ANTHROPOLOGY

CHANGE


APPLIED LINGUISTICS

ADDS

- AL 8630 ENGLISH FOR SPECIFIC PURPOSES 3.0

English for specific purposes (ESP) refers to that branch of ESL teaching and research in which the course content and teaching methods are derived from an analysis of a specific language use situation, such as English for business, English for tour guides, English for English teaching, or English for air traffic control. The course focuses on two aspects of ESP teaching and research that may be said to distinguish them from more general purpose English: authenticity of task and the interaction between language knowledge and specific purpose content knowledge.

CHANGE

- AL 8960 QUANTITATIVE RESEARCH METHODS (Change description)

Quantitative Research Methods. Prerequisite: PhD student status or permission of instructor. Focus on the most widely used and useful statistical methods in Applied Linguistics (AL). Examination of statistical concepts and methods fundamental to analysis and explanation of empirical data.

- AL 8961 QUALITATIVE RESEARCH METHODS (Change description)

Qualitative Research Methods. PhD student status or permission of instructor. Overview of issues related to qualitative research methods. Topics include various types of methodology, data collection and analysis. Course is for doctoral and advanced MA students.
• **AL 8962 SEMINAR IN RESEARCH METHODS (Change description)**

  Seminar in Research Methods. PhD student status or permission of instructor. In-depth investigation of various topics related to research methods. May be repeated if topics vary. Course is for doctoral and advanced MA students.

• **AL 8970 LINGUISTIC ANALYSIS (Change description)**

  Current Issues in Linguistic Analysis. PhD student status or permission of instructor. Overview of linguistic theory of particular relevance to applied linguistics. Topics may include syntax, morphology, and cross-language speech perception. May be repeated if topics vary.

• **SEM LANG COGNITION COMMUNICATN (Change description)**

  Seminar in Language, Cognition, and Communication. PhD student status or permission of instructor. Latest research in special areas of second language learning as it relates to cognition, behavior, and communication. Topics may include cognitive, social, and/or experimental perspectives regarding biological psychological, social, and cultural factors in the learning and using of second languages. Course may be repeated if topic varies. Course is for doctoral and advanced MA students.

• **AL 8980 CURR ISS SEC LANG ACQUISTION (Change description)**

  Current Issues in Adult Second Language Acquisition. PhD student status or permission of instructor. Survey of current research and theory in the field of L2 acquisition. Topics may include cognitive, sociocultural, and discourse theories of second language acquisition. For each topic, examination of underlying epistemologies (including theories and research methods) and evaluations of the implications of established findings for second and foreign language learning by adults. Course is for doctoral and advanced MA students. May be repeated if topics vary.

• **AL 8983 BILINGUAL LANGUAGE PROCESSING (Change description)**

  Bilingual Language Processing. PhD student status or permission of instructor. Examination of current research on bilingual language processing and its potential implications for second language acquisition and teaching. Course is for doctoral and advanced MA students.

• **AL 8990 CURR ISS PREP SEC LANG TEACHER (Change description)**

  Current Issues in Preparation of Second Language Teachers. PhD student status or permission of instructor. For prospective educators of ESL and EFL teachers. Focuses on theory, processes, and research options teacher educators may explore to prepare language teachers to work in diverse cultural, linguistic, and social contexts. Expands awareness of social, cultural, professional, and institutional considerations that combine to influence the process of serving as an educator of ESL/EFL teachers, especially of those teachers who work in English for
Academic Purposes (EAP) settings with adult learners. Research project focused on L2 teacher learning and/or teacher development required. Course is for doctoral and advanced MA students.

- **AL 8992 SEMINAR IN LANGUAGE TEACHING** (Change description)

Seminar in Language Teaching and Teacher Development. PhD student status or permission of instructor. Designed for prospective educators of ESL and EFL teachers. Surveys current research and theory in second language (L2) teacher learning and professional development of L2 teachers. Participants will complete a research project focused on L2 teacher learning and/or teacher development as part of course requirements. Course may be repeated if topic varies. Course is for doctoral and advanced MA students.

**ART & DESIGN**

**ADDS**

- **ART 2900 SELECTED TOPICS IN STUDIO 3.0**

Art 2900 Selected Topics in Studio Prerequisites: Two of the following: Art 1010, 1020, 1030, 1050 with grades of C or higher or consent of the instructor. Lab fee: $50.00. The lab fee covers costs for art supplies given to students at the location. This lower level studio course can be taken as elective credit for art majors and non-art majors.

**CHANGE**

- **AE 4200 ART PRESCHOOL-FIFTH GRADE** (Change title) ART PRESCHOOL-FIFTH GRADE CTW
- **AE 4900 ART THEORY CRITCSM ART ED** (Change title) ART THEORY CRITCSM ART ED CTW
- **GRD 3910 HISTORY OF GRAPHIC DESIGN** (Change title; Change description)

HISTORY OF GRAPHIC DESIGN CTW; History of Graphic Design. Prerequisites: GrD 3200 with grade of C or higher and consent of instructor. Survey of aesthetic, cultural, and technological influences on written and printed media including sources of modern design. This is a Critical Thinking Through Writing Course.

