Graduate Council Curriculum Report

The Graduate Council Curriculum Report (GCCR), which includes all graduate curricular proposals approved through the Graduate Council curricular review process, is published 12 times each calendar year.

Questions/comments regarding the GCCR or its contents may be directed to the Director of Graduate Council Administration.

June 5, 2019

Graduate Degree Programs

CHANGE

Social and Behavioral Neuroscience – change degree requirements (College of Health and Human Development), page 15

Software Engineering – change admission and degree requirements (Penn State Great Valley), page 22

Graduate Courses

ADD

AE 576
Building Information Modeling Execution Planning
BIM PLANNING (3)
AE 576 is designed for students who wish to gain a thorough understanding of research and application of Building Information Modeling (BIM) on Architecture/Engineering/Construction (AEC) projects and within AEC organizations. This course explores advanced topics related to the BIM Project Execution Planning Procedure, including research into advanced BIM and information management approaches. Students will learn how to design a BIM approach to maximize value to a project. Additionally, AE 576 examines the organizational strategy, execution and project procurement to leverage BIM implementation. Students will research planning approaches for organizations to develop their BIM strategy through assessing organizational maturity, aligning BIM vision and objectives to organization’s mission and goals, and develop organizational roadmaps to integrate BIM within an organization. The course delves into planning detailed BIM implementation within the operations of an organization through establishing organizational goals and BIM objectives; identifying BIM uses; designing processes; and determining information, infrastructure, and personnel needs. Students should have a general understanding of the AEC industry as a prerequisite to taking this course.
RECOMMENDED PREPARATIONS: General understanding of the Architecture/Engineering/Construction (AEC) industry.
PROPOSED START: FA2019

AERSP 552
Interplanetary Astrodynamics
INTERPLANETARY ASTRODYNAMICS (3)
This course focuses on mathematics and practices in interplanetary astrodynamics. Major topics include: astrodynamics applied to interplanetary space missions, the N-body problem, orbit transfers, Lambert’s problem, gravity assists, planetary entry, descent and landing, planetary ephemerides, tracking sources and measurements, and spacecraft navigation. Other topics may be covered as time permits.
RECOMMENDED PREPARATIONS: AERSP 450 Sufficient proficiency in computer programming to code and debug a complex computer program. Fundamental knowledge in astrodynamics, as would be found in an
junior or senior astrodynamics course.

PROPOSED START: FA2019

**BGEN 595**

Internship

**INTERNSHIP (1-18/Repeatable Max: 18)**

Supervised, research-oriented, off-campus, nongroup instruction, including field experiences, practicums, or internships. Written and oral critique of activity required.

PROPOSED START: FA2019

**BGEN 596**

Individual Studies

**INDIVIDUAL STUDIES (1-9/Repeatable Max: 9)**

Creative projects, including nonthesis research, that are supervised on an individual basis and which fall outside the scope of formal courses.

PROPOSED START: FA2019

**BGEN 600**

Thesis Research

**THESIS RESEARCH (1-15/Repeatable Max: 999)**

No Description

PROPOSED START: FA2019

**BGEN 601**

Ph.D. Dissertation Full-Time

**THESIS DISSERTATION FULL-TIME (0/Repeatable Max: 999)**

No Description

PROPOSED START: FA2019

**BGEN 602**

Supervised Experience in College Teaching

**SUP EXP COL TEACH (1-3/Repeatable Max: 6)**

Supervised experience in teaching and orientation to other selected aspects of the profession at The Pennsylvania State University.

PROPOSED START: FA2019

**BGEN 611**

Ph.D. Dissertation Part-Time

**PHD DISSERTATION PART-TIME (0/Repeatable Max: 999)**

No Description

PROPOSED START: FA2019

**MFE 830**

Financial Engineering Capstone Project

**CAPSTONE PROJECT (3)**

This course will be an intensive/exploration/hands on course that will consist of two phases, Phase I will be a preparation phase in which the student will acquire on his/her own all the financial terminology to be used throughout the semester. Examples of the topics to be covered in this phase include asset pricing, statistical analysis of high-frequency data, merger and acquisitions, portfolio formation, assessment and traditional portfolio theory, and market anomalies. In Phase II students are required to select a topic from these areas and conduct a research project.

PREREQUISITES: MFE 513, MFE 527, MFE 801, STAT 805

PROPOSED START: FA2019
MGMT 885
Management Consulting Methods and Practice
MGMT CONSULTING METHODS (1-3)
MGMT 885 explores the methods and tools commonly used in the practice of management consulting. This course is intended for students interested in working in this field or working in organizations that hire management consultants. It is organized into the following topical areas:
Management Consulting as a Discipline—In this area, students learn how management consulting fits into the overall business marketplace and why/how firms engage management consultants as a resource.
Tools, Methods, and Practices for Managing the Engagement—In this area, students learn methods and practices commonly used to manage a project/engagement in a management consulting context. This area covers topics related to understanding the overall life cycle of a consulting engagement, as well as tools and techniques used to manage scope, time, people, finances, risks, and overall activity on a consulting project.
Tools, Methods, and Practices for Research and Information Gathering—In this area, students explore tools and techniques used by management consultants to conduct both secondary and primary research as means for investigation and learning.
Tools, Methods, and Practices for Analysis and Solution Generation—In this area, students learn tools, frameworks, and methodologies commonly used by management consultants to assess a client’s needs, to analyze information, to generate potential solutions, and to evaluate potential solutions in a given context.
Tools, Methods, and Practices for Change Management—In this area, students learn theories, models, and frameworks related to overcoming barriers to change and to implementing change within a business organization.
Tools, Methods, and Practices for Client Communication—In this area, students learn tools and techniques used by management consultants to communicate with their client in order to effectively manage an engagement, to influence stakeholders, and to enhance impact of their work.
PROPOSED START: FA2019

PLSC 508
Political Networks
POLITICAL NETWORKS (3)
A network is a set of relationships among units. The study of networks in political science, the social sciences, and beyond has grown rapidly in recent years. This course is a comprehensive overview of methods for analyzing network data. We will cover network data collection and management, the formulation and expression of network theory, network visualization and description, and methods for the statistical analysis of networks. The course will make extensive use of real-world applications and students will gain a thorough background in the use of network analytic software. Most of the applications discussed will be drawn from political science and sociology, but this course will be relevant to anyone interested in the study of network data.
RECOMMENDED PREPARATIONS: Students taking this course should have knowledge of hypothesis testing and regression, and experience with at least one statistical or scientific programming language (e.g., R, Stata, SAS, Python, Matlab).
PROPOSED START: FA2019

PSY 818
Leadership Assessment and Development
LEADERSHIP ASSESS. & DEVEL. (3)
Organizations use personality and other types of assessments for a variety of purposes, including employee selection, team building, and employee development. Many assessments are well-developed with extensive research to support their use for specific purposes. These assessments can add tremendous value to organizations and individuals by providing insights related to interests, traits, and other characteristics. There are also many popular personality inventories that are used for purposes that the publisher does not intend and/or that research does not support.
This course will serve two primary goals. First, by educating class participants concerning the advantages and
limitations of a variety of popular personality inventories and other types of assessments, students will become educated consumers, better able to make choices for themselves and their organizations concerning appropriate assessment methodologies. Second, by completing different assessments during the course, students will gain personal insights concerning their individual strengths, talents, interests, and developmental needs.

Examples of the course topics that will be addressed include: an overview of leadership competency models, including models such as Bartram’s Great Eight which is used in Penn State’s Leadership Assessment Center; measurement issues, including topics such as reliability and validity; strengths and limitations of different assessment techniques; multi-rater feedback, including creating and administering a short feedback survey; theories underlying different approaches to measuring personality traits and styles; how to integrate different assessment sources; setting goals; and creating a professional development plan.

PREREQUISITES: PSY 532, PSY 539
PROPOSED START: FA2019

CHANGE

OLD
EDUC 505
Curriculum Foundations
CURR FOUND (3)
Provides a comprehensive overview of the philosophical, historical, psychological, and social foundations that affect the school curriculum. EDUC 505 Curriculum Foundations (3)This course provides a comprehensive overview of the philosophical, historical, psychological, and social foundations that affect the school curriculum. The course calls attention to the global and multicultural perspective in education. It involves the study of the implications and applications of these curricular foundations in the form of issues and theoretical trends that shape the field of curriculum. Participation in the course activities allows candidates to identify and analyze their personal values, beliefs, and perspectives, as well as theories and research which shape their own professional practice as educators within diverse educational settings with children. By the end of the course, participants will be able to 1) develop and demonstrate understanding of how major foundations (disciplines) shape the curriculum of schooling, including philosophy, history, politics/policy, social psychology, and cultural studies; 2) consider and critique selected educational issues, both past and present, examining how they are anchored in and influenced by the foundations of curriculum; 3) investigate how social, economic, cultural, and political/policy debates and representations in the public sphere help to shape the foundations of curriculum; 4) engage in critical inquiry regarding the future roles of teachers, students, and other stakeholders in the learning community and society at large, and exercise the faculty of imagination as a means of thinking "outside the box" for educational purposes; 5) continue to develop professional scholarly attitudes, skills, and dispositions, including critical analysis and constructive use of questioning; scholarly use of research; dedication to continuous learning; positive group interaction and participatory collaboration; and reflective envisioning and enacting of curricular reform; 6) examine issues of race/ethnicity, linguistic variation, social class, gender, and sexual orientation and their relationships to the curriculum and schooling; and 7) continue to develop a professional scholarly writing style with a practical focus sharpened by theoretical awareness, using the APA Writing Manual as a style guide. The key assessment in the course is a critical analysis paper in which participants apply aspects of curriculum theory to their personal philosophies of education and how both impact practical applications in the schools. Other assessments include midterm or final examinations, quizzes, class presentations, online activities, discussion forums (Message Board), collaborative class activities, research papers, journal reflections, cultural learning process activities, application papers, or class participation.
PREREQUISITES: EDUC 520

NEW
EDUC 805
Pattern Recognition and Machine Learning
Curriculum Foundations
CURRICULUM FOUNDATIONS (3)
This course provides a comprehensive overview of the philosophical, historical, psychological, and social foundations that affect the school curriculum. The course calls attention to the global and multicultural perspective in education. It involves the study of the implications and applications of these curricular foundations in the form of issues and theoretical trends that shape the field of curriculum. Participation in the course activities allows candidates to identify and analyze their personal values, beliefs, and perspectives, as well as theories and research which shape their own professional practice as educations within diverse educational settings with children. By the end of the course, participants will be able to 1) develop and demonstrate understanding of how major foundations (disciplines) shape the curriculum of schooling, including philosophy, history, politics/policy, social psychology, and cultural studies; 2) consider and critique selected educational issues, both past and present, examining how they are anchored in and influenced by the foundations of curriculum; 3) investigate how social, economic, cultural, and political/policy debates and representations in the public sphere help to shape the foundations of curriculum; 4) engage in critical inquiry regarding the future roles of teachers, students, and other stakeholders in the learning community and society at large, and exercise the faculty of imagination as a means of thinking "outside the box" for educational purposes; 5) demonstrate professional scholarly attitudes, skills, and dispositions, including critical analysis and constructive use of questioning; scholarly use of research; dedication to continuous learning; positive group interaction and participatory collaboration; and reflective envisioning and enacting of curricular reform; 6) examine issues of race/ethnicity, linguistic variation, social class, gender, and sexual orientation and their relationships to the curriculum and schooling; and 7) demonstrate a professional scholarly writing style with a practical focus sharpened by theoretical awareness, using the APA Writing Manual as a style guide.
PREREQUISITES: EDUC 820

OLD
EDUC 506
Curriculum Development and Instructional Design
CURR DEV/INSTR DSG (3)
Examination of theory, issues, problems, organization, and application of instructional design in planning and developing a curriculum. EDUC 506 Curriculum Development and Instructional Design (3)This course is an examination of theory, issues, problems, organization, and application of instructional design for teachers in planning and developing a curriculum. The course also presents examples of effective strategies including concept-based curricula, backward design, interdisciplinary approaches, integrated curricula (curriculum mapping), assessment, and reporting techniques. At the conclusion of the course, participants will be able to 1) describe scientific and non-scientific approaches to curriculum development, design, and implementation; 2) define the universal elements of curriculum development and implementation cycle, including knowing the learner, identifying aims and objectives, selecting content, organizing learning experiences and evaluating; 3) discuss the history, philosophy, and scope and sequence of various models of curriculum; 4) describe the contributions of numerous educators to the development of curriculum, including Tyler, Tabba, Eisner, Doll, Cornbleth, and McDonald; 5) analyze the complexity of curricular design, articulation, continuity and balance, and their relationships to materializing an educational vision and philosophy; 6) describe the importance of community resources and their relationship to the curriculum; 7) examine governments' roles (federal, state, and local) in curriculum, including Pennsylvania Chapter 4; 8) discuss approaches to and methodological issues involved in curriculum evaluation; and 9) examine the problems, prospects, and future trends and challenges of implementing innovative curricula and school reform. The key assessment for the course is a curriculum development outline in which participants develop a curriculum for 15-16 weeks in their areas of interest and present the curriculum to the class. Other assessments include midterm or final examinations, class presentations, online activities, group reports, research papers, journal reflections, application papers, or class participation.
PREREQUISITES: EDUC 505
NEW

EDUC 806
Curriculum Development and Instructional Design
CURRICULUM DEV & INSTR DESIGN (3)
The course focuses on an examination of theory, issues, problems, organization, and application of instructional design for teachers in planning and developing a curriculum. The course presents examples of effective strategies including concept-based curricula, backward design, interdisciplinary approaches, integrated curricula (curriculum mapping), assessment, and reporting techniques.
PREREQUISITES: EDUC 805

OLD

EDUC 520
Learning Theory for the Classroom
CLASSROOM LEARN (3)
An application of learning theories from psychological, sociological, and physiological disciplines to educational settings for children and adolescents. EDUC 520 Learning Theory for the Classroom (3) This course is an application of learning theories from psychological, sociological, and physiological disciplines to educational settings for children and adolescents. At the conclusion of the course, participants will be able to 1) analyze the educational implications of cognitive, language, personal and social/emotional development; 2) describe and distinguish among major learning theories from biological, psychological, and sociological disciplines; 3) employ knowledge of learning theories to analyze learning strategies, strengths, and needs; 4) apply learning theories to optimize learning for all students, that complements their cultural background, race, gender, ethnicity, socioeconomic status or special needs; and 5) analyze through a theoretical lens the impact on student learning of current educational issues and trends. The key assessment of the course is a case study analysis of a student whose learning is not optimized, based on biological, behavioral, cognitive, and sociological learning theories. Other assessments include examinations, research papers, class presentations, classroom inquiry projects and/or performance assessments.
PREREQUISITES: admission to program

NEW

EDUC 820
Learning Theory for the Classroom
CLASSROOM LEARNING THEORY (3)
This course is an application of learning theories from psychological, sociological, and physiological disciplines to educational settings for children and adolescents. At the conclusion of the course, participants will be able to 1) analyze the educational implications of cognitive, language, personal and social/emotional development; 2) describe and distinguish among major learning theories from biological, psychological, and sociological disciplines; 3) employ knowledge of learning theories to analyze learning strategies, strengths, and needs; 4) apply learning theories to optimize learning for all students that complements their cultural background, race, gender, ethnicity, socioeconomic status, or special needs; and 5) analyze through a theoretical lens the impact on student learning of current educational issues and trends. The key assessment of the course is a case study analysis of a student whose learning is not optimized, based on biological, behavioral, cognitive, and sociological learning theories. Other assessments include examinations, research papers, class presentations, classroom inquiry projects and/or performance assessments.
PREREQUISITES: None.

OLD

EDUC 539
Educational Assessment
EDUC ASSESSMENT (3)
This course will prepare students with the knowledge and skills necessary to monitor, assess, and report student achievement. EDUC 539 Educational Assessment (3) This course will prepare students with the knowledge and skills necessary to monitor, assess, and report student achievement.
PREREQUISITES: EDUC 520
NEW

EDUC 839
Educational Assessment
EDUCATIONAL ASSESSMENT (3)
This course will prepare students with the knowledge and skills necessary to monitor, assess, and report student achievement.
PREREQUISITES: EDUC 820

OLD

GEOG 588
Planning GIS for Emergency Management
PLAN GIS EMER MGMT (3)
Requirements analysis and proposal writing to plan and implement GIS solutions supporting emergency management activities of government agencies and contractors. GEOG 588 Planning GIS for Emergency Management (3) Planning GIS for Emergency Management is designed specifically for adult professionals and is offered exclusively through the World Campus as an elective course in Master of GIS degree program. This course introduces the potential of GIS to support all stages of emergency (crisis or disaster) management activities, the latest R&D advances that are helping to achieve this potential now, and some challenges for the future. The course focus is on requirements analysis and proposal writing targeted toward planning and implementing GIS solutions for government agencies and contractors. As a basis from which to pursue these objectives, Planning GIS for Emergency Management introduces the current and potential future roles of GIS in support of crisis (emergency) management activities at all geographic scales (local to international). These roles are considered at each of the four stages of crisis management, including planning and mitigation, preparation, response, and recovery. Then, selected focus topics (e.g., GIS for evacuation planning and support, real time data integration, and international crisis response) are considered in detail. The course provides a framework for understanding use of GIS in crisis management situations and for addressing the applied research needed to enable more effective GIS application in this context. It provides the background and perspective needed by project managers, consultants, and other professionals who are engaged in activities that range from initial requirements analysis (to determine whether and how to implement or extend GIS capabilities for emergency management), through design of training exercises (to develop requisite staff expertise in application of GIS to different kinds of emergency situations), to development of technological enhancements intended to improve the effectiveness of GIS in specific emergency management activities. This course will challenge students to exercise the analytical and writing skills needed to develop successful proposals. Assignments focus on helping students to improve their ability to write and critique proposals to agencies that provide funding to support state and local implementation and application of GIS for Emergency Management and/or to support industry development of new technologies (e.g., the U.S. Department of Homeland Security or State Departments of Emergency Management). A term project involves proposal writing in response to real or hypothetical solicitations for a project that targets GIS tool development, implementation, and/or training to support emergency management activities in local, regional, state, national, or international contexts. Writing skills are honed through instructor critiques and peer reviews. Weekly lessons focus on: (a) critical appraisal of relevant literature about development of GIS for and application to emergency management and (b) application of knowledge gained to representative challenges faced by IT managers who implement or upgrade GIS to support emergency management and by IT researchers/developers who attempt to develop advanced GIS capabilities to better meet the needs of emergency managers. Students will be required to post weekly statements relating readings to their individual professional and community contexts and to their own in-progress proposals.
PREREQUISITES: GEOG 583, GEOG 584; GEOG 488 recommended

NEW

GEOG 858
Spatial Data Science for Emergency Management
SPATIAL DATA SCI EMERG MANAGE (3)
Geospatial perspectives and technologies have a major role to play in planning for and responding to
emergencies. As is true with other analytical paradigms, geospatial systems and technologies - from aerial mapping techniques to data acquisition - are changing rapidly. Emergency management is also changing quickly as the frequency and magnitude of crises and disasters are increasing, and more and more people and places are being impacted. GEOG 858 helps students develop proficiency in the theoretical, analytical, and technical perspectives required to support all stages of emergency (crisis or disaster) management activities with geospatial solutions, ranging from small-scale emergency management efforts to large-scale disasters and humanitarian crises. Topics covered in GEOG 858 will include advancements in geospatial data collection, geospatial data processing and analysis capabilities, unmanned aerial systems (UAS), geospatial artificial intelligence (geoAI), volunteered geographic information (VGI), geospatially-oriented social media, and others.

PREREQUISITES: None.
RECOMMENDED PREPARATIONS: GEOG 483

OLD
HIST 514
The Early Modern World: Empires, Trade, and Religion
EMWRLD EMP TRD REL (3)
This course provides an overview of early modern history, with an emphasis on cultural encounters between the different global regions. HIST 514 The Early Modern World: Emphasis, Trade, and Religion (3) This course introduces the global history of the Early Modern Period between the Late Middle Ages and the 18th century. In particular it provides a broad exploration of early modern global history, with an emphasis on the broad currents of political, economic, and cultural encounters between the different global regions. Students will recognize, identify and apply theoretical dimensions of world history in a global context. Students will learn a general history of the political, economic, and cultural encounters between the different global regions between the collapse of the Mongol Empire in the 14th century and the rising global domination of western Europe in the 18th century. In weekly readings and discussion, this course takes the global history in the aftermath of the collapse of the Mongol Empire as its starting point. After examining the Mongol Empire, the first global political entity in world history, it will investigate the rise of the maritime empires of Spain and Portugal as a means to build an awareness and transition to the dynamic early modern trends in South Asia especially in relation to the interlocking trading entities of the Indian Ocean world. Exploring the concepts of World System and Global History, the class will investigate the rise and decline of maritime expansion during the Ming dynasty before turning to an investigation of the rise of Portugal as the first European maritime power. While examining the reasons for the rise of Western Europe (the decline of the Mediterranean, the rise of the Atlantic), this course will also examine the history of trade and cultural contact in South and Southeast Asia before moving on to an examination of the history of the Eurasian steppes between the 17th and 18th centuries. The course concludes with the rising domination of Western Europe. This is a foundational course in global history for graduate students, not only in the history department, but for all students in the College of the Liberal Arts and the College of Arts and Architecture (primarily Art History), who want a firm grounding in late medieval and early modern history.

NEW
HIST 514
Global History 1300-1800: Empires, Economy, and Civilizations
GLOBAL EMPIRES ECONOMY CIV (3)
This course covers the basic historical information, historiographical orientation, and theoretical discussions of the major problems of global history between the end of the Middle Ages and the beginning of the modern world. It covers the history of Europe, Asia, Africa, the Americas, as well as Oceania in a thematic and chronological manner.

OLD
HIST 531
RELIGION STATE (3)
This course provides students with an overview of the process of state-making in relationship to religious
convictions in the Early Modern era, ca. 1400-1800. HIST 531 Religion and State-Making in the Early Modern World, 1400-1800 (3) This seminar exposes students to the current state of scholarship from the standpoint of historical, legal, sociological and literary analyses of the state and religious authority. The inadequacy of long-accepted notions of "secularization" and "modernization" to describe the challenges to both state and religion in the Early Modern era require students to assess the specific value given to notions of the state and religion in specific cultural and historical contexts and what precipitated a crisis of authority in both. The exchanges between European and non-European centers of authority during the Early Modern period helped to shape many of these disputes and scholars’ interpretive frameworks. The seminar is intended for graduate students in history and related fields who are preparing for the field in Early Modern studies.

NEW
HIST 531
Religion and State-making in the Early Modern World
EM RELIGION AND STATE (3)
This course is a research seminar covering the historiography of early modern Europe, the Ottoman Empire, Mughal India, Warring-State and early Tokugawa Japan, Choson Korea, and the history of Ming and Qing China with a focus on the interaction between religious and political history.

OLD
HIST 556
Social Movements in the Twentieth Century
SOCIAL MOVE 20C US (3)
Students study the theory and history of movements for social and political change in the 20th century US.
HIST 556 Social Movements in the Twentieth Century US (3) This seminar examines movements for change in the United States over the course of the twentieth century. It uses the historical and social science literature to explore the attempts of various groups, especially those of less powerful Americans, to press demands on the state, and on economic powers, social institutions, and cultural authorities as well. The course considers the strategic use of mass movement challenges from the disadvantaged employing traditional and innovative weapons of the weak. It also takes up the tactical use of movements by established interests. It focuses on groups whose race, ethnicity, class, or gender generally places them outside the conventional decision-making processes of the polity and society. The course deals with movement initiatives across the ideological spectrum, including conservative efforts to resist change. The seminar will address numerous major parameters of social movements. These will include interest identification and agenda formulation, social composition, the role of timing and contextual factors in opening opportunities for change, creation and manipulation of legitimating ideas and symbols, formation of collective identities, communication and mobilization processes and their concomitant rhetorical strategies, leadership development, engagement with adversaries in confrontation and negotiation, tactical repertoire of action, organizational evolution, building of relationships with allies and sympathizers, and other dimensions of movement activity. Students in this course will gain knowledge of major social movements of the twentieth century, such as feminism, environmentalism, the African-American freedom struggle, and the working-class movement. They will have the opportunity to develop analytical skills in understanding the processes of social and political change and the sources of resistance to change. Students will have the option of pursuing original historical research into twentieth-century movements. They will gain command of concepts and theories potentially useful for comprehending political, social, economic, and cultural forces beyond the realm of movement.

NEW
HIST 556
American Social and Cultural History
AM SOCIAL AND COULTURAL HIST (3)
Surveying Social and Cultural History in the 19th and 20th centuries in the United States, this course examines key themes and topics in the history of the field, including: race, class, gender, sexuality, labor, migration, citizenship, incarceration, and environment.
This seminar gives students an overview of major questions and problems in American Social and Cultural
History such as: What is culture? How does society produce culture? What is the relationship between culture and politics? How do we write history from the bottom up? How do our methods constrain what histories we can tell?

Methodologically, this course exposes students to a range of theories and subfields including political history, gender history, history of capitalism, labor history, urban history, and legal history. Additionally, this seminar examines journalistic historical writing, biographies, and opinion editorials in order to examine the multiple forms history writing can take.

OLD

**HIST 588**
Ethnicity and Borderlands in Late Imperial China

**CHINA ETHNICITY BORDERLANDS (3)**

An examination and overview of literature and themes related to ethnicity, borderlands, and governance in late imperial China. **HIST 588 Ethnicity and Borderlands in Late Imperial China (3)** This course will provide students with a thematic and theoretical foundation for the study and teaching of Qing history. This course seeks to equip students to teach Chinese history with a multi-ethnic dimension while also examining the ethnically diverse borderland regions of Tibet, Chinese Central Asia, Mongolia and Manchuria. Students will explore administrative policies, imperial rituals, political structures, and legal codes related to the non-Han Chinese peoples to shift away from a &lsquo;palace view&rsquo; of the imperial court. In this way, the more traditional notions of Qing diplomacy that highlights tributary states and static notions of center-periphery relations will be infused with a much more nuanced ethnic dimension. Major topics to be covered will include the expansion of frontier and borderlands policies, how ethnicity was perceived in the borderlands vis-&agrave;vis the imperial court; what recent theoretical concepts have been employed to recast the traditional understanding of Qing borderlands; the evolution of China&rsquo;s governance and indigenous rule within the borderlands; and finally, how gender, marriage, and the eroticization of China&rsquo;s borderlands influences China&rsquo;s characterization of the non-Chinese border populations. The overarching theme will be one that seeks to throw into relief the strong ethnic diversity of late imperial China thus contrasting the notion of China as ethnically monolithic with the reality of an ethnically diverse empire. Students will be asked to explore the power of acculturation, weigh the impact of government-sponsored immigration of Han Chinese, and develop an awareness of indigenous resistance and autonomy. On a methodological level, the study of China&rsquo;s ethno-history combines several disciplines such as anthropology, political science, and religious studies with different subfields of history, ranging from economic to political, social, and cultural history. The merits and pitfalls of interdisciplinary approaches and the use of theory will be explored. The research papers will take the transnational dimension of late imperial China history into account and will rely on primary material and secondary studies from at least one other discipline. Students will have the option to use this course as a research seminar, conducting primary document research alongside their historiographic readings. Students who select to do so will produce a research paper during the course.

NEW

**HIST 558**
Ethnicity and Borderlands in China

**CHINA ETHNICITY AND BORDERLANDS (3)**

A research seminar, this course examines Chinese history from a multi-ethnic perspective. Major topics to be covered include the theoretical development (and evolution) of the terms frontier and borderlands; ethnicity in the imperial period; the centrality of ethnicity in China’s conceptualizations of itself; and ethnicity in the People’s Republic of China.

After successfully completing this course, students will be able to: demonstrate their familiarity with the major themes and topics for Chinese imperial history and how it relates to the intertwined conceptualizations of ethnicity through discussion and written work. Students will have the option to use this course as a research seminar, conducting primary document research alongside their historiographic readings.
HLS 594
Research Topics
RESEARCH TOPICS (3)
Research project.
PREREQUISITES: HLS 801, HLS 803, and HLS 805; PADM401, PADM404, PADM802, and PADM803

HLS 594
Research Topics
RESEARCH TOPICS (3)
The course builds on the knowledge components and skills students have gained in prior courses in the program, and students should actively use and integrate those during their work in this capstone course. The purpose of this course is to provide a culminating study and research experience in order to develop additional competencies in problem identification; conducting, using, and interpreting research for problem solving; professional writing and oral presentation; as well as group research and presentation skills. During the course, students will work both individually and within one of several assigned groups. The course therefore requires students to demonstrate evidence of analytical ability and synthesis of material, as gained in the iMPS-HLS program. Students are also expected to actively use knowledge, analytical insight, and experience gained in previous classes and throughout the program as a whole.
PREREQUISITES: HLS 801, HLS 802, HLS 803, HLS 804, HLS 805, HLS 811, HLS 404

HLS 802
Multifaceted Approaches to Homeland Security
MULTIFACETED HLSD (3)
Examination of the roles of the public and private sectors and the military in preparing, mitigating, and responding to disasters. PADM 802 Multifaceted Approaches to Homeland Security (3) Preparedness and responsiveness have long been part of the law enforcement and military lexicon; however 9/11 expanded the terms' application and the number of people who held responsibility for their implementation. The result is a growing interest surrounding the nature of the terrorist threat and how intelligence fusion is essential to prevention; the role of the military in civil society; cooperation among federal, state, and local agencies as well as the private sector in response to a catastrophic event; the importance of planning and exercises to improve the mitigation of such events. This course, Multifaceted Approaches to Homeland Security, introduces relevant perspectives and concepts related to these topics and develops a framework that demonstrates their interconnectivity. In addition to providing a conceptual understanding of key ideas, it familiarizes the students with the roles played by various entities (e.g., law enforcement, intelligence organizations, the military, and federal, state, and local agencies) and the ad de facto framework in which they exercise their responsibilities. The course introduces students to intelligence and the importance of intelligence fusion as a counter-terrorism force as well as the need for collaboration among all relevant actors and the integration of actions and planning. Finally, it provides an opportunity to evaluate table top exercises, a key component in mitigating the impact of future events. The course will motivate students to understand how to protect against and respond to the threats of the 21st century.
PREREQUISITES: PADM 401

HLS 802
Multifaceted Approaches to Homeland Security
MULTIFACETED APPROACHES TO HLS (3)
Preparedness and responsiveness have long been part of the law enforcement and military lexicon; however 9/11 expanded the terms' application and the number of people who hold responsibility for their implementation. The result is a growing interest surrounding the nature of the terrorist threat and how intelligence fusion is essential to prevention; the role of the military in civil society; cooperation among
federal, state, and local agencies as well as the private sector in response to a catastrophic event; the importance of planning and exercises to improve the mitigation of such events. This course gives an overview of relevant perspectives and concepts related to these topics and develops a framework that demonstrates their interconnectivity. In addition to providing a conceptual understanding of key ideas, it familiarizes students with the roles played by various entities (e.g., law enforcement, intelligence organizations, the military, and federal, state, and local agencies) and the de facto framework in which they exercise their responsibilities. The course gives students an overview of intelligence and the importance of intelligence fusion as a counter-terrorism force as well as the need for collaboration among all relevant actors and the integration of actions and planning. Finally, it provides an opportunity for students to demonstrate their ability to apply knowledge and methodologies to real-world cases, practically assessing key components in mitigating the impact of future events.

CROSS-LISTED COURSES: PADM 802
PREREQUISITES: HLS 811; PADM 401

OLD
HLS 804
Strategic Planning and Organizational Imperatives in Homeland Defense and Security
STRAT PLAN HLDS (3)
The Homeland Security framework depends on strategic planning and organization. This course examines the key issues associated with these. Strategic Planning and Organizational Imperatives in Homeland Defense and Security (3) The Strategic Planning and Organizational Imperatives in Homeland Defense and Security course builds on PADM 401 and introduces the essential concepts of planning for the response to all hazards incidents. While the JPS is studied in-depth as a template for a logical planning sequence to organize and employ resources effectively and efficiently, it is not the only system available to municipalities to complete these tasks. The National Incident Management System (NIMS) and its companion policy guidance document, the National Response Plan (NRP), provide broad policy guidance for a comprehensive approach to domestic incident management to prevent, prepare for, respond to, and recover from all hazards incidents. Familiarity with the NIMS and the NRP are essential for individuals to integrate into and be a valuable member of destructive event mitigation and response, whether disasters are natural or human-caused. Critical infrastructure, key resources, and border protection provide the framework for the nation’s homeland security and defense efforts. Over eighty percent of these resources reside in the private sector. This presents a challenge to the nation, particularly in the areas of policy guidance and information sharing between the public and the private sectors. These challenges will be presented and analyzed during this course. Participant’s understanding of the principles presented will be measured through the preparation of an analysis of a key homeland security/defense issue related to the materials presented.
PREREQUISITES: PADM 401

NEW
HLS 804
Strategic Planning and Organizational Imperatives in Homeland Defense and Security
STRATEGIC PLANNING IN HLS (3) The course covers the essential concepts of planning for the response to all hazards incidents. The National Incident Management System (NIMS) and its companion policy guidance document, the National Response Framework (NRF), provide broad policy guidance for a comprehensive approach to domestic incident management to prevent, prepare for, respond to, and recover from all hazards incidents. Familiarity with the NIMS and the NRP are essential for individuals to integrate into and be a valuable member of destructive event mitigation and response, whether disasters are natural or human-caused. Critical infrastructure, key resources, and border protection provide the framework for the nation’s homeland security and defense efforts. Over eighty percent of these resources reside in the private sector. This presents a challenge to the nation, particularly in the areas of policy guidance and information sharing between the public and the private sectors. These challenges will be presented and analyzed during this course. Participant’s understanding of the principles presented will be measured through the preparation of an analysis of a key homeland security/defense issue related to the materials presented.
PREREQUISITES: HLS 811
OLD

MCIBS 541
Critical Analysis of Bioinformatics and Genomics Research Topics
CRIT BIOINF GEN (1/Repeatable Max: 2)
A weekly review of current literature related to the area of bioinformatics and genomics research. MCIBS 541 Critical Analysis of Bioinformatics and Genomics Research Topics reviews the recent developments made in the understanding of basic genomics and bioinformatics research. This approach provides an insight into the topics that are shaping the current and future directions in a field that is rapidly evolving and literally transforming lives. Tutorials provide a comprehensive overview of the new and fundamental developments in genomics research and highlight the way in which genomic concepts are applied to basic biological processes. This course will provide insights into computational, evolutionary, and functional aspects of genomic sciences. Basic concepts that describe how life was organized and evolved and applications that promise huge advances in biomedical and biotechnological fields will be discussed. In addition to helping students develop critical oral and written presentation skills, this course is intended to kindle excitement about genomic research among graduate students and provide an intellectual framework for identifying potentially challenging and interesting questions that may be pursued.

NEW

BGEN 541
Critical Analysis of Bioinformatics and Genomics Research Topics
ANALYSIS BGEN RESEARCH TOPICS (1/Repeatable Max: 2)
Critical Analysis of Critical Analysis of Bioinformatics and Genomics Research Topics reviews the recent developments made in the understanding of basic genomics and bioinformatics research. This approach provides an insight into the topics that are shaping the current and future directions in a field that is rapidly evolving and literally transforming lives. Tutorials provide a comprehensive overview of the new and fundamental developments in genomics research and highlight the way in which genomic concepts are applied to basic biological processes. This course will provide insights into computational, evolutionary, and functional aspects of genomic sciences. Basic concepts that describe how life was organized and evolved and applications that promise huge advances in biomedical and biotechnological fields will be discussed. In addition to helping students develop critical oral and written presentation skills, this course is intended to kindle excitement about genomic research among graduate students and provide an intellectual framework for identifying potentially challenging and interesting questions that may be pursued.

OLD

PADM 500
Public Organization and Management
PUB ORG AND MGMT (3)
Development of basic concepts and issues in public administration; administrative theory and public policy processes.

NEW

PADM 500
Foundations of Public Administration
FOUND OF PUB ADMIN (3)
PADM 500 is an overview of the study and practice of public administration. It gives students an overview of the basic concepts and issues in the field, including theories of organization, public policy, public management, decision making, public law, program implementation and evaluation, and ethics, and notes how the field has developed over time. Students develop skills in decision making, and in appreciating the multiple perspectives, values, and ethical challenges of public service. The course shows the interrelationships of organizations, public policies, and management activities within the public sector, including the role of nonprofit organizations in delivering services to the public. Theories from social psychology, economics, political science, jurisprudence, ethics, and organizational studies are covered to
illustrate the range of ideas used in governance and management. Contemporary efforts to reform organizations and management activities are assessed, and future directions in which the field is likely to head are considered.

### CE 533
**Construction Productivity Analysis and Performance Evaluation**  
**CONSTRUCTION PROD (3)**  
Construction productivity concepts and models; productivity measurement, control, and forecasting; analysis of factors affecting productivity; methods improvement techniques.  
PROPOSED DROP: FA2019

### CE 546
**Reinforced Concrete Slabs**  
**REIN CONC SLABS (3)**  
Behavior, analysis, and design of floor systems; elastic, ACI Code method, yield line theory; two-way, flat slab, flat plate.  
PROPOSED DROP: FA2019

### EMCH 534
**Micromechanisms of Fracture**  
**MICRO FRAC (3)**  
Mechanisms of fracture and their relationship to loading conditions, environment, flow behavior, processing history, and microstructure.  
PROPOSED DROP: FA2019

### GER 515
**Introduction to German Applied Linguistics**  
**GERMAN APLNG (3)**  
Introduction to the major areas of the broad field of Applied Linguistics as relevant to the study of German.  
GER 515 Introduction to German Applied Linguistics (3) This course provides an introduction to some of the major areas of Applied Linguistics as they apply to users of the German language. No prior knowledge of linguistics is assumed. Topics discussed include the acquisition of German by people who do not speak it natively, the teaching of German to people who do not speak it natively, the use of technology in the instruction of German, the relationships between users of German and German (Pragmatics) in both oral and written discourse, and the inter-relationships of society and culture, users of the German language, and the use of the German language in global and local contexts (Sociolinguistics). This is not a language course that focuses on the speaking and writing of German. The course will be conducted in either German or English. Reading assignments will include scholarly articles and excerpts from seminal work in the field. Students will work extensively on published and self-collected data, e.g. recordings of German classroom discourse, German conversations, German advertising. Evaluation is based on problem sets, seminar presentations, assigned readings, classroom participation, and written assignments. The course is required for students pursuing the German PhD Option in Applied Linguistics and may be selected to satisfy the core requirements for the M.A. in German. This course will be offered once each year with 15 seats per offering.  
PROPOSED DROP: FA2019

### RUS 525
**Pushkin**  
**PUSHKIN (3)**  
Pushkin’s significance in Russian literature; his relation to other European literatures; Eugene Onegin and selected shorter works  
PROPOSED DROP: FA2019
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Office of the Dean of the Graduate School, 211 Kern Building, University Park. For more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School:  
School of Graduate Professional Studies  
Department or Instructional Area:  
Engineering

New Graduate Program, Option, or Minor:  
Add

Designation of new graduate program:
Classification of Instructional Programs (CIP) Code: 
Designation of new graduate option: 
Designation of new graduate minor: 

Indicate effective semester:
First semester following approval
Second semester following approval

Existing Graduate Program Option, or Minor:  Change  Drop

Current designation of graduate program:  
Master of Software Engineering in Software Engineering
Current designation of graduate option: 
Current designation of graduate minor:

New designation of existing graduate program (if changing):
New designation of existing graduate option (if changing):
New designation of existing graduate minor (if changing):

Brief description of the change (if not noted above):  Changed the required courses and updated admission requirements in accordance with Graduate School policy

Indicate effective semester:
First semester following approval
Second semester following approval

Submitted by Graduate Program Head

Colin J. Neill
Printed name

Date: 3/21/19
Signature

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:

Pornsit Jiraporn  
Printed name

Date: 3/22/19
Signature

Approved by College/School Dean/Chancellor (or Designee):

James A. Nemes
Printed name

Date: 3/22/19
Signature
<table>
<thead>
<tr>
<th>Role</th>
<th>Name</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair, Graduate Council Subcommittee</td>
<td>David Babb</td>
<td></td>
<td>6/15/2019</td>
</tr>
<tr>
<td>Chair, Graduate Council Committee on Programs and Courses</td>
<td>C. Andrew Cole</td>
<td></td>
<td>6/15/2019</td>
</tr>
<tr>
<td>Dean of the Graduate School</td>
<td>Regina Vasilatos-Younken</td>
<td></td>
<td>6/15/2019</td>
</tr>
</tbody>
</table>
The submitted request involves a change in the required coursework for the dual-title degree in Social and Behavioral Neuroscience. Currently students pursuing the dual-title are required to take the following courses

NEURO 520: Cellular and Molecular Neuroscience
NEURO 521: Systems Neuroscience
SBN 590: Proseminar

The Steering Committee governing the dual-title, which consists of a representative of each of the three affiliated departments as well as a representative from the IDGP in Neuroscience, have discussed these requirements and agreed that a change is needed. Specifically, it has come to our attention that the NEURO 521 course (a) is best taken after the student has had a formal course in neuroanatomy and (b) does not have a set curriculum but rather varies in emphasis regarding different neural systems depending on semester and instructor. As such, it was discussed that NEURO 521 would be a valid elective for students pursuing the dual-title, but should not be required. Instead we would like to require a course in neuroanatomy, of which 3 existing options have been identified by the Steering Committee as equally acceptable.

We request that the required coursework be changed to:

NEURO 520: Cellular and Molecular Neuroscience
**NEURO 511 or NEURO 512 or BIOL 478**
SBN 590: Proseminar

And that NEURO 521 be approved as an elective.

- As a new program there are currently no students pursuing this dual-title as of this semester, and thus this change will not impact any graduate students’ course of study.
- These changes do not impact SARI requirements related to the degree.

Steering Committee:

Lisa Gatzke-Kopp, Ph.D., Director
Human Development and Family Studies
Lmk18@psu.edu

Koraly Perez-Edgar, Representative
Psychology

David Vandenbergh, Representative
Biobehavioral Health

Kevin Alloway, Representative
IDGP Neuroscience

The following pages represent the language in the graduate bulletin with the requested changes noted in red text.
Students electing this degree program through participating programs earn a degree with a dual-title at the Ph.D. level, i.e., in (graduate program name) and Social and Behavioral Neuroscience.

The following graduate programs offer a dual degree in Social and Behavioral Neuroscience: Ph.D. in Biobehavioral Health and Social and Behavioral Neuroscience; Ph.D in Human Development and Family Studies and Social and Behavioral Neuroscience; Ph.D. in Psychology and Social and Behavioral Neuroscience.

THE GRADUATE FACULTY (TO BE ADDED)

The Program

The Social and Behavioral Neuroscience dual-title degree program is administered by the Social and Behavioral Neuroscience Steering Committee, which is responsible for the management of the program. The committee oversees the general direction of the program, identifies faculty and courses appropriate to the program, recommends policy and procedures for the program’s operation to the Dean of the Graduate School, and is an advisory body to the program Director. The program enables students from participating graduate programs to obtain foundational graduate-level training in neuroscience as well as expertise in social and behavioral neuroscience theory, research, and methods. This dual-title training will enable rigorous research at the intersection of neuroscience and the students’ partner discipline. To pursue a dual-title degree under this program the student must apply to the Graduate School and register through one of the approved graduate programs.

Admission Requirements

Before they can apply for admission to the dual-title degree program, students must apply and be admitted to their primary graduate program and the Graduate School. Applicants who are interested in the dual-title degree program will have the opportunity to indicate this interest when applying to their primary graduate programs. In their statements of purpose for admission to their primary graduate program, applicants may also comment on how their interests in the primary graduate program are related to their interests in Social and Behavioral Neuroscience.

Students may apply for enrollment in the dual-title degree program in Social and Behavioral Neuroscience during their first year (second semester) or second year in their primary graduate program. To apply, a student must submit a letter of application, graduate and undergraduate transcripts, and a letter of recommendation from their graduate adviser. Applications will be reviewed by the Social and Behavioral Neuroscience Admissions Committee. The composition of the admissions committee will be determined by the program Steering Committee. At a minimum applicants must be in
good standing in their primary graduate program and be recommended for admission by their graduate
adviser. Students must be admitted into the dual-title degree program in Social and Behavioral
Neuroscience prior to taking the qualifying examination obtaining candidacy in their primary graduate
program.

Degree Requirements

To qualify for the dual-title degree, students must satisfy the requirements of their primary
graduate program in which they are primarily enrolled. In addition, they must satisfy the
requirements described below, as established by the Social and Behavioral Neuroscience
Steering Committee.

The minimum course work requirements for the dual-title Ph.D. degree in Social and Behavioral
Neuroscience are as follows:

- Course work and other requirements of the primary program.
- NEURO 520 (3 credits)
- NEURO 521 (3 credits)
- NEURO 511 (3 credits) or NEURO 512 (4 credits) or BIOL 478 (3 credits)
- SBN 590 (1 credit, taken twice)

- A minimum of 12 credits from the following list of courses
  
  NEURO 511 521 (3 credits) or NEURO 512 (4 credits)
  SBN 505 (3 credits, variable)
  SBN 508 (3 credits, variable)
  SBN 511 (3 credits, variable)
  HDFS 502: Biological Systems in Developmental Context
  HDFS 512: Cognitive Developmental Neuroscience of Adolescence
  PSY 524: Biological Basis of Behavior

- The dissertation must involve the integration of neuroscience and a research question of
  interest within the primary graduate program.

Selection of specific courses is made by the student in consultation with an adviser from the
primary graduate program and an adviser from the Social and Behavioral Neuroscience program.
SBN 505, 508, and 511 can be taken more than once, if this involves sections with different
topics. Primary graduate programs will determine whether a given section of the SBN courses can fulfill their requirements. Primary graduate programs may add additional distributional requirements.

Students or faculty may request that the Social and Behavioral Neuroscience Steering Committee consider approval of other courses, including one-time approval for an experimental or variable-title course. The Steering Committee may delegate this approval process to the program Director, in consultation with academic advisers from a student’s primary graduate program and Social and Behavioral Neuroscience.

**Candidacy Qualifying Examination Committee Composition**

The candidacy qualifying examination committee must conform to all requirements of the primary graduate program and the Graduate Council. In accordance with Graduate Council, the qualifying examination committee must include at least one member of the Social and Behavioral Neuroscience Graduate Faculty. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role.

**Candidacy Qualifying Exam**

The dual-title degree will be guided by the Candidacy Qualifying Exam procedure of the primary graduate program and the Graduate Council. In accordance with Graduate Council, there will be a single candidacy qualifying examination, assessing candidacy for both primary graduate program and the dual-title program. Because students must first be admitted to a primary graduate program of study before they may apply to and be considered for admission into a dual-title graduate degree program, dual-title graduate degree students may require an additional semester to fulfill requirements for both areas of study and, therefore, the candidacy qualifying examination may be delayed one semester beyond the normal period allowable.

**Doctoral Ph.D. Committee Composition**

The doctoral Ph.D. committee must conform to all requirements of the primary graduate program and the Graduate Council. In addition to the general Graduate Council requirements for doctoral Ph.D. committees, the doctoral Ph.D. committee of a Social and Behavioral Neuroscience dual-title doctoral degree student must include at least one member of the Social and Behavioral Neuroscience Graduate Faculty. Faculty members who hold appointments in both programs’ Graduate Faculty may serve in a combined role. If the chair of the doctoral Ph.D. committee is not also a member of the Graduate Faculty in Social and Behavioral Neuroscience, a member of the committee representing Social and Behavioral Neuroscience must be appointed as co-chair.

**Comprehensive Exam**

The dual-title degree will be guided by the Comprehensive Exam procedure of the primary graduate program. After completion of required course work, doctoral candidates must pass a comprehensive examination. In programs where this includes evaluation of a written exam, the Social and Behavioral Neuroscience representative on
the student's doctoral Ph.D. committee will participate in the writing and evaluation of the exam, in accordance with procedures maintained by the primary graduate program. In programs where the comprehensive exam involves defense of a dissertation prospectus, the Social and Behavioral Neuroscience representative on the student's doctoral Ph.D. committee will participate in the evaluation of the prospectus, including ensuring the proposed dissertation has substantial Social and Behavioral Neuroscience content.

### Dissertation and Dissertation Defense

Upon completion of the doctoral dissertation, the candidate must pass a final oral examination (the dissertation defense) to earn the Ph.D. degree. Students enrolled in the dual-title program are required to write and orally defend a dissertation on a topic that reflects their original research and education in their primary graduate discipline and in Social and Behavioral Neuroscience. The dissertation must be accepted by the doctoral committee, the heads of both graduate programs, and the Graduate School.

### Student Aid

Graduate assistantships available to students in this program and other forms of student aid are described in the Student Aid section of the Graduate Bulletin. Students on graduate assistantships must adhere to the course load limits set forth in the Graduate Bulletin.

### Courses

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.
Graduate Council
Program, Option, or Minor Proposal Form

Submit 1 original, signed Graduate Council proposal form and 2 hardcopies of the graduate program proