

2006

## Curriculum Change 2006-2007

Portland State University

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**New Courses and Course Changes**  
**Effective Fall 2006**  
*Amended August 15, 2006*

**LIBERAL ARTS AND SCIENCES**  
**Anthropology**

Anth 101  
Introduction to Biological Anthropology (4) [CHANGE TITLE]

Anth 333  
Anthropology of Food (4)  
Explores biological and cultural aspects of past and present human food systems. Topics include nutrition, the cultural significance of food, domestication of plants and animals, archaeological records of competitive feasting, global movement of foods during the colonial period, new revolutions in food technology, the politics and economics of contemporary food systems, and eating disorders such as obesity, anorexia, and bulimia. [NEW]

Anth 370  
Paleoanthropology (5)  
Emphasis will be placed on the fossil record and the interactions between biology and culture in the evolution of the human species. Four hours lecture and one biweekly laboratory. Recommended prerequisite: Anth 101. [CHANGE DESCRIPTION AS SHOWN, ADD LABORATORY]

**Chemistry**

Ch 284, 285, 286  
General Chemistry Workshop I, II, III (1, 1, 1)  
Optional peer-led problem-solving sessions designed to promote the success of students in Ch 221, 222, 223 general chemistry sequence. Corequisite: corresponding lecture course Ch 221, 222, 223. Pass/no pass only. [NEW]

Ch 384, 385, 386  
Organic Chemistry Workshop I, II, III (1, 1, 1)  
Optional peer-led problem-solving sessions designed to promote the success of students in the Ch 334, 335, 336 organic chemistry sequence. Corequisite: corresponding lecture course Ch 334, 335, 336. Pass/no pass only. [NEW]

**Economics**

Ec 472/572  
Time Series Analysis and Forecasts (4)  
Prerequisite: Ec 370 for 472, 570 for 572. [ADD PREREQUISITE]

Ec 522  
Economics of Sustainability: Theory and Practice (4)  
Economic concepts and theories for analyzing sustainable development, including the emerging field of ecological economics. Roles and practices of the business, government and nonprofit sectors in fostering sustainability. [NEW]

**English**

Eng 301  
Topics: Shakespeare (4)  
Study of Shakespeare's works focusing on topics such as genre (tragedy, comedy, etc.), period (Elizabethan/Jacobean) or cultural context. Some familiarity with Shakespeare and/or the Renaissance is expected. Course may be repeated for credit with different topics. [NEW]

Eng 345

Modern British Literature (4)

Selected works of twentieth-century British literature; introduction to themes, genres, history, and culture of modernism. [RETURN COURSE TO 345]

Eng 387

Women's Literature (4)

A close study of writing by women from the medieval period to the present including poetry, drama, fiction and non-fiction. [CHANGE NUMBER FROM 345]

Wr 413

Advanced Poetry Writing (4)

Further refines technical skills by demanding more ambitious works of poetry by the advanced writer. Students will have an opportunity to do research and can expect to confront a variety of technical problems emerging from class discussion. The exploration of various techniques, schools and poetic voices will be encouraged. Recommended: Wr 313. Consent of instructor required. [NEW]

Wr 435/535

Grammar for Writers (4)

Study of grammar that focuses on writing that reads well aloud. Topics include: editing written work for rhythm, meter, emphasis, and balance; translating prose or poetry; and writing speeches, letters, and other forms of communication. Provides background for students in upper-division and graduate programs that require writing and editing skills. Prerequisite: senior or graduate status. [NEW]

### **Foreign Languages and Literatures**

Dane 316

Readings in Danish (2)

A variable-content course designed to give advanced students of Danish experience reading a variety of content areas. Taken in conjunction with regularly scheduled corequisite FLL courses taught in English. Recommended: Dane 203. [NEW]

Dane 347

Major Works in Danish Literature (4)

Four centuries of Danish masterpieces with attention to themes, styles and characteristics in light of the literary trends of their times. Conducted in English. Recommended: sophomore inquiry. [NEW]

FL 335

Icelandic Sagas (4)

Explores the sagas and the cultural milieu in which they were created. Conducted in English. Recommended prerequisite: sophomore inquiry. [NEW]

Fr 335

19th Century France (4)

French politics, society and their reflections in literature from the Revolution to the 3<sup>rd</sup> Republic (1871-). Main themes: *ancien regime*, Revolution, French political instability, rise of the *bourgeoisie*, growth of working class, reflection of these themes in major literary works. Recommended prerequisite: Hst 103 or UnSt 226. [NEW]

\*Grk 333

Women in Ancient Greece (4)

Course on the role of women in ancient Greece as daughters, wives, concubines, mothers, heiresses, writers, priestesses, and participants in religious rituals and festivals. Conducted in English. [NEW]

\*Grk 334

Greek Ethical Thought (4)

Survey of the development of Greek ethical thinking from the Archaic period through the Hellenistic period, including the role of ethics in Greek religion, Platonic dialogues, Aristotle's Nicomachean Ethics, and Epicurean and Stoic philosophy. Conducted in English. [NEW]

\*Grk 335

Sophocles and Euripides (4)

Course on two of the most important tragedians of ancient Greece, covering all of the extant works of Sophocles and the most important works of Euripides in their cultural context. Conducted in English. [NEW]

\*Span 434/534

Major Topics: Peninsular Multiple Genres (4)

Study, analysis, and critique of works in multiple genres on such topics as Medieval Literature, the Celestina, Women Writers, Cine-Lit, Literature of the Franco Years, the Poetry and Drama of Garcia Lorca, and the Generation of '8. Course may be repeated for credit when topics vary. Recommended prerequisites: at least 8 credits of Span 341, 342, or 343. [NEW]

\*Span 436/536

Major Topics: Latin American Multiple Genres (4)

Study, analysis, and critique of works in multiple genres on such topics as Transvestism, Feminism, Sickness and Literature, Cine-Lit, Prose and Poetry of Borges, and Pre-Columbian Literature. Course may be repeated for credit when topics vary. Recommended prerequisites: at least 8 credits of Span 341, 342, or 343. [NEW]

Swah 101, 102, 103

First Year Swahili (4, 4, 4)

Introduction to elementary Swahili. Emphasis on listening comprehension, and oral practice, the elements of grammar, vocabulary building, and elementary readings. [NEW]

Swah 201, 202, 203

Second Year Swahili (4, 4, 4)

Intensive review of basic materials introduced in first year program and further development of communication skills. [NEW]

Tur 330

Topics in Turkish Culture and Literature (4)

Development of Turkish life, thought, and arts from the late-Ottoman to contemporary period. Topics may include Westernization, emergence of journalism, influence of the French revolution, national literature, urbanization, "guest workers" in Europe, feminist revival, Marxism, Islamism, and popular culture. Conducted in English. This course may be taken twice for credit with different topics. [NEW]

Tur 341

Turkish Literature in Translation (4)

Study of texts representative of major Turkish authors, themes or genres from the modern period in translation. Examples are modern drama, realism, autobiography, contemporary novel. Conducted in English. [NEW]

## Geography

Geog 340

Global Water Issues and Sustainability (4)

Examines the availability and quality of freshwater resources around the world. Includes the global water cycle, human use and modifications of global water systems, effects of climate change on global freshwater, water policy in international rivers, and sustainable water resource management. Focuses on case studies in major international rivers. [NEW]

Geog 425/525

Field Methods in Human Geography (4)

Field observation, description, and analysis in human geography. Students explore landscapes in Portland metropolitan region through a series of exercises including sampling techniques, field mapping, and photography supplemented by data collection from census records, tax records, historic maps and photographs, and published accounts about places. Recommended: 8 credits of upper-division or regional geography or graduate standing. [NEW]

Geog 496/596

Visualization of Spatial Data (4)

The use of graphics as a fundamental descriptive and exploratory tool for visualizing data in geography and other disciplines. Topics include graphic types, their design and meaning, visualization of spatial data surfaces, cartographic counterparts to descriptive statistics, data classification techniques, data transformations, and index numbers. Spatial graphics software packages will be introduced. Prerequisite: 12 hours of coursework in geography. [NEW]

Geog 497/597

Spatial Quantitative Analysis (4)

Introduction to the principles of inferential spatial statistics. Topics include point pattern analysis, spatial autocorrelation, spatial interpolation, and multivariate spatial data analysis. Prerequisite: Geog 496/596; Stat 243 and 244 recommended. [CHANGE DESCRIPTION, PREREQUISITE]

### **Geology**

G 453

Geology of the Pacific Northwest (4)

Survey of the topographic and geologic features of the Pacific Northwest, emphasizing geologic and mining history and focusing on the close relationship between the Pacific Northwest as the leading edge of a moving continental plate, the geologic/paleobiologic (fossil) record of this area, and the implications of recent tectonic activity: the Mt. St. Helens eruption, earthquakes, floods, and threats of major seismic sea waves or tsunamis. Prerequisite: upper division standing. (Note: Course available only through Independent Study) [NEW]

### **History**

Hst 442/542

Race, Class and Gender in the American West (4) [CHANGE TITLE]

Hst 457/557

Topics in Early Modern Europe (4)

Examines selected topics in the social, cultural, political and/or economic history of Europe in the early modern period (roughly 1515-1815). Topics will vary, but may include European financial history, the crisis of the seventeenth century, popular revolt, the royal state, and other topics. May be taken a second time for credit (maximum 8 credits) with a different topic. Recommended: upper-division standing. [NEW]

Hst 467/567

Readings in Native American History (4)

Surveys the historiography of Native American history, with a special emphasis on ethno-historical theory and methods, disease and depopulation, contact and encounter, spirituality and missions, federal Indian policy, gender and social roles, environmental context, and frontier theory. Recommended: one of the following: Hst 330, Hst 331, Hst 464/564. [NEW]

### **Mathematics and Statistics**

Stat 543

Survey of Statistical Methods (4)

An introductory, discipline-neutral course in statistical analysis to prepare graduate students for research methods courses in other departments. Topics include descriptive statistics, confidence intervals, hypothesis tests, regression and correlation, analysis of variance, chi-squared tests, and use of statistical software. [NEW]

## **Philosophy**

Phl 315

Existentialism (4)

Introduction to a number of philosophers and literary figures gathered together under the name “existentialism.” Authors include Dostoyevsky, Kierkegaard, Nietzsche, Rilke, Kafka, Ortega y Gasset, Jaspers, Heidegger, Sartre and Camus. Topics include consciousness, (in)authenticity, alienation, death, anxiety, freedom, time, nihilism, historical meaning and religion. Recommended: one philosophy course. [NEW]

