. Professor (Communication), 1961
B.A., M.A., University of Louisville, 1953

OKIA, Nathan O. ............... Visiting Assistant Professor (Biological), 1978
A.B.; A.M., Ph.D., Indiana University, 1968

OKULSKI, Thomas A. .......... Assistant Professor (Radiology), 1976 (Part time)
A.B.; M.D., Jefferson Medical College, 1969

OLESON, Norman L. ............ Professor (Physics), 1969
B.S., M.S., Ph.D., University of Michigan, 1940

OLINE, Larry W. ............... Professor (SMF-Engineering), 1967
B.A.; B.S.; M.S., Ph.D., Georgia Institute of Technology, 1968

O'SULLIVAN, Peter B. .......... Professor (Theatre), 1963
B.A.; M.A., University of North Carolina, 1957

OTT, Ruth A. .................. Counselor/Advisor (Continuing Education), 1975 Sarasota Campus

OWEN, Terence C. .............. Professor (Chemistry), 1964
B.Sc., Ph.D., University of Manchester, England, 1964

OWEN, William D. .............. Professor (Music Arts), 1964
B.M.; M.M., North Texas State University, 1960

PACIGA, June E. ................ Assistant in Research (Pathology), 1978
B.S., University of Illinois, 1972

PALLE, Terry L. ............... Assistant Professor (Humanities), 1967
B.A.; M.A., Ph.D., University of Kansas, 1974

Palm, John W. .................. Assistant Professor (Interdisciplinary Social Science), 1970

Palmer, Robert E., Sr. ........ Associate Professor (Adult and Vocational Education), 1970
B.S., M.S., Ph.D., Florida State University, 1969

PANTHER, Edward E. .......... Associate Professor - Chairperson (Guidance Education), 1969
B.S.; M.S., Ed.D., State University of New York at Buffalo, 1969

PAPPAS, George ................. Professor - Chairperson (Visual Arts), 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

PARKER, John W., Jr. ......... Professor (English), 1963
B.A.; M.A.; Ed.D., University of Kentucky, 1961, Ed.S.

PARKER, Keith A. .............. Associate Professor (History), 1966
B.A.; M.A.; Ph.D., University of Maryland, 1965

PARRADO, Adrian A. .......... University Counseling Psychologist - Assistant Professor (Counseling Center, Student Affairs), 1969
B.S.; M.A.; Ed.D., Nova University, 1975

PARRISH, James A., Jr. ........ Professor (English), 1960
B.S.; M.A.; Ph.D., Florida State University, 1955

PARROTT, Mary E. .............. Assistant Professor (Mathematics), 1979
B.S., M.A., Purdue University, 1965

PARROTT, William H. .......... Associate Professor (Accounting), 1976
B.A.; M.Acc., Ph.D., University of Illinois, 1971

PASELL, Nicholas .............. Assistant Professor (Liberal Studies), 1976
B.S., M.A., Florida State University, 1978

PATTERSON, James B. ........ Assistant in Research (Pathology), 1978
B.A.; M.A., University of South Florida, 1979

PATTERSON, Gerald E. ......... Associate Professor (Adult and Vocational Education), 1971
B.S.; M.A., Ph.D., Ohio State University, 1970

PATTERSON, Michael H. ....... Director (University Physical Planning, Facilities Planning, 1973
B.A.; University of Florida, 1969

PAULSON, Darryl G. .......... Assistant Professor (Political Science), 1974 St. Petersburg Campus
B.A.; M.S., Ph.D., Florida State University, 1975

PEARCEY, Walter E., Jr. ...... Instructor (Childhood and Language Arts Education), 1970
B.A., M.A., University of New Jersey, 1971

PENNER, Louis A. ............ Professor (Psychology), 1969
B.A.; M.A.; Ph.D., Michigan State University, 1969

PEPPARD, Victor E. ........... Associate Professor (Foreign Languages), 1975
B.A.; M.A., University of Michigan, 1974

PERCHALSKI, John E. .......... Assistant Professor - Program Director (Family Medicine), 1978
B.S.; M.D., University of Florida, 1967

Perez, Louis A. ............... Professor - Chairperson (History), 1970
B.A.; M.A.; Ph.D., University of New Mexico, 1970