- **GRD 6250 GRAPHIC DESIGN IN POP CULTURE** (Change lab fee)-Lab fee: $20.00
- **GRD 6400 DESIGN FOR FILM & TV** (Change lab fee)- Lab fee: $20.00
- **GRD 6550 SPEC APPLICTNS OF GRAPH DESIGN** (Change lab fee)-Lab fee: $20.00
- **GRD 6600 GRAD WKSHP GRAPHIC DESIG** (Change lab fee)- Lab fee: $20.00
- **ID 3000 ARCHITECTURAL DRAWING I** (Change title; Change prerequisites) DRAFTING. Prerequisites: Art 1010, 1020, 1030, 1050, AH 2000 and AH 1700 or AH 1750 or AH 1850 with grades of C or higher.
- ID 4000 INTERIOR DES: SELECTED TOPICS (Change prerequisites) ID 3320 with grade of C or higher, or consent of instructor.
- ID 4100 LIGHTING DESIGN (Change prerequisites) ID 3350, 3500, and 3600 with grades of C or higher.
- ID 4200 RESIDENTIAL DESIGN I (Change prerequisites) Prerequisites: ID 3350, 3500, and 3600 with grades of C or higher.
- ID 4300 COMMERCIAL DESIGN I (Change prerequisites) ID 3350, 3500, and 3600 with grades of C or higher.
- ID 4350 COMP-AIDED DRAFT & DESIGN II (Change title) CAD II
- ID 4400 ARCHITECTURAL DRAWING V (Change title; Change prerequisites; Change description) CAD III. Description: ID 4400 COMP-AIDED DRAFTING & DESIGN III Working Drawings. Prerequisites ID 4350 with grade of C or higher, or consent of instructor. Digital production of contract documents for interior construction. Lab Fee $75.00
- ID 4800 PROFESSIONAL PRACTICE (Change prerequisites) ID 4330 with grade of C or higher.
- ID 4930 INTERIOR DESIGN INTERNSHIP (Change prerequisites) ID 4340 with grades of C or higher, and consent of the program director.
- ID 4940 INTERIOR DESIGN PORTFOLIO I (Change prerequisites) Prerequisites: ID 4300 with grades of C or higher.
- PHOT 3050 SELECTED TOPICS (Change lab fee)- Lab fee $125.00
- PHOT 3500 DIGITAL PHOTOGRAPHY (Change lab fee)- Lab fee $145.00
- PHOT 3600 DIGITAL VIDEO FOR ARTISTS (Change lab fee)- Lab fee $145.00
- PHOT 3900 SELECTED TOPICS IN PHOTOGRAPHY (Change lab fee)- Lab fee $125.00
- PHOT 4500 DIRECTED STUDY IN PHOTOGRAPHY (Change lab fee)- Lab fee $125.00
- PHOT 4940 PORTFOLIO I (Change lab fee)- Lab fee $125.00
- PHOT 4950 PORTFOLIO II-CTW (Change lab fee)– Lab fee $125.00
- PHOT 4980 SPECIAL PROBLEMS (Change lab fee)- Lab fee $125.00
- PHOT 6020 DIGITAL PHOTOGRAPHY (Change lab fee)- Lab fee $145.00
- PHOT 6030 DIGITAL VIDEO FOR ARTISTS (Change lab fee)- Lab fee $145.00

DROPS

- ID 3100 ARCHITECTURAL DRAWING II
- ID 4210 RESIDENTIAL DESIGN II
- ID 4310 COMMERCIAL DESIGN II

BIOLOGY
• **BIOL 2106 INTRO TO THE BIOL SCIENCES 2.0**

  Introduction to the Biological Sciences. Two lecture hours a week. Introduction to evolutionary theory, plant, animal, microbial diversity, evolutionary history, and ecology.

• **BIOL 4232 CELL CYCLE AND CANCER 4.0**

  Cell Cycle and Cancer. Prerequisite: Biol 3800 with a C or better. This course discusses the cell cycle, and how misregulation of this well orchestrated process results in cancer. Current research in cell cycle and cancer biology will be utilized to stimulate critical thinking and communication about the complex biological processes that go awry in cancer and form the basis for intervention with chemotherapeutic drugs.

• **BIOL 4906 THEME-BASED BIO LAB-CTW 4.0 (1.0 lecture, 3.0 lab)**

  Theme-based Biology Laboratory-CTW. One lecture and six laboratory hours a week. Prerequisite: Biol 3810 with grade of C or higher. Students will work in small groups to develop specific biological hypotheses, design and carry out experiments to test these hypotheses, and analyze the results they obtain. May be repeated for credit if topic is different. Serves as one of the two Critical Thinking Through Writing (CTW) courses required of all biology majors.

• **BIOL 6232 CELL CYCLE AND CANCER 4.0**

  Cell Cycle and Cancer. Prerequisite: Biol 3800 with a C or better. Four lecture hours a week. This course discusses the cell cycle, and how misregulation of this well-orchestrated process results in cancer. Current research in cell cycle and cancer biology will be utilized to stimulate critical thinking and communication about the complex biological processes that go awry in cancer and form the basis for intervention with chemotherapeutic drugs.

• **BIOL 6282 TUMOR IMMUNOLOGY 4.0**

  Tumor Immunology. Prerequisites: Biol 3880 and Biol 3900 with grades of C or higher, or equivalent course work. Four lecture hours a week. This course discusses the molecular basis of tumorigenesis and the interactions between the immune system and tumors/cancer cells. Research in tumor immunology is based on the premise that tumor cells express antigenic determinants that are not found on normal cells and furthermore, that these antigens can elicit an anti-tumor immune response. Topics covered include: basic tumorigenesis of common solid tumors, basic immunology, tumor antigen expression, types of immune responses to tumors, mechanisms by which tumors escape/suppress the immune response and novel approaches for immunotherapy of advanced cancers. This course will involve critical
thinking and communication about the complex biological systems of cancer and the immune system.

CHANGE

- BIOL 3990 INDEPENDENT READINGS (Change grade mode) S, U, I, W, WF
- BIOL 4484 LAB TECH: APPLD & ENVIRON MICRO (Change prerequisites) Biol 3880, 3890, or equivalent course work; Biol 4438 and 4458, with grades of C or higher.
- BIOL 4565 ONCOLOGY (Change title; Change description) Title: GENERAL ONCOLOGY. Description: General Oncology. Prerequisite: Biol 3900 with grade of C or higher. Four lecture hours a week. Etiology, pathology, mechanisms of metastasis and treatment of cancer. Students will also analyze current primary literature in the field.
- BIOL 4900 DIR LAB STUDY (Change grade mode) S, U, I, W, WF
- BIOL 4910 UNDERGRAD RESEARCH IN BIOLOGY (Change grade mode) S, U, I, W, WF
- BIOL 4912 ZOO INTERNSHIP IN ANIMAL MGMT (Change grade mode) S, U, I, W, WF
- BIOL 4913 GEORGIA AQUARIUM INTERNSHIP I (Change grade mode) S, U, I, W, WF
- BIOL 4914 GEORGIA AQUARIUM INTERNSHIP II (Change grade mode) S, U, I, W, WF
- BIOL 4915 COLLAB INTERNSHIP IN BIOLOGY (Change grade mode) S, U, I, W, WF
- BIOL 4960 BIOL CAREERS SEMINAR (Change grade mode) S, U, I, W, WF
- BIOL 4970 BIOLOGY SEMINAR (Change grade mode) S, U, I, W, WF
- BIOL 6484 LAB TECH: APPL&ENVIR MICROBIOL (Change prerequisites) Biol 3880, 3890, or equivalent; Biol 4438 and 4458.
- BIOL 6565 ONCOLOGY (Change title; Change description) Title: General Oncology. Description: General Oncology. Prerequisite: Biol 3900. Four lecture hours a week. Etiology, pathology, mechanisms of metastasis and treatment of cancer. Students will also analyze current primary literature in the field.
- BIOL 8278 MOLECULAR IMMUNOLOGY (Change prerequisites; Change description) Biol 4278 or 6278 or consent of instructor. Description: Molecular Immunology. Prerequisite: Biol 4278 or 6278 or consent of instructor. Four lecture hours a week. Important concepts of modern immunology and mechanisms of inflammation. Topics include host defense against pathogens, inflammation, innate and adaptive immunity, systemic and cellular level regulatory mechanisms. The course also discusses major current inflammatory diseases and infectious conditions.

CHEMISTRY
• CHEM 4150 INTRO TO PHIOPHYSICAL CHEMISTRY (Change prerequisite; Change description) Prerequisite: Math 2212 or equivalent with a grade of C or higher or equivalent. Description: Prerequisite: Math 2212 or equivalent with a grade of C or higher or equivalent. Applied physical chemistry to biological systems. Elements of thermodynamics, kinetics, hydrodynamics, and spectroscopy are used to characterize biomacromolecules and their interactions with ligands. Acceptable for credit toward a BS degree in Chemistry in the Biochemistry concentration.

• CHEM 6150 INTRO TO PHIOPHYSICAL CHEMISTRY (Change prerequisite; Change description) Prerequisite: Math 2212 or equivalent with a grade of C or higher or equivalent. Description: Prerequisite: Math 2212 or equivalent with a grade of C or higher or equivalent. Applied physical chemistry to biological systems. Elements of thermodynamics, kinetics, hydrodynamics, and spectroscopy are used to characterize biomacromolecules and their interactions with ligands. Acceptable for credit toward a BS degree in Chemistry in the Biochemistry concentration.

Communications

ADDS

• JOUR 2700 FOUNDATIONS OF MEDIA THEORY 3.0

Jour 2700. Foundations of Media Theory. Credit Hours: 3.0. Prerequisite: Jour 1000 with grade of C or higher. Co-requisite: Jour 2500. Examination of theoretical perspectives on mediated communication, including critical and social-scientific approaches.

• JOUR 3900 DIGITAL PUBLISH & PROD 3.0 (1.0 lecture, 2.0 lab)

Jour 3900. Digital Publishing and Production. Credit Hours: 3.0. Prerequisites: Jour 3010 and Jour 3060 with a grade of C or higher. Only students with an institutional GPA of 2.5 or higher. Foundations of digital multimedia journalism, including professional principles of techniques for producing stories containing text, audio, video, and photo elements.