Phl 317

Philosophy of Art (4)

Philosophical issues concerning the creation, interpretation, and consumption of art. Includes an overview of the major philosophical theories about the nature of art, an examination of the relationship between art and ethics, art and psychology, art and pornography, and relativism of aesthetic value judgments. [NEW]

Phl 321

Practical Epistemology (4)

Considers criteria for knowledge-claims based on different sources, such as: memory, perception, eyewitness testimony, expert testimony, and medical and scientific experts. Do the criteria for reasonable belief differ so fundamentally from one object-domain to another that we cannot expect a single formal definition of ‘knowledge’? [NEW]

Phl 451/551

Classical Figures (4)

Intensive study of some classical figures such as Descartes, Spinoza, Leibniz, Nietzsche, Hegel. Course may be repeated for credit. Recommended: junior level standing. [NEW]

## **Sociology**

Soc 419/519

Sociology of Mental Illness (4)

An overview of sociological perspectives on mental health and illness. Informs understanding of mental health and illness by challenging dominant views of mental illness, examining how social relationships play a role in mental illness, questioning the goals and implications of mental health policy and presenting research on how mental health services are organized and provided. Prerequisite: Soc 200. [NEW]

Soc 462/562

Sociology of Integrative Medicine (4)

An examination of common systems and practices understood as complementary and alternative medicine (CAM) including prevalence, patterns of use, trends, consumer health beliefs and motivations, and integration with mainstream allopathic medicine; philosophical, historical and political dimensions; theories of health and illness; evidence-based research vs. traditional and folk beliefs; and a consideration of benefits and limitations considering the growing popularity. Not a course about how to practice any form of alternative medicine. Recommended prerequisite: Soc 200. [NEW]

Soc 498/598

Globalization Seminar (4)

Analysis of the ways in which economic patterns that reach across national boundaries affect the security of communities and their standards of living. Topics include how different economic classes fare in the rapid reshuffling of national economies that globalization entails; the role of international institutions in shaping economic globalization; the experience and responses of workers as a group; and the role of states in facilitating or resisting the adverse impacts of globalization. Prerequisite: Soc 320. [NEW]

Soc 695

Advanced Methods in Sociology (4)

Introduces a range of advanced quantitative methods commonly found in published research in sociology. Particular attention will be paid to the techniques commonly used to address the most common shortcomings of sociological data, including estimation of multivariate models with categorical dependent variables (i.e. logistic regression) and to nonparametric methods for analyzing data. Prerequisites: Soc 585/685, Soc 593 and Stat 543 or equivalent. [NEW]

### **Speech and Hearing Sciences**

SpHr 380

Language Disorders in Communication I (4)

An overview of developmental language disorders in children. Disorders will be presented in terms of etiology, incidence, and characteristics. Assessment issues and treatment principles will be discussed. Prerequisite: SpHr 372. [CHANGE DESCRIPTION AND PREREQUISITE]

SpHr 464

Articulation/Phonological Disorders (4) [DELETE 564]

### **BUSINESS ADMINISTRATION**

Fin 447

The Valuation of Real Estate Investments (4)

Principles of valuation applied in the context of real estate investments. Financial strength analysis, cash flow estimation, determining the cost of capital, various discounted cash flow methods. Option valuation and real options approaches. Relative valuation approaches. Applied to the valuation of Real Estate Investment Trusts and other real estate development entities. Prerequisites: Fin 333, Fin 319. [NEW – NOT IN CATALOG]

ISQA 426

Introduction to Decision Technologies (4)

Provides and introduction to the technologies used in aiding decision making in organizations. In addition to the theoretical aspects of decision support, the course exposes students to current technologies. Topics include: human decision making; database technologies for decision support; statistical, analytical, and artificial-intelligence models for decision support; data mining; and on-line analytical processing. Prerequisite: ISQA 415. [NEW]

ISQA 428

Principles and Practices of Information Security (4)

An introduction to the theories, concepts, and practices relating to the deployment and management of information security systems. Topics include: threat analysis and risk management; encryption and security technology; system design, implementation, and maintenance; and the legal, ethical, and social implications of information security. Prerequisite: ISQA 380. [NEW]

ISQA 430

Industrial Transportation and Freight (4)

Develops an understanding of various modes of transportation, primarily focused on business applications and the movement of freight. Operational characteristics of the modes are evaluated, freight rate derivation and analyses are understood, and organizational evaluations of transportation strategies are studied. Transportation contract forms are analyzed and transportation risks are evaluated. Prerequisites: BA 339. [NEW]

### **EDUCATION**

Read 551

Literacy Instruction for Special Needs Students K-12 (3)

Designed to prepare effective and reflective teachers in language and literacy instruction for students with special needs. Participants will explore multiple perspectives, practices, and methodological approaches to literacy instruction which are research-based, and proven effective to promote literacy development. Topics include (but are not limited to): 1) language and literacy development; 2) characteristics of special needs students; 3) framework of effective literacy instruction within context of students with special needs; 4) methods of effective basic literacy skills instruction; 5) methods of teaching comprehension and critical thinking strategies; 6) methods of promoting learning and meta-

cognitive strategies for lifelong learning, and 7) methods of appropriate and meaningful assessment. [NEW 2 YRS. AGO – DESCRIPTION NOT IN CATALOG]