Peretz-Millan, Mercedez A. ... Assistant Professor (Nursing), 1978
B.S.N.; M.S.N., Medical College of Georgia, 1977

PERRY, L. Douglas ............ Associate Professor (Ophthalmology), 1976
B.S.; M.S., M.D., University of Louisville, 1967

Persky, David W. .............. Acting Assistant to Vice President (Academic Affairs), 1979
B.A.; M.S., Ph.D., Florida State University, 1979

PETROZONI, Donovan D. ....... Professor (Educational Leadership Education), 1968
B.S.; M.A.; Ph.D., University of Pittsburgh, 1970

PFEIFFER, Eric A. ............. Professor (Psychiatry), 1978
A.B., M.D., Washington University, 1960

PFISTER, Fred C. ............. Associate Professor (Library, Media and Information Studies Education), 1976
B.S.; M.Ed.; A.M.L.S., Ph.D., University of Michigan, 1970
PIERCE, PFOST, POWELL, ROBERT
POIRIER, MAURICE
PHILLIPS, PHILLIPPY, STEVE
POWERS, PAULINE
POLLET, ROBERT
PRIDE, PRITCHARD, LAWRENCE
PRICE, PRICE, PRICE
RICHARD, SAM
RAGAN, WILLIAM
RAO, RAO, PAPINENI
REDDING, REARICK, MARTHA N.
REED, REED
REDDING, REARICK, MARTHA N.
READ, ANTHONY J.
READ, DONNA Y.
READ, JAMES H.
REDING, BARBARA A.
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B.A.; M.S.E.S., University of South Florida, 1972
REILLY, J. TIM. Associate Professor (Criminal Justice), 1965 St. Petersburg Campus
B.A., M.A.: J.D., Stetson University, 1938
REINER, CHRISTOPHER D. Assistant Professor (Pediatrics), 1978
B.A.; M.D., University of South Florida, 1975
REINER, DOLLY K. Assistant Professor (Nursing), 1979
B.S.; M.N., University of Washington, 1975
RINE, ROGER J. Assistant Professor (Natural Sciences), New College of USF, 1975 Sarasota Campus
B.A.; M.A., University of California, Berkeley, 1963
REYNOLDS, JEROLD M. Associate Professor (Music Arts), 1966
B.A.; M.M., University of Oregon, 1963
RICH, THOMAS A. Professor — Chairperson (Gerontology), 1961
B.A.; M.A., University of Illinois, 1976
RICHMAN, ALAN V. Assistant Professor (Pathology), 1978
B.S.; M.D., Jefferson Medical College, 1968
RICHMAN, MICHAEL B. Visiting Instructor (Accounting), 1978
B.B.A.; M.Acc., University of South Florida, 1977
RICHIE, JOYCE A. Systems Coordinator (Computer Research Center), 1960
B.S., University of Kentucky, 1955
RICHMAN, ALAN V. Assistant Professor (Pathology), 1978
B.S.; M.D., University of South Florida, 1975
RICHMAN, ANDREW B. Visiting Instructor (Accounting), 1978
B.B.A.; M.Acc., University of South Florida, 1977
RICKER, LAWRENCE H. Professor (Communicology), 1966
B.S., M.A., Ph.D., University of Florida, 1962
RIDDLE, RONALD W. Associate Professor (Humanities), New College of USF, 1975 Sarasota Campus
A.B.; M.A.; Ph.D., University of Illinois, 1976
RIGGELS, DONALD A. Assistant Director (Computer Research Center), 1977
B.A., University of South Florida, 1972
RIPF, STEPHEN I. Assistant Professor (Internal Medicine), 1974
A.B., M.D., University of Rochester, 1967
RIGGIN, JOHN T. Associate Dean — Professor Medicine, 1978
A.B., M.D., Johns Hopkins University School of Medicine, 1951
RIGGIN, ONA Z. Assistant Dean for Graduate Education — Professor (Nursing), 1977
B.A.; M.Ed.; Ed.D. Memphis State University, 1976
RIGGS, CARL D. Vice President (Academic Affairs), Professor (Zoology), 1971
B.S., M.S., Ph.D., University of Michigan, 1953
RIGOS, PLATON N. Assistant Professor (Political Science), 1976
B.A.; M.A.; Ph.D., Michigan State University, 1974
RIMBAY, DONALD H. Professor (Energy Conversion Engineering), 1967
B.S., M.S., Ph.D., University of Illinois, 1962, P.E.
RINKER, MAURICE O. Instructor — Assistant Director (Florida Institute of Oceanography), 1973 St. Petersburg Campus
B.S., Florida State University, 1953
RITCHIE, ALEXANDER W. Assistant Professor (Geology), 1978
B.A.; M.A.; Ph.D., University of Texas, 1974
RITTERMAN, STUART I. Professor (Communicology), 1969
B.A.; Ph.D., Case Western Reserve University, 1968, C.C.C.
RIVARD, RICHARD J. Assistant Professor (Finance), 1977
B.S.; M.S., Ph.D., Texas A & M University, 1978
ROBERTS, LOREN G. Coordinator (Student Personnel Office, Education), 1968
B.S., M.S., Emporia State Teachers College, 1963
ROBERTS, ROBIN E. Athletic Coach (Physical Education, Student Affairs), 1976
B.S., Michigan State University, 1948
ROBERTSON, HENRY M. Professor (American Studies), 1961
B.A.; M.A.; Ph.D., University of Minnesota, 1966
ROBERTSON, PHYLLIS M. Counselor/Advisor (Student Personnel Office, Education), 1968 (Part time)
B.A., University of Minnesota, 1941
ROBINSON, CHASE Associate Professor (Dance), 1971
B.S., Florida State University, 1959
ROBINSON, GERALD G. Professor (Biology), 1960
B.S.; Ph.D., University of Minnesota, 1960
ROBINSON, JACK H. Professor (Measurement and Research Education), 1963 St. Petersburg Campus
B.S.; M.A.; Ed.D., Harvard University, 1960
ROBISON, JOHN O. Assistant Professor (Music), 1977
B.A.; M.A.; D.M.A., Stanford University, 1975
ROCHELLE, DAVID B. Director, University TV (Educational Resources), 1979
B.F.A., University of Houston, 1956
RODRICK, GARY E. Assistant Professor (Comprehensive Medicine), 1978
B.A.; M.S.; Ph.D., University of Oklahoma, 1971
RODRIGUEZ, MANUEL, JR. Business Manager (Medical Clinics), 1977
B.S., University of Tampa, 1968
ROGERS, DONALD W. Visiting Associate Professor (SMF-Engineering), 1973 Part time
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ROGERS, JOANNE L. Athletic Coach (Physical Education, Student Affairs), 1975
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ROLF, CAROL J. Institutional Research Coordinator (Institutional Research), 1974
B.A., University of South Florida, 1976
ROMEO, JOHN T. Assistant Professor (Biology), 1977
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ROMIG, LARRY G. Instructor — Assistant Director (Continuing Education), 1966
B.S.; M.A., University of South Florida, 1970
ROOT, ALLEN W. Professor — Associate Chairperson (Pediatrics), 1973
A.B.; M.D., Harvard Medical School, 1958
ROOT, EDWARD R. Assistant Professor (Pediatrics), 1978
B.A.; M.D., Albert Einstein College of Medicine, 1973
ROSE, DONALD C. Professor (Mathematics), 1960
A.B.; M.A.; Ph.D., University of Kentucky, 1954
ROSEL, NORA E. Assistant Professor (Social Sciences), New College of USF, 1975 Sarasota Campus
B.A.; M.A., Ph.D., Indiana University, 1971
ROSENZWEIG, ABRAHAM. Professor (Geology), 1977
B.S.; Ph.D., Bryn Mawr College, 1950
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, VIVIAN M. Associate Professor (Nursing), 1977
B.S.N., M.S.N.; Ed.D., Nova University, 1975
ROSS, WILLIAM T. Associate Professor — Program Director (English), 1970
B.A.; M.A., University of Virginia, 1970
ROUSE, MARYANNE M. Assistant Professor (Business Administration), 1971 St. Petersburg Campus
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ROUSH, S. LARRY Assistant Professor (Management) 1978 Sarasota Campus
B.S., M.Ed., University of Texas, 1958
ROWE, JOHN W. Professor — Chairperson (Economics), 1979
B.S.; M.S., Ph.D., University of Illinois, 1966
RUBIN, STEVEN J. .............. Associate Professor — Associate Chairperson (English), 1969
B.A.; M.A., Ph.D., University of Michigan, 1969
RUNDUS, DEWEY J. ............ Associate Professor (Psychology), 1972
B.S.; Ph.D., Stanford University, 1970
RUSH, JAMES A. ................. Assistant Professor (Ophthalmology), 1979
A.B.; M.D., Georgetown University School of Medicine, 1972
RUSH, WILLIAM E. .............. Associate Professor / Director (Medical Clinics), 1979
B.S.; M.D., Wayne State University, 1952
RUTENBERG DANIEL ............ Professor (Humanities), 1964
A.B., M.A., Ph.D., University of Florida, 1967
SABA, HUSSAIN I. .............. Associate Professor (Internal Medicine), 1975
M.D.; Ph.D., University of North Carolina School of Medicine, 1972
SABA, SABITHA ................. Assistant Professor (Pathology), 1979
M.D., Darbhanga Medical College, India, 1963
SACCO, WILLIAM P. .......... Assistant Professor (Psychology), 1979
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SACKETT, WILLIAM M. ....... Professor — Chairperson (Marine Science), 1979 St. Petersburg Campus
A.B., Ph.D., Washington University, 1958
SADLLOWSKI, RONALD W. .... Assistant Professor (Surgery), 1976
B.S., M.D., Indiana University School of Medicine, 1968