CHANGE

• JOUR 2500 COMM RESEARCH & RESEARCH & INFO TECHNOLOGY (Change title; Change description) Title: FOUNDATIONS OF MEDIA. Description: Foundations of Media Research. Credit Hours: 3.0. Prerequisites: Jour 1000 with a grade of C or higher. Introduction to qualitative and quantitative research methods, including the use of
library and on-line resources, with emphasis on the critical skills needed to evaluate and conduct media and journalism research.

- JOUR 3950 PUBLIC RELATIONS RESEARCH (Change prerequisites) Jour 3060 and 3500 with grades of C or higher.

DROP

- JOUR 370 INTRO TO THEORIES OF MASS COMM

GEOSCIENCES

DROP

- GEOG 2206 INTRODUCTORY MAPPING & GIS

CHANGE

- GEOG 4815 DIGITAL CARTOGRAPHY (Change prerequisite) No prerequisites
- GEOG 4532 GEOGRAPHIC INFORMATION (Change prerequisite) Geog 4518 with grade of C or higher, or consent of instructor.
- GEOG 4764 URBAN GEOGRAPHY (Change title) URBAN GEOGRAPHY CTW
- GEOG 4784 CLIMATIC CHANGE (Change title) CLIMATIC CHANGE CTW
- GEOG 4830 SENOR SEMINAR (Change title) SENIOR SEMINAR CTW
- GEOG 6518 DIGITAL CARATOGRAPHY (Change prerequisite) No prerequisites
- GEOG 6532 GROGRAPHIC INFORMATION SYSTEMS (Change prerequisites, Change description) Prerequisites: Geog 6518 with grade of C or higher, or consent of instructor. Description: Introduction to Geographic Information Systems. Prerequisite: Geog 6518 with grade of C or higher, or consent of instructor. Fundamental concepts and applications of raster and vector-based geographic information systems involving the integration and synthesis of geographic data with map overlays, databases, computer graphics, and/or remote sensing imagery.
- GEOL 4006 SEDIMENTARY ENVIR&STRATIGRAPHY (Change title) SEDIMENT ENVIR&STRATIGRAPH CTW
- GEOGL 4930 SENOR SEMINAR (Change title) SENIOR SEMINAR CTW

GERONTOLOGY

ADD

- GER 2000 INTRODUCTION TO GERONTOLOGY 3.0
Gero 2000: Introduction to Gerontology Course Description: This course is an interdisciplinary and multidisciplinary introductory course for undergraduates interested in learning about human aging. Drawing on diverse perspectives including sociology, psychology, political science, biology and health professions, this class identifies basic components of human aging in the United States. Undergraduate: 3 Credit Hours

- GER 8130 FAMILY, SEX, INTIMACY, AND AGING 3.0

GER 8130 - Ties that Bind: Family, Intimacy, and Aging. (Same as Soci 8130.) This course examines older adults' family lives and intimate relationships in social, historical and demographic context. Emphasis is placed on theoretical and methodological understanding in the type, nature, content and meaning of relationships, empirical research, and on identifying influential factors, including, for example, gender, race, ethnicity, class, sexual orientation, and health status. 3.000 Credit hours, Target student Group: GERO Certificate students, Gero MA Students, Soci MA and PHD students

**HISTORY**

**ADD**

- HIST 3625 WAR IN EUR & AMER SINCE 1500 4.0

War in Europe and America Since 1500. Warfare and military institutions as they relate to social, economic, political, and technological developments.

**CHANGE**

- HIST 4615 HIST OF SCIENCE & TECHNOLOGY (Change title) SCIENTIFIC REVOLUTIONS
- HIST 49701 INDEPENDENT STUDY (Change description) Independent Study. Prerequisites: Hist 3000 with grade of C or higher and at least five upper-division history courses. Consent of the department is required for non majors. By invitation only. For history majors with a grade point average of 3.5 or better in major courses and all course work. No more than four credit hours may be applied toward the major.

**DROP**

- HIST 4900 WAR IN EUR & AMER SINCE 1500

**MATHEMATICS & STATISTICS**

**CHANGE**
• MATH 4211 OPTIMIZATION (Change prerequisites) Math 3435 or Math 3030 with a grade of C or higher.
• MATH 6211 OPTIMIZATION (Change prerequisites) Math 3435 or Math 3030 with a grade of C or higher.

MODERN AND CLASSICAL LANGUAGES

ADD

• CHIN 3001 ADVANCED CHINESE I 3.0

Advanced Chinese I. Prerequisite: Grade C or higher in CHIN 2002 Intermediate Chinese II, or permitted by course instructor. This course is not open to native speakers of Chinese. For heritage learners, please contact your instructor for eligibility. This course is designed for students who have successfully completed two years of Chinese classes at Georgia State University and plan to further develop their Chinese language proficiency and cultural competence. Adopting an integrated approach, this course will gradually develop and refine student's oral and written proficiency at discourse level. Meanwhile, listening and reading skills at more advanced level will also be part of the course foci. Students will continue to build their pragmatic competence in dealing with professional and everyday situations. Strategies in acquiring more advanced language and cultural competence will also be discussed and practiced throughout the semester. Lab Fee $5.00

• CHIN 3002 ADVANCED CHINESE II 3.0

Advanced Chinese II. Prerequisite: Grade of C or higher in CHIN 3001 Advanced Chinese I, or permission by course instructor. This course is not open to native speakers of Chinese. For heritage learners, please contact your instructor for eligibility. This course is designed for students who have successfully completed CHIN 3001 Advanced Chinese at Georgia State University. A major task of this course is to develop and strengthen students' ability to perform the essential language skills (listening, speaking, reading, and writing) at discourse level. Another important task is to help students to build their language competence in dealing with a wider range of topics beyond daily situations (e.g., history, tourism, education). Strategies for acquiring those more advanced language skills will also be discussed and practiced throughout the semester. This course is not open to native speakers of Chinese. For heritage learners, please contact your instructor for eligibility. Lab Fee $5

• CHIN 3080 TOPICS IN CHINESE STUDIES CTW 3.0

Topics in Chinese studies. Prerequisite: none. This course surveys key aspects of Chinese culture and society pertaining to literature, arts, education, philosophy, religion, language, etc. Organized around thematic topics, this course aims to promote students' cultural
understanding with regard to China. Lectures will be accompanied with in-depth reading and discussions of primary texts selected from the classics of various fields (e.g., literature, religion, philosophy), with the goal of helping students to better understand and appreciate the continuity and diversity of Chinese civilization. This is a CTW course and may be repeated for credit when topics vary. Lab Fee $5

CHANGE

- **SPAN 4405 SPAN FOR INTL BUSNSS I (Change description)**
  Spanish for International Business I. Prerequisite: Span 3303 with grade of C or higher, or equivalent, or consent of instructor. Students who are not in the 5-Year Joint Degree Program or IEML are strongly recommended to take BUSA 3000 when the course is offered in Spanish. Discussion of current business and economic issues in Spanish-speaking countries.

- **SPAN 4407 SPAN FOR INTL BUSNSS II (Change description)**
  Spanish for International Business II. Prerequisite: Span 3303 with grade of C or higher, or equivalent, or consent of instructor. Students who are not in the 5-Year Joint Degree Program or IEML are strongly recommended to take BUSA 3000 when the course is offered in Spanish. The course is a continuation of SPAN 4405. Discussion of current business and economic issues in Spanish-speaking countries.

- **SPAN 8601 INTRO TO SPANISH LINGUISTICS (Change title; Change description)**
  Title: SPANISH LINGUISTICS. Description: Spanish Linguistics. Prerequisite: Span 8600 or equivalent. Study of all areas of Spanish linguistics: phonetics, phonology, morphology, syntax, historical linguistics, and dialectology.

MIDDLE EAST INSTITUE

CHANGE

- **ARBC 4501 CLASSICAL ARABIC LIT & CULTURE (Change title; Change description)**
  Title: CLASSICAL ARABIC LIT CTW. Description: Classical Arabic Literature and Culture - CTW. This course is an introduction to classical Arabic literature and culture from its beginnings in the fifth century to the thirteenth century C.E. The course includes selections from the Qur'an as well as texts and poetry representing different literary periods: Pre-Islamic, Early Islamic, Umayyad, Abbasid, and Hispano-Arabic. The course also addresses the scientific and technological developments of the period. All readings will be in English translation. No knowledge of Arabic is required. This is a Critical Thinking Through Writing (CTW) course.

- **ARBC 4502 MODERN ARABIC LIT IN TRANS (Change title; Change description)**
  Title: MODERN ARABIC LIT IN TRAN CTW. Description: Modern Arabic Literature in Translation - CTW. The goals of this class include introducing
students to realist and experimental modern novels by Arab writers from different countries (including Egypt, Lebanon, Palestine, Saudi Arabia, and Sudan), familiarizing the students with the socio-historic background necessary for thinking and writing critically about the literature and cultures of the region, exploring some of the major recurrent themes in modern Arabic literature, and analyzing the rhetorical devices and literary techniques employed by the authors of these novels. All readings are in English translation. No knowledge of Arabic is required. This is a Critical Thinking Through Writing (CTW) course.

**MUSIC**

**ADD**

- **MUS 8920 RESEARCH OR TA IN MUSIC 3.0-12.0**

Research or Teaching Assistantship in Music. Does not count toward degree requirements. Assisting of music faculty members in their research or teaching classes of one's own under the supervision of a faculty member. Required of all graduate students receiving a stipend. May be repeated for credit.

**CHANGE**

- **MUS 8900 NON-THESIS RESEARCH IN MUSIC (Change credit hours) 1.0-6.0**

**NEUROSCIENCE INSTITUTE**

**ADD**

- **NEUR 4200 NEUROSCIENCE OF MEMORY 3.0**

Neur 4200 Neuroscience of Memory. Prerequisite: Neur 3000 or Biol 4102. 3 lecture hours per week. An introduction to the neural bases of memory. The course begins with a review of the historical background, experimental methods, and relevant principles of neuroscience. The neuroscience of memory will then be reviewed at different levels of biological organization, including molecular/cellular, neural circuit, neural system, and behavioral. An elective for Neuroscience Majors. 3.000 Credit Hours