### **Educational Policy, Foundations, and Administrative Studies**

EPFA 516/616

Collaborative Ethnographic Research Methods (4)

Explores if and how a participatory and collaborative form of research will foster knowledge democracy, and give ownership to those whose knowledge it is. Methodologies covered are: different genres of qualitative methods, community-based planning and research, participatory action-research, Gaian participatory science, classical ethnography, auto-ethnography, ethnographic performance, life histories, feminist methodologies, and “dialogue circles.” [NEW]

EPFA 517/617

Ecological and Cultural Foundations of Learning (4)

Explores how we teach and learn ecologically and what constitutes ecological and cultural ways of knowing. One of the key foundational courses for LECL specialization, this course is beyond simply justifying or advocating that our education should be grounded in ecological principals. Rather it offers an opportunity to engage in critical and comparative analyses of what has been already accomplished and the new areas of innovations in environmental education, mature education, outdoors education, naturalist training and other such genres. [NEW]

EPFA 519

Sustainability Education (4)

Course covers local, national and global innovation in light of the UN decade for Education for Sustainability (2005-15). We also critically assess earlier traditions such as nature education, environmental education, outdoor education, place-based education, and ecological literacy. Students are involved in developing curriculum and teacher preparation modules for K-12. [NEW]

EPFA 573

Educational Leadership Project I (1)

Focus on the development, in a school or agency setting, of an Educational Leadership Project demonstrating knowledge, skills, and dispositions required by the TSPC Initial Administrator License Standards. The first quarter of a three quarter project designed in conjunction with a practicum supervisor to address a leadership challenge area in teaching and learning for student success within an assigned practicum setting. Students will define the challenge area, research the problem context and related literature, and develop an action plan. Prerequisite: admission to Initial Administrator Licensure Program. [NEW]

EPFA 574

Education Leadership Project II (1)

Focus on the implementation, in a school or agency setting, of an Educational Leadership Project demonstrating knowledge, skills, and dispositions required by the TSPC Initial Administrator License Standards. The second quarter of a three quarter project designed in conjunction with a practicum supervisor to address a leadership challenge area in teaching and learning for student success within an assigned practicum setting. Students will implement their action plan by collecting, organizing, and analyzing data. Prerequisite: admission to the Initial Administrator Licensure Program, EPFA 573. [NEW]

EPFA 575

Educational Leadership Project III (1)

Focus on final analysis of an Educational Leadership Project demonstrating knowledge, skills, and dispositions required by the TSPC Initial Administrator License Standards. The third quarter of a three quarter project designed in conjunction with a practicum supervisor to address a leadership challenge area in teaching and learning for student success within an assigned practicum setting. Students will analyze the outcome of their year-long project, suggest implications for further research, and reflect on the entire project. Prerequisite: admission to the Initial Administrator Licensure Program, EPFA 573 and EPFA 574. [NEW]

EPFA 582

Teaching, Learning and Curriculum I (2)

Examines the role of effective school leadership for best practices in teaching, learning and curriculum which promote the success of all students. Students will examine those factors which make supervision and evaluation really work, i.e., contribute to the larger purpose of building an environment where teachers can deliver their best and children can learn the most. Prerequisite: admission to Initial Administrator Licensure Program. Must be taken concurrently with EPFA 570. [NEW]

EPFA 583

Teaching, Learning and Curriculum II (2)

Examines the complex relationships between staff evaluation, individual professional development, staff development, and effective teaching, learning, and curriculum. Students will formulate a working knowledge of the change process, staffing, program, and faculty needs within an educational setting through problem-based learning. Prerequisites: admission to Initial Administrator Licensure Program, EPFA 570 and EPFA 582. Must be taken concurrently with EPFA 572. [NEW]

## **ENGINEERING AND COMPUTER SCIENCE**

### **Civil and Environmental Engineering**

CE 433/533

Cold-formed Steel Design (4)

Design of cold-formed steel beams, columns, beam-columns, cylindrical tubular members and connections based on the Allowable Stress Design (ASD) and the Load and Resistance Factor Design (LRFD) methods of the AISI specification. Prerequisite: CE 333. [NEW]

CE 450/550

Transportation Safety Analysis (4)

Incorporating safety in highway engineering and transportation planning that includes highway design, operation, and maintenance, as well as human factors, statistical analysis, traffic control and public policy. Design concepts of intersections, interchanges, signals, signs and pavement markings; analyzing data sets for recommendations and prioritization; principles of driver and vehicle characteristics in relation to the roadway. Prerequisite: CE 351, senior or graduate standing. [NEW]

CE 453/553

Freight Transportation and Logistics (4)

Components and performance characteristics of the U.S. freight transportation system, with emphasis on data needs, planning, design and operation of the entire supply chain. Discussion of impact of freight on passenger transportation system and economy. Modal emphasis includes freight rail, motor freight, ocean freight and air freight. Terminal operations. Roles of public and private actors in freight system. Prerequisite: CE 351. [NEW]

### **Electrical and Computer Engineering**

ECE 171

Digital Circuits (4)

Prerequisite: Mth 111. [ADD PREREQUISITE]

ECE 222

Signals and Systems I (4)

Prerequisite: ECE 221, ECE 201; Mth 256 or concurrent. [CHANGE PREREQUISITE]

ECE 223

Signals and Systems II (4)

Prerequisite: ECE 222, ECE 202. [CHANGE PREREQUISITE]

ECE 311

Feedback and Control (5)

Prerequisite: ECE 222, Mth 256 [CHANGE PREREQUISITE]

#### ECE 321

##### Electronics I (4)

Introduction to solid state electronics, leading to the physical properties and characteristics of solid state electronic devices: diodes, bipolar junction transistors and field effect transistors. Analysis and design of analog systems and operational amplifier based amplifiers, active filters, oscillators and rectifier topologies. Application of a computer-aided design (CAD) tool, such as SPICE.