SAENZ, ARMANDO .............. Associate Professor (Psychiatry), 1975
B.A.; M.D., University of Texas, Southwestern Medical School, 1963
SAFF, DONALD J. .............. Professor (Visual Arts), 1965
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SAFF, EDWARD B. .............. Professor (Mathematics), 1969
B.S.; Ph.D., University of Maryland, 1968
SANDERS, THOMAS E. .......... Associate Professor (History), 1978
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SANDERSON, ARTHUR M. ...... Professor (Mass Communications), 1965
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SANDLER, JACK ................. Professor (Psychology), 1969
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SAPORTA, SAMUEL .......... Assistant Professor (Anatomy), 1977
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SARACENO, CARMELA A. ..... Assistant Professor (Surgery), 1978
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SASMOR, JEANNE L. .......... Associate Professor (Nursing), 1979
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SASSER, EMERY L. ............ Professor — Chairperson (Mass Communications), 1973
A.B., M.A.; Ph.D., University of Illinois, 1967
SAXON, SUE V. ................ Professor (Gerontology), 1963
B.S., M.S., Ph.D., Florida State University, 1963
SCHELEMAN, HARRY J., JR. .. Assistant Professor (Geography), 1969 St. Petersburg Campus
B.S.; M.A., University of Cincinnati, 1965
SCHATZ, DAVID R. ............. Assistant Professor (Humanities), 1975
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SCHEUERLE, JANE W. ........ Assistant Professor (Communication), 1971
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SCHEUERLE, WILLIAM H. .... Associate Vice President (Academic Affairs), Professor (English), 1964
B.A.; M.A.; Ph.D., Syracuse University, 1964
SCHIMMEL, STEVEN D. ....... Assistant Professor (Biochemistry), 1974
B.A.; Ph.D., Albert Einstein College of Medicine, 1969
SCHMITT, CHARLES J. ......... Coordinator (Fine Arts Events), 1976
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SCHNEIDER, RAYMOND J. ...... Professor (Communications), 1968
A.B.; Ph.L.; M.A.; S.T.L.; Ph.D., University of Michigan, 1965
SCHNEIDER, STEWART W. ....... Professor (Chemistry), 1971
B.S., M.S.; Ph.D., Indiana University, 1968
SCHNITZLEIN, HAROLD N. .... Professor (Anatomy), 1973
A.B.; M.S., Ph.D., St. Louis University, 1954
SCHROEDER, HAROLD M. ...... Professor — Chairperson (Management), 1973
B.A.; M.A., Ph.D., Ohio State University, 1954
SCHULMAN, PETER .......... Assistant Professor (Internal Medicine), 1979
B.A.; M.D., Tufts University School of Medicine, 1974
SCHWARTZ, CAROLE J. ....... Instructor (Childhood and Language Arts Education), 1970
B.A.; M.S., University of Wisconsin, 1969
SCHWARTZ, DANIEL J. ......... Assistant Professor (Internal Medicine), 1978
B.A.; M.D., Jefferson Medical College, 1973
SCHWARTZ, JULIA L. ........ Assistant Department Head — University Librarian (Libraries), 1962
B.S.; M.S.L.S., Case Western Reserve University, 1955
SCOTT, LAWRENCE E. ....... Assistant to Vice President (Student Affairs), 1976
B.S.; M.A., Ed.D., Western Michigan University, 1976
SCOTT, LINUS A. .............. Professor — Chairperson (Energy Conversion and Mechanical Design), 1964
B.S.M.E., M.S.E.; Ph.D., Case Institute of Technology, 1960, P.E.
SCOTT, RICHARD A. .......... Visiting Assistant Professor (Adult and Vocational Education), 1972
B.S., M.Ed., Ed.D., Auburn University, 1976
SCHURTE, CHRISTINE C. .... Counselor/Advisor (Math Education), 1973
B.A.; M.A., University of South Florida, 1973
SCRUGGS, CHARLES E. ......... Associate Professor — Chairperson (Foreign Languages), 1972
B.A.; M.A., Ph.D., University of Kentucky, 1968
SCUDDER, PAUL H. .......... Assistant Professor (Natural Sciences), New College of Sarasota Campus
B.S.; Ph.D., University of Wisconsin, 1977
SEAGRAVE, FRANCES M. ..... Student Affairs Coordinator (Student Affairs), 1974 St. Petersburg Campus
B.A., M.Ed., Wayne State University, 1952
SEARLS, EVELYN F. .......... Associate Professor (Reading Education), 1974