- **NEUR 4340 NEUROPHYSICS 3.0**
Neurophysics. Prerequisite: Neur 3000, and Phys 2212K with grade of B or higher, or equivalent, or consent of instructor. Three lecture hours per week. Course provides fundamental findings of physics of neuronal systems. The course covers such topics as introduction to biomechanics, membranes, transport, electroosmotic effects, ion pumping, cellular homeostasis, the Hodgkin-Huxley formalism, energetics of spiking, neural coding, and dynamics of neurons and neuronal networks. It also covers methods of recording of neuronal activity. 3.000 Credit Hours

- NEUR 4350 NUMERICAL METHODS FOR NEUROSCI 3.0

Neur 4350, Numerical Methods for Neuroscience, 3 credit hours. Prerequisites: Math 4010 (Mathematical Biology) or Math 4610 (Numerical Analysis) or Math 4275 (Applied Dynamical Systems). This class develops hands-on practical skills in numerical problem solving for dynamical systems models applied to neuroscience. Students will design and test complex scientific calculations using various software tools, including the application of bifurcation analysis, phase plane analysis, and simulation tools. Students will undertake three projects to demonstrate such calculations

- NEUR 4576 NEUROVIROLOGY 4.0

Neurovirology. Prerequisite: Biol 3800 with grade of C or higher. Following an introduction to basic neuroanatomy and neuroimmunology, individual lectures will focus on the diagnosis, treatment, and pathogenesis of several neurologic diseases of virus origin. These include encephalitis, meningitis, chronic inflammatory and demyelinating diseases, HIV/AIDS-associated dementia, peripheral neuropathies, retinitis, and transmissible spongiform encephalopathies caused by prions. The concept of virus latency within the nervous system will be emphasized, as will the possible contributions of viruses or prions toward the onset of Alzheimer's disease. 4.000 Credit hours

- NEUR 4770 MORAL PSYCHOLOGY 3.0

Neur 4700 Moral Psychology. Prerequisite: Neur 3000 or Biol 4102. 3 lecture hours per week. In this course, we will examine some of this literature and explore various connections between scientific work and philosophical questions in moral psychology. We will also examine the rich historical literature in philosophy and psychology that sets the stage for the modern debates. 3.000 Credit Hours

- NEUR 4780 NEUROETHICS 3.0

Neuroethics 4780 3 credit hours. Neuroethics considers ethical protocols for conducting neuroscientific research and addressing the ethical implications of
emerging neuroscience technologies that allow, for instance, cognitive enhancement and direct manipulation of the brain.

- **NEUR 6340 NEURO PHYSICS 3.0**

Neurophysics. Prerequisite: consent of instructor. Three lecture hours per week. Course provides fundamental findings of physics of neuronal systems. The course covers such topics as introduction to biomechanics, membranes, transport, electroosmotic effects, ion pumping, cellular homeostasis, the Hodgkin-Huxley formalism, energetics of spiking, neural coding, and dynamics of neurons and neuronal networks. It also covers methods of recording of neuronal activity. 3.000 Credit Hours

- **NEUR 6350 NUMERICAL METHODS FOR NEUROSCI 3.0**

Neur 6350, Numerical Methods for Neuroscience, 3 credit hours. Prerequisites: Math 4010 (Mathematical Biology) or Math 4610 (Numerical Analysis) or Math 4275 (Applied Dynamical Systems). This class develops hands-on practical skills in numerical problem solving for dynamical systems models applied to neuroscience. Students will design and test complex scientific calculations using various software tools, including the application of bifurcation analysis, phase plane analysis, and simulation tools. Students will undertake three projects to demonstrate such calculations.

- **NEUR 6530 NEUROETHICS 3.0**

( Same as PHIL 6780.) Prerequisite: consent of the instructor. Neuroethics considers how ethical theories inform neuroscientific practice and how neuroscientific discoveries inform ethical theorizing. Topics may include ethical protocols for neuroscience research, ethical and legal implications of neuroscientific research, and implications of neuroscience for debates about moral behavior and judgment. 3 Credit Hours.

- **NEUR 6540 MORAL PSYCHOLOGY 3.0**

NEUR 6540 Moral Psychology (Same as PHIL 6770.) Prerequisite: consent of the instructor. Examination of how humans function in moral contexts and how this information may impact debates in ethical theory. Drawing from relevant literature in philosophy, psychology, neuroscience, and other sciences, topics may include moral judgment and intuitions, moral disagreement, reason and emotion, moral agency and responsibility, character traits and virtues, altruism and egoism, and moral development. 3 Credit Hours.

- **NEUR 6550 ETHICAL THEORY 3.0**
NEUR 6550 Ethical Theory (Same as PHIL 6700) Prerequisite: consent of the instructor. Major Western theories, such as relativism, egoism, emotivism, utilitarianism, deontology, naturalism, intuitionism, virtue, ethics, existential ethics, and feminist ethics. 3 Credit Hours.

- NEUR 6560 ADVANCED BIOMEDICAL ETHICS 3.0

NEUR 6560 Advanced Biomedical Ethics (Same as PHIL 6740.) Prerequisite: consent of the instructor. Major moral problems in science and medicine, including abortion, death and euthanasia, treatment of the mentally ill, experimentation with human subjects, and genetic research. 3 Credit Hours.

- NEUR 6570 PHILOSOPHY OF LAW 3.0

NEUR 6570 Philosophy of Law (Same as PHIL 6820.) Prerequisite: consent of the instructor. Topics such as theories of law, feminist legal theory, the nature of legal reasoning, legal obligation, law and justice, law and morality. 3 Credit Hours.