Prerequisite: ECE 222. [DESCRIPTION AS SHOWN, CHANGE PREREQUISITE]

#### ECE 322

##### Electronics II (4)

Study of digital circuits used in various logic families. Analysis of electronic amplifiers using small-signal models of electronic devices. Differential and operational amplifier design techniques involving current mirrors and active loads. Frequency response of analog circuits, review of transfer functions and Bode analysis. Computer-aided design.

Prerequisite: ECE 321, ECE 301. [DESCRIPTION AS SHOWN, CHANGE PREREQUISITE]

#### ECE 323

##### Electronics III (4)

Introduction to feedback amplifier analysis and design. Stability criteria for feedback topologies. Design and analysis of sinusoidal waveform generators. Introduction to phase-locked loops. Study of digital circuits used in various logic families. Computer-aided design. Prerequisite: ECE 322, ECE 302, ECE 223, ECE 203. [DESCRIPTION AS SHOWN, CHANGE PREREQUISITE]

#### ECE 331

##### Engineering Electromagnetics I (4)

Theory and applications of transmission lines and their effects on signal integrity, review of vector calculus, static Maxwell's equations, theory and applications of electrostatics and magnetostatics. Prerequisites: Mth 256, Ph 223. [CHANGE TITLE, PREREQUISITES]

#### ECE 411

##### Industry Design Processes (2)

Prepares students for ECE 412 Senior Project Development I and ECE 413 Senior Project Development II classes. Topics covered include: design documentation standards; building and managing effective teams; product development steps; developing a project proposal; the design process; Intellectual Property, Non-Disclosure Agreements, and professional ethics; Design for X; and design for the environment. Class has weekly lectures and a small team-based term project. Prerequisite: Wr 227, senior standing in the University, and completion of all junior-level required ECE classes. For non-ECE majors, consent of instructor. [DESCRIPTION AS SHOWN, CHANGE PREREQUISITE]

#### ECE 412

##### Senior Project Development (2)

In this course, groups of three to five students will apply the structured design methodology learned in ECE 411 or UnSt 421 to original projects with the assistance of faculty and industrial/community advisers. After initial research each student group will prepare a written and oral project proposal. Each student is required to keep a log of his or her individual design work and to turn in weekly progress reports. At periodic intervals, each group will give an oral progress report to the entire class. Prerequisite: ECE 411, ME 491, or UnSt 421 (Industry Design Processes), Wr 227. [DESCRIPTION AS SHOWN, CHANGE PREREQUISITE]

#### ECE 421/521

##### Analog Integrated Circuit Design I (4)

Modeling of IC devices: transistors, capacitors, resistors. Temperature and device parameter variation effects. Building blocks of analog integrated circuits: current sources and mirrors, gain stages, level shifters, and output stages. Design of supply and temperature independent biasing schemes. CAD tools for circuit design and testing. Prerequisite: ECE 323. [DESCRIPTION AS SHOWN]

ECE 422/522

Analog Integrated Circuit Design II (4)

Analysis and design of BJT and MOS operational amplifiers, current-feedback amplifiers, wideband amplifiers and comparators. Frequency response of amplifiers. Feedback techniques, analysis and design. Stability and compensation of amplifiers, high slew-rate topologies. Noise in IC circuits. Fully differential circuits, analog multipliers and modulators. CAD tools for circuit design and testing. Prerequisite: ECE 421/521. [DESCRIPTION AS SHOWN]

ECE 425/525

Digital Integrated Circuit Design I (4)

Prerequisite: ECE 323, Stat 451. [CHANGE PREREQUISITE]

ECE 451/551

Control Systems Design I (4)

State space description of linear systems. Controllability and observability. State feedback used in controller and observer design by pole placement. Optimal control, linear quadratic regulator, linear quadratic estimator (Kalman filter), linear quadratic Gaussian, and linear quadratic Gaussian with loop transfer recovery design procedures.

Prerequisite: ECE 311, Mth 261 or Mth 343. [CHANGE PREREQUISITE, DESCRIPTION AS SHOWN]

ECE 452/552

Control Systems Design II (4)

Discrete-time control systems, z transforms, difference equations, pulse transfer function, sampling, data hold, block diagram reduction. Jury stability test. Various approaches to classical control design of discrete time controllers. State space analysis and design in discrete-time.