SEEHAUSEN, TIM F. .......... Assistant Professor (Family Medicine), 1978
A.B., M.D., Indiana University School of Medicine, 1973
SEGREGTO, PETER S. ......... Assistant Professor (Geography), 1975
B.A.; M.A., Ph.D., University of Florida, 1975
SELEMO, JOHN A. .......... Director (Medical Clinics), 1976
B.S., University of Tampa, 1971
SELIGSOHN, HARRIET C. .... Academic Administrator (Evaluation and Testing, Academic Affairs), 1960
B.S.; M.A., Ph.D., University of South Florida, 1976
SELMAN, JAMES .......... Professor (Adult and Vocational Education), 1971
B.S., M.S., Ed.D., Florida State University, 1967
SEPANIK, MARY A. .......... Assistant Director (Libraries), 1969
B.S.; M.A.L.S., Rosary College, 1965
Snyder, Janice B. Associate Professor (Political Science), 1968
Snyder, Lee D. Associate Professor (Social Science), New College of USF, 1975 Sarasota Campus
Sodeman, William A., Jr. Professor - Chairperson (Management), B.A.; M.Div.; Ph.D., Harvard University, 1966
Soleman, David A. Assistant Professor (Medicine), 1976
Solomon, T. W. Graham Professor (Chemistry), 1960
Solomonson, Larry P. Assistant Professor (Biochemistry), 1976
Sommer, Ada M. Assistant Professor (Psychiatry), 1976 (Part time)
Spain, Frank H. Director (Community College Relations), B.S., M.S.; Ed.D., University of Florida, 1954
Sparks, Amy J. Associate Professor (Humanities), 1968
Spear, Frank E. Director, Publications (University Relations), 1969
Spector, Steven C. Assistant Professor (Medical Microbiology), 1979
Spence, James G. Assistant Professor (Economics), 1975
Spiegel, Phillip G. Professor (Surgery), 1978
Spier, Charles D. Professor (Psychology), 1972
Spillane, James R. Assistant Professor (Humanities), 1966
Spillman, Carolyn V. Visiting Assistant Professor (Childhood and Language Arts Education), 1977 Fort Myers Campus
Stalnaker, Leo, Jr. Associate Professor - Director (Student Publications, Student Affairs), 1969
Stark, William R. Visiting Assistant Professor (Mathematics), 1978
Stark, William R. (Theatre), 1979
Steely, Christopher L. Assistant Professor (History), 1974
Stein, Edith R. Associate University Attorney (General Counsel), 1976
Steiner, H. Edwin, Jr. Associate Professor - Chairperson (Science and Health Education), 1969
Steinke, George C. Associate Professor (Economics), 1970
Stenmark, David E. Professor - Program Director (Clinical Psychology), 1977
Stevens, Noel S. Associate Professor (Music), 1970
Stevens, William L. Associate Professor (Accounting), 1971
Stith, Melvin T. Assistant Dean - Assistant Professor (Business Administration), 1977
Stith, Patricia L. Counselor/Advisor (University Studies, Student Affairs), 1977
Stone, Carolyn L. Counselor/Advisor (Project Thrust, Academic Affairs), 1979
Stone, Douglas E. Professor (Measurement and Research Education), 1964
Stork, Karl. Instructor (Mass Communications), 1973
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<th>Name</th>
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<td>Tserpes, Nicholas A.</td>
<td>Professor (Mathematics)</td>
<td>1968</td>
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<td>B.A.; M.A.; Ph.D., Wayne State University</td>
<td></td>
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<td>Tsokos, Chris T.</td>
<td>Professor (Mathematics)</td>
<td>1972</td>
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<td>B.A., M.S.; Ph.D., University of Connecticut</td>
<td></td>
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<td>Tsokos, Janice O.</td>
<td>Associate Professor (Chemistry)</td>
<td>1972</td>
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<td>B.S.; Ph.D., University of Rhode Island</td>
<td></td>
<td>1969</td>
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<td>Turbeville, Joseph E. Jr.</td>
<td>Lecturer (Physics)</td>
<td>1964</td>
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<td>B.A.; University of South Florida</td>
<td></td>
<td>1963</td>
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<td>Turner, Stephen P.</td>
<td>Associate Professor (Sociology)</td>
<td>1975 St. Petersburg Campus</td>
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<td>Tyner, John L., Jr.</td>