- NEUR 8390 INTOR TO MODELING 3.0

Neur 8390, Introduction to Modeling for the Life Sciences, (3) Prerequisites: Instructor consent (a C or above in pre-calculus is beneficial). This is a discussion-based class based on reading assignments and in-class presentations. It prepares non-mathematically literate students for future collaboration with mathematical and computational modelers, without teaching mathematical technicalities. Students from more mathematical backgrounds will learn how to communicate technical ideas to non-mathematicians through collaborative group work. There are no formal examinations for this course.

- NEUR 8761 SEMINAR IN MORAL PSYCHOLOGY 3.0

NEUR 8761 Seminar in Moral Psychology (Same as PHIL 8770.) Prerequisite: consent of the instructor. An in-depth examination of select topics in moral psychology, such as moral intuitions, moral disagreement, agency and responsibility, virtues, altruism, etc. May be repeated if topic varies. 3 Credit Hours.

- NEUR 8762 TOPICS IN NEUROETHICS 3.0

NEUR 8762 Topics in Neuroethics (Same as PHIL 6790.) Prerequisite: consent of the instructor. Study of specific issues in neuroethics, such as cognitive enhancement, neuromarketing, neurolaw, neuroscience and free will, etc. 3 Credit Hours.

- NEUR 8763 SEMINAR IN ETHICS 3.0
(Same as PHIL 8700.) Prerequisite: consent of the instructor. Topics such as Greek ethics, Kantian ethics, utilitarianism, feminist ethics, and religious ethics. May be repeated if topic varies. 3 Credit Hours.

- NEUR 8764 SEMINAR IN BIOETHICS 3.0

NEUR 8764 Seminar in Bioethics (Same as PHIL 8740.) Prerequisite: consent of the instructor. Examination of contemporary issues in bioethics. Topics may include: research ethics-human and non-human subjects; end-of-life decision making; eugenics and The Human Genome Project; reproductive-cloning, freezing embryos, artificial insemination; abortion-maternal/fetal relations, embryonic stem cell research; and health care disparity-race, gender, and income. May be repeated if topic varies. 3 Credit Hours.

CHANGE

- NEUR 8600 INTRO GRADUATE BIOLOGY STUDIES (Change title; Change description). Title: INTRO TO GRAD STUDIES. Description: Introduction to Graduate Studies in Neuroscience. One lecture hour a week. Analysis, discussion, and review of requirements for the fulfillment of the responsible conduct in research (RCR) training, including ethics, publication, attribution of work, conflict of interest, and human and animal welfare. Course also entails taking and passing the Federal Collaborative Institutional Training Initiative (CITI) on-line training. 1.000 Credit hours

PHILOSOPHY

ADD

- PHIL 2500 INTRODUCTION TO SYMBOLIC LOGIC 3.0

Introduction to the examination of correct reasoning using symbols to represent statements and relationships between them. This course covers sentential logic and some predicate logic. A grade of B or better in this course is required in order to take Phil 4500, Symbolic Logic.

- PHIL 3710 MARRIAGE AND FAMILY 3.0

Study of philosophical issues relating to marriage and the family. Topics may include the nature of marriage and marital obligation, marriage and the state, children’s rights and parental obligations, the family and the state, and justice in the family.

- PHIL 4500 SYMBOLIC LOGIC 3.0
Prerequisite: Phil 2500 with grade of B or better, or consent of instructor. This course will cover the fundamentals of propositional and predicate logic, and selected topics in such areas as the logic of identity and relations, modal logic, or meta-logic. Emphasis placed on construction of proofs in formal systems.

- **PHIL 4770 MORAL PSYCHOLOGY 3.0**
  Examination of how humans function in moral contexts and how this information may impact debates in ethical theory. Drawing from relevant literature in philosophy, psychology, neuroscience, and other sciences, topics may include moral judgment and intuitions, moral disagreement, reason and emotion, moral agency and responsibility, character traits and virtues, altruism and egoism, and moral development.

- **PHIL 4780 NEUROETHICS 3.0**
  Neuroethics considers how ethical theories inform neuroscientific practice and how neuroscientific discoveries inform ethical theorizing. Topics may include ethical protocols for neuroscience research, ethical and legal implications of neuroscientific research, and implications of neuroscience for debates about moral behavior and judgment.

- **PHIL 4790 TOPICS IN NEUROETHICS 3.0**
  Topics in Neuroethics. Study of specific issues in neuroethics, such as cognitive enhancement, neuromarketing, neurolaw, neuroscience and free will, etc.

- **PHIL 6500 SYMBOLIC LOGIC 3.0**
  This course will cover the fundamentals of propositional and predicate logic, and selected topics in such areas as the logic of identity and relations, modal logic, or meta-logic. Emphasis placed on construction of proofs in formal systems.

- **PHIL 6770 MORAL PSYCHOLOGY 3.0**
  Examination of how humans function in moral contexts and how its information may impact debates in ethical theory. Topics may include moral judgment and intuitions, moral disagreement, reason and emotion, moral agency and responsibility, character traits and virtues, altruism and egoism, and moral development.

- **PHIL 6780 NEUROETHICS 3.0**
  Neuroethics considers how ethical theories inform neuroscientific practice and how neuroscientific discoveries inform ethical theorizing. Topics may include ethical protocols for neuroscience research, ethical and legal implications of neuroscientific
research, and implication of neuroscientific research, and implications of neuroscience for debates about moral behavior and judgment.

- **PHIL 6790 TOPICS IN NEUROETHICS 3.0**

  Study of specific issues in neuroethics, such as cognitive enhancement, neuromarketing, neurolaw, neuroscience and free will, etc.

- **PHIL 8770 SEMINAR IN MORAL PSYCHOLOGY 3.0**

  An in-depth examination of select topics in moral psychology, such as moral intuitions, moral disagreement, agency and responsibility, virtues, altruism, etc.

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**PHYSICS AND ASTRONOMY**

- **PHYS 4340 NEUROPHYSICS 3.0**

  Neurophysics. Prerequisites: Neur 3000 and Phys 2212 with grades of B or higher, or equivalent, or consent of instructor. Three lecture hours per week. Course provides fundamental findings of physics of neuronal systems. The course covers such topics as introduction to biomechanics, membranes, transport, electroosmotic effects, ion pumping, cellular homeostasis, the Hodgkin-Huxley formalism, energetics of spiking, neural coding, and dynamics of neurons and neuronal networks. It also covers methods of recording of neuronal activity.

- **PHYS 6340 NEUROPHYSICS 3.0**

  Neurophysics. Prerequisites: Neur 3000 and Phys 2212 with grades of B or higher, or equivalent, or consent of instructor. Three lecture hours per week. Course provides fundamental findings of physics of neuronal systems. The course covers such topics as introduction to biomechanics, membranes, transport, electroosmotic effects, ion pumping, cellular homeostasis, the Hodgkin-Huxley formalism, energetics of spiking, neural coding, and dynamics of neurons and neuronal networks. It also covers methods of recording of neuronal activity.
- **PHYS 7210 PHYS PRINC & TEACH PROBLEM I 4.0 (3 lecture, 1 lab)**

Physics Principles & Teaching Problems I. Prerequisite: consent of instructor. Students should have completed one year of introductory undergraduate physics equivalent of Phys1111/1112 or Phys2211/2212 before taking this course. The course will attempt to develop a deep conceptual understanding of fundamental physics concepts associated with Newtonian mechanics, energy, and waves in the pre-service science teachers taking it. A related goal will be to support these pre-service teachers in developing strategies for using their understanding to facilitate the construction of physics knowledge in the students they will come to teach. This course is primarily for students being certified to teach physics at the secondary school level in the Masters of Arts in Teaching program.

- **PHYS 7220 PHYS PRINC & TEACH PROBLEM II 3.0 (2 lecture, 1 lab)**

Physics Principles & Teaching Problems II. Prerequisite: Phys7110 with a grade of B or higher or consent of instructor. Students should have completed one year of introductory undergraduate physics equivalent to Phys1111/1112 or Phys2211/2212 before taking this course. The course will develop a deep conceptual understanding of fundamental physics concepts associated with electricity, magnetism, and modern physics in the pre-service science teachers taking it. A related goal will be to support these pre-service teachers in developing strategies for using their understanding to facilitate the construction of physics knowledge in the students they will come to teach. This course is primarily for students being certified to teach physics at the secondary school level in the Masters of Arts in Teaching program.

**POLITICAL SCIENCE**

ADD

- **POLS 4800 ADVANCED RESEARCH METHODS 3.0**

The purpose of this course is to provide students with an introduction to advanced principles and applications of data analysis in political science. The course will review both the conceptual issues and methodological issues in using data analysis by working step-by-step through the key theoretical debates and practical issues of this type of research. Prerequisite: POLS 3800

**RELIGIOUS STUDIES**

ADD

- **RELS 4400 INTERNSHIP IN RELS 3.0**
Supervised work coupled with academic instruction. Students may propose internships they have been able to arrange (although these must be approved by the department faculty member supervising the internship and the undergraduate or graduate director, as appropriate). Students may also choose from several internship opportunities established by the department, including internships in the media, non-profit administration, business, and government.

- **RELS 6400 INTERNSHIP IN RELS 3.0**

Supervised work coupled with academic instruction. Students may propose internships they have been able to arrange (although these must be approved by the department faculty member supervising the internship and the undergraduate or graduate director, as appropriate). Students may also choose from several internship opportunities established by the department, including internships in the media, non-profit administration, business, and government.

**CHANGE**

- **JST 3500 JEWISH STUDIES INTERNSHIP (Change prerequisite) No prerequisite.**

**SOCIOLOGY**

**ADD**

- **SOCI 8130 FAMILY, SEX, INTIMACY, AND AGING 3.0**

Soci 8130 - Ties that Bind: Family, Intimacy, and Aging. (Same as GERO 8130.) This course examines older adults family lives and intimate relationships in social, historical and demographic context. Emphasis is placed on theoretical and methodological understanding in the type, nature, content and meaning of relationships, empirical research, and on identifying influential factors, including, for example, gender, race, ethnicity, class, sexual orientation, and health status. 3.000 Credit hours, Target student Group: GERO Certificate students, Gero MA Students, Soci MA and PHD students