Prerequisite: ECE 451/551. [DESCRIPTION AS SHOWN]

ECE 461/561

Communication Systems Design I (4)

Prerequisite: ECE 223. [CHANGE PREREQUISITE]

ECE 478/578

Intelligent Robotics I (4)

Basic problems of intelligent robotics. Hardware for Artificial Intelligence and Robotics. Formulation and reduction of problems. Tree-search. Predicate calculus and resolution method. Methods of formulating and solving problems in logic programming. Fuzzy Logic. Logic programming and artificial intelligence in robot systems. Reasoning by analogy and induction. Associative processors. Prerequisite: ECE 372. [CHANGE PREREQUISITE, DESCRIPTION AS SHOWN]

ECE 485/585

Microprocessor System Design (4)

Prerequisite: ECE 372. [CHANGE PREREQUISITE]

ECE 530

Fault Tolerant Systems (4)

Introduction to the design and analysis of dependable systems; study of failure modes in embedded and distributed computer systems and linear control systems; introduction to fault detection, fault masking and fault recovery strategies; case studies of fault tolerant systems. Prerequisite: graduate standing. [NEW LAST YEAR – NOT IN CATALOG]

ECE 563/663

Information Theory (4)

Prerequisite: graduate standing. [ADD PREREQUISITE]

ECE 565/665

Signals and Noise (4)

Prerequisite: ECE 223. [CHANGE PREREQUISITE]

ECE 568/668

Introductory Image Processing (4)

Prerequisite: ECE 223. [CHANGE PREREQUISITE]

ECE 572/672

Advanced Logic Syntheses (4)

Boolean and multi-valued algebras. Cube calculus and its computer realization. Basic operators and algorithms of function minimization. Decomposition and factorization theories. Multilevel minimization. Orthogonal expansions and tree circuits. Cellular logic and its applications to Field Programmable Gate Arrays. Spectral theory of logic optimization. Ordered Binary and Multiple-Valued Decision Diagrams. Design for speed, testability, power consumption, reliability, Reed-Muller forms, and EXOR circuits. Technology mapping. Modern logic synthesis programs, systems, and methodologies. Project that continues in ECE 573. Prerequisite: ECE 271. [CHANGE PREREQUISITE, DESCRIPTION AS SHOWN]

ECE 575/675

Introduction to Integrated Circuit Test (4)

Prerequisite: ECE 425/525, ECE 416/516. [CHANGE PREREQUISITE]

## **FINE AND PERFORMING ARTS**

### **Art**

ArH 292

History and Contemporary Issues in Photography (4)

The history of photography focusing on its exemplary masters, the impact of photographic technologies and techniques, contemporary issues of aesthetics and ethics in photography, the role of photography in the fine arts and design, and emerging photographic media. [NEW]

Art 301

Processes and Practices of the Creative Industries (4)

This course provides an overview of creative industries, its practices, production, and consumption, and its importance to global knowledge-based economies. Students are introduced to key creative industries theoretical and analytical frameworks and will learn how these frameworks converge and can be applied in creative industries – as well as the importance of multi-disciplinary collaborations to creative industries. Students will gain the foundational vocabulary and skills to critique, present and discuss creative industries ideas and case studies. [NEW]

Art 365

Digital Portfolios for Visual Artists (4)

Studio course for visual artists focusing on design and development of digital portfolios. Concepts of portfolio development, graphic design, and interactive design are applied to create an effective communication of the artist's body of work. Digital production techniques are practiced as portfolios are assembled and published in a variety of print, time-based, and interactive formats. [NEW]

### **Music**

MuEd 228

Introduction to Music Education (2)

Overview of the music education profession, with emphasis on the various levels, genres, options, and requirements of the field. Concurrent enrollment in an appropriate practicum (Mus 409) required. Prerequisites: Mus 111, 112, 113. [CHANGE PREFIX AND NUMBER FROM MUS 328, TITLE, DESCRIPTION]

MuEd 332

String Techniques (3)

Study of the stringed instrument family for students in the teacher education program. Special emphasis will be given to the teaching of these instruments to groups of young and/or inexperienced students. [CHANGE PREFIX FROM MUS, TITLE, DIVISION OF SEQUENCE, DESCRIPTION]

MuEd 333

Guitar Techniques (3)

Study of the guitar and the methods and materials used to teach guitar to young and/or inexperienced students. Required for students in the Music Education Program. [CHANGE PREFIX FROM MUS, TITLE, DIVISION OF SEQUENCE, DESCRIPTION]

MuEd 334

Vocal Techniques K-12 (1)

Study of vocal techniques for students in the teacher education program. Special emphasis will be given to teaching voice to groups of young and/or inexperienced students from childhood through high school. [NEW]

MuEd 335

Percussion Techniques (3)

Study of the percussion instruments of orchestra and band for students in the teacher education program. Special emphasis will be given to the teaching of these instruments to groups of young and/or inexperienced students. [CHANGE PREFIX AND NUMBER FROM MUS 235, 236, 237, TITLE, DESCRIPTION]

MuEd 336

Flute and Double Reeds (1)

Study of how to teach and play flute and double reeds (bassoon and oboe) for students enrolled in the teacher education program. [NEW]

MuEd 337

Clarinet and Saxophone (1)

Study of how to teach and play clarinet and saxophone for students enrolled in the teacher education program. [NEW]

MuEd 338

High Brass Techniques (1)

Study of how to teach and play trumpet and horn for students enrolled in the teacher education program. [NEW]

MuEd 339

Low Brass Techniques (1)

Study of how to teach and play trombone, euphonium and tuba for students enrolled in the teacher education program. [NEW]

MuEd 340

Wind Instrument Techniques (3)

For students in the Choral/General Music Education track. Techniques of brass and woodwind instruments for groups of young students with special emphasis on resources, beginning techniques, and appropriate literature. [NEW]

MuEd 341

Jazz Techniques (1)

Study of techniques used in the teaching of middle and high school instrumental jazz music. Includes rehearsal techniques, basic arranging, swing concepts, rhythm section concepts, and improvisation. Prerequisite: instructor approval. [NEW]

MuEd 420/520, 421/521

Choral Literature and Rehearsal Techniques (3, 3)

Students will learn the essentials of rehearsing large choral groups from grades 6-12 and requisite materials and techniques for starting and building a choral program. Prerequisites: Mus 322, MuEd 328, 334. [NEW]

MuEd 422/522, 423/523

Instrumental Literature and Rehearsal Techniques (3, 3)

Study of critical thinking about many aspects of music education and developing a repertoire of teaching techniques and leadership skills—for students enrolled in the teacher education program. Prerequisites: Mus 321, MuEd 328, 335.

[NEW]

Mus 240, 241, 242

Composition I (2, 2, 2)

Prerequisites: Mus 113 and 116. Must be taken in sequence. [CHANGE NUMBER FROM 414/514, 415/515, 416/516, PREREQUISITES]

Mus 311

Formal Analysis (3)

Thorough study of formal analysis, including phrases and periods, variations, two- and three-part song forms, developed ternary forms, sonata, rondo, and the concerto. Prerequisites: Mus 211, 212, 213. [CHANGE TITLE, CREDIT HRS FROM 2 TO 3, DESCRIPTION]

Mus 312

Orchestration (3)

Fundamentals of arranging music for instrumental ensembles. Emphasis on basic principles of orchestration and their practical applications. Prerequisite: Mus 213. [CHANGE TITLE, CREDIT HRS FROM 2 TO 3, DESCRIPTION, PREREQUISITE]

Mus 313

Counterpoint (3)

Intensive study of polyphonic music. Analysis and application in writing contrapuntal exercises using two, three, and four voices. Prerequisites: Mus 211, 212, 213. [CHANGE CREDIT HRS FROM 2 TO 3, DESCRIPTION]

Mus 314

Harmonic and Structural Analysis (2) [DELETE COURSE]

Mus 315

Harmonic and Structural Analysis (2) [DELETE COURSE]

Mus 318

Instrumental Arranging (2) [DELETE COURSE]

Mus 420/520

Analytical Techniques (3)

Study of the formal structure of musical compositions of various styles with the purpose of discovering the sources of unity, variety, order, and expression present in them. Prerequisites: Mus 311 is required for 420. Successful completion of the department's graduate entrance examination is required for 520. [ADD 420, CHANGE DESCRIPTION]

Mus 421

Analysis of Contemporary Music (3)

Thorough study of the compositional techniques and structural devices used in contemporary music. Topics include formal, harmonic, and rhythmic aspects of modern music. Serialism, set theory, texture, and indeterminacy are also addressed. Prerequisites: Mus 211, 212, 213. [CHANGE NUMBER FROM 316, TITLE, CREDIT HRS FROM 2 TO 3, DESCRIPTION]

Mus 540

Jazz Literature (3)

Study and analysis of the classic Jazz compositions and recordings. Prerequisite: Mus 355. [NEW]

Mus 567

Jazz History (2)

Advanced studies in Jazz History. Course involves individual research projects culminating in student class presentations. Historical research projects will be coordinated through PSU's Leroy Vinnegar Jazz Institute. Prerequisite: Mus 355. [NEW]

### Theater Arts

TA 102

Introduction to Acting (4)

A study in the basic building blocks of how to approach, prepare, and act a role. Text analysis, improvisation, exercises to expand the imaginative world of the play, preparation, commitment to an action, commitment to body and voice exercises to increase awareness, and how to work collaboratively. [NEW]

TA 248

Acting I: Process (4)

The first acting class for the major. Emphasis on the building blocks of actor technique leading into scene work: text analysis for the actor, preparation, commitment, character arc, boldness, rhythm, living a life onstage, and collaboration. This course is rigorous and demands outside time commitment for rehearsal. Prerequisites: TA Major; TA 111,112; sophomore standing. [NEW]

TA 333

Workshop Theater: Directing/Stage Management/Dramaturgy (1)

For PSU Theater Department productions. Offerings include stage manager, assistant director, dramaturg, choreography, and music direction. Participants are required to audition or interview for Main Stage and/or Studio productions. Information about auditions/interviews is provided on the Theatre Call Board outside of LH 127. Meeting times are arranged by the director. Most performances and rehearsals are in the evening; therefore, evening classes will usually conflict. Technical rehearsal for mainstage productions requires a full weekend technical schedule. Course is repeatable for credit. [NEW]

TA 334

Workshop Theater: Scenery & Lighting Production (1)

For PSU Theater Department productions. Offerings include scene construction and painting, costume construction and crew, stage/run crews, props, sound design and crew, lighting design and crew. Meeting times depend upon the assignment for which the student is registered, and may include daytime, evening, and/or weekend. Technical rehearsal for mainstage productions requires a full weekend technical schedule. Course is repeatable for credit. [NEW]

TA 335

Workshop Theater: Management/Publicity (1)

For PSU Theater Department productions. Offerings include house management, public relations, audience development, publications, educational outreach, and display. This course meets each term for one hour per week as a group, with the remaining meeting times depending upon the specific assignments for the term in question. Meeting times depend upon the assignment for which the student is registered, and may include daytime, evening, and/or weekend. Course is repeatable for credit. [NEW]

TA 336

Workshop Theater: Costume Production (1)

For PSU Theater Department productions. Offerings include wardrobe crew head, wardrobe crew, makeup head/crew, wigs head/crew, assistant designer, cutter/drapper, dyer, costume artisan, milliner, stitcher. [NEW]

TA 340

Acting II: Scene Study (4)

Building on TA 248, coursework deepens the student actor's understanding of arc, character development, commitment, rhythm of sound and language, and choices that ignite the text. Class demands commitment to intense scene work outside the classroom. Must be taken in sequence. Prerequisites: TA Major, TA248, and permission of instructor. [NEW]

## **SOCIAL WORK**

SW 539

Diversity and Social Justice (3)

Explores diversity and oppression based on race, ethnicity, gender, sexual orientation, religion, (dis)ability status, and social class; models for intergroup relations; the historical context of group relations; and cultural variables significant to ethnic, racial and cultural minority populations. Examines social, political, and cultural processes as they affect intergroup and intragroup relations. Explores the role of social worker as border crosser, cultural learner, and agent of change. Opportunities for cross-cultural dialogue and content analysis and skills development. Requires examination of the meaning systems in which each of us is immersed, as well as examination of those meaning systems that social workers must strive to understand. [NEW]

SW 540

Human Behavior in the Social Environment: Micro Theory (3)

Presents and critiques basic knowledge of human development from infancy to late adulthood in the context of individuals and families and identifies relationships between theoretical frameworks and the biopsychosocial environment. Considers populations at risk and the impacts of racism and other forms of oppression on development. Provides students with knowledge of how developmental frameworks organize information about human dynamics, while still stressing the multicausal nature of behavioral outcomes. Prerequisite: SW 539. [NEW]

SW 541

Human Behavior in the Social Environment: Macro Theory (3)

Presents and critiques basic knowledge of the development, behavior and change process of groups, communities and organizations. Uses social theory to provide students with conceptual frames for analyzing how the actions of both clients and social work practitioners are conditioned and constrained as well as enabled and empowered by broader social forces. Considers the effect of mezzo and macro level forces on the development and functioning of populations at risk. Prerequisite: SW 539. [NEW]

SW 551

Data Analysis in Social Work Research (3)

Focuses on techniques of quantitative data analysis and introduces methods of qualitative data analysis. Considers interpreting and using results to improve social work practice including program evaluation. Covers descriptive statistics, probability theory and hypothesis testing, and inferential methods. Includes discussion of culturally sensitive research and ethical issues in social work research. Prerequisite: SW 550. [NEW]

## **URBAN AND PUBLIC AFFAIRS**

### **Community Health Education**

PHE 445/545

Men's Health (4)

The focus of this course is current men's health issues. Students have opportunities to critically explore a broad array of men's health concerns across the lifespan from a multi-disciplinary perspective. May include such topics as reproductive health, violence, aging, heart disease, depression and sexuality. The class is taught in an interactive format through group discussion, presentations, and the participation of guest speakers. Focuses on the consideration and critique of current influences on men's health including the effect of the health care system, male socialization, the impact of social and cultural factors, and the influence of evolving technology. [NEW]

### **Criminology and Criminal Justice**

AJ 435

Crime, Grime, and Fear (4)

Crime, grime, and fear is a course designed to study the social, economic, political, and physical factors underlying neighborhood crime and decline. Special attention is given to physical and social incivilities, the "broken windows" theory, police-community partnerships, and problem-solving. Students will work on neighborhood-centered projects to

explore solutions to neighborhood crime patterns, disorder, and fear of crime, and ideas for strengthening police-citizen relations, and community building. Recommended: AJ 340. [NEW]

AJ 520/620

Analysis of Crime and Justice Data (4)

An applied approach to the analysis of criminal justice data. Includes an overview of the collection, storage, and retrieval of data from various sources (e.g., police, courts, corrections). Basic techniques commonly used to analyze and present criminal justice data are covered with an emphasis on the use of empirical findings to solve problems and develop policy. Advanced statistical procedures introduced. [NEW]

### **Political Science**

PS 103

State of the World (4)

The course surveys and analyzes the major global issues of our time, including human rights, environmental protection, poverty and underdevelopment, and war and peace. The importance of using interdisciplinary tools of analysis, and understanding the meaning of a global perspective on world affairs, are emphasized. [NEW]

### **Public Administration**

PA 311

Introduction to Civic Leadership (4)

Students will examine leadership in democratic societies, the ways in which people put concepts of civic responsibility into practice, and the challenges of community-building and leadership development in the context of our evolving democratic society. Students will explore leadership through various perspectives, including diversity, individualism, trust, and participation. A central goal of this course is to help prepare students for a lifetime of responsible citizenship and civic engagement. [NEW]

PA 412

Civic Engagement: The Role of Governing Institutions (4)

This course develops understanding of how local governments carry out their governance responsibilities and the roles they play within the larger scheme of the American democratic system. The goal is to assess how the structures and processes of local governments affect opportunities for democratic accountability, citizen participation, the development of civic capacity, citizenship and civic leadership. Prerequisite: PA 311. [NEW]