<td>University Physician (Student Health Service, Student Affairs)</td>
<td>1972 (Part time)</td>
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<td>B.S.; M.D., Medical School of South Carolina</td>
<td></td>
<td>1965</td>
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<td>Van, Anita</td>
<td>Associate Professor (Art and Music Education)</td>
<td>1968</td>
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<td>B.A.; M.A.; University of Illinois</td>
<td></td>
<td>1959</td>
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<td>Upchurch, Sam B.</td>
<td>Associate Professor (Geology)</td>
<td>1974</td>
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<td>A.B.; M.S.; Ph.D., Northwestern University</td>
<td></td>
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<td>Urichard, A. Edward</td>
<td>Director (Graduate Studies) - Professor (Math Education)</td>
<td>1968</td>
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<td>B.A.; M.S.; Ph.D., Syracuse University</td>
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<td>Uraich, Paul A.</td>
<td>Director (University Safety and Security)</td>
<td>1973</td>
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<td>B.S., M.S., Florida State University</td>
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<td>Urbanek, Raymond A.</td>
<td>Professor (Measurement and Research Education)</td>
<td>1961</td>
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<td>B.A.; M.S.; Ed., University of Kansas</td>
<td></td>
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<td>Valentine, Virginia W.</td>
<td>Lecturer (English)</td>
<td>1968</td>
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<td>B.A.; M.S., Southern Methodist University</td>
<td></td>
<td>1951</td>
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<tr>
<td>Van Der Car, David H.</td>
<td>Assistant Professor (Psychology)</td>
<td>1972</td>
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<td>B.A., M.S.; Ph.D., University of Miami</td>
<td></td>
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<td>Van Der Veen, Jan H.</td>
<td>Associate Professor (Social Sciences), New College of USF, 1977 Sarasota Campus</td>
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<td>B.A.; M.A.; Ph.D., Cornell University</td>
<td></td>
<td>1973</td>
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<td>Van Neste, Roy J.</td>
<td>Assistant Professor (History)</td>
<td>1971</td>
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<td>B.A.; M.A.; Ph.D., University of Wisconsin</td>
<td></td>
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<td>Van Vleet, Edward S.</td>
<td>Assistant Professor (Marine Science)</td>
<td>1979 St. Petersburg Campus</td>
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<td>B.S.; B.A.; M.S.; Ph.D., University of Rhode Island</td>
<td>1978</td>
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<td>Van Voorhis, Kenneth R.</td>
<td>Associate Professor (Management)</td>
<td>1970</td>
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<td>B.S., M.B.A., D.B.A., Louisiana State University</td>
<td>1971</td>
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<td>Van Voorst, Steven J.</td>
<td>Assistant Professor (Surgery)</td>
<td>1979</td>
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<td>B.S.; M.D., Indiana University School of Medicine</td>
<td>1972</td>
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<td>Vanden, Harry E.</td>
<td>Assistant Professor (Political Science)</td>
<td>1975</td>
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<td>Vandersandor L.</td>
<td>Assistant Professor (Chemistry)</td>
<td>1977</td>
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<td>B.A.; M.S.; Ph.D., Ohio State University</td>
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<td>Vargas, Alfonso</td>
<td>Assistant Professor (Pediatrics)</td>
<td>1979</td>
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<tr>
<td>M.D., Universidad Nacional De Colombia School of Medicine</td>
<td>1972</td>
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<td>Vargo, Gabriel A.</td>
<td>Assistant Professor (Marine Science)</td>
<td>1979 St. Petersburg Campus</td>
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<td>B.S., M.S.; Ph.D., University of Rhode Island</td>
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<td>Vassey, Frank B.</td>
<td>Assistant Professor (Internal Medicine)</td>
<td>1977</td>
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<td>B.A.; B.S.; M.D., University of Pennsylvania</td>
<td></td>
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<td>Vastine, James P.</td>
<td>Assistant Department Head - University Librarian (Libraries)</td>
<td>1970</td>
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<td>B.A.; M.S.L.S., Florida State University</td>
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<tr>
<td>Vega, Manuel</td>
<td>Associate Professor (Criminal Justice)</td>
<td>1965 Sarasota Campus</td>
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<td>B.S., M.S., Ph.D., Florida State University</td>
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<td>1964</td>
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<td>Verkauf, Barry S.</td>
<td>Associate Professor (Obstetrics and Gynecology)</td>
<td>1974 (Part time)</td>
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<td>B.A.; M.D., Tulane University School of Medicine</td>
<td></td>
<td>1965</td>
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<td>Vesperi, Maria D.</td>
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<td>1978</td>
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<td>B.A.; M.A., Ph.D., Princeton University</td>
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<td>Vetter, Harold J.</td>
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<tr>
<td>B.A.; M.A., Ph.D., State University of New York at Buffalo</td>
<td>1955</td>
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<td>Villeme, Melvin G.</td>
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<td>1971</td>
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<td>B.A.; M.A., Ed.D., Nova University</td>
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<td>Vincellette, Joyce P.</td>
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<td>1977</td>
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<td>B.S.; M.B.A.; D.B.A., Indiana University</td>
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<td>Vincent, Albert L.</td>
<td>Assistant Professor (Comprehensive Medicine)</td>
<td>1978</td>
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<td>A.B.; M.A.; Ph.D., University of California, Los Angeles</td>
<td>1976</td>
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<td>Vincent, D. Ashley</td>
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<td>1976</td>
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<td>B.S. G.E.; M.A.; Ph.D., University of Virginia</td>
<td></td>
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<td>Vogel, Denis E.</td>
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<td>1979</td>
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<td>Wagner, Bonnie</td>
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<td>1970 (Part time)</td>
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<td>Walbolt, Daniel R.</td>
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<td>1969</td>
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<td>B.S., J.D., New York University</td>
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<td>1965</td>
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<td>Walden, Eric L.</td>
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<td>Wallace, Robert E.</td>
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<tr>
<td>B.S., University of Akron</td>
<td></td>
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<tr>
<td>Walsh, Ruth M.</td>
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<td>1969</td>
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<td>A.B.; M.A.; Ph.D., University of South Florida</td>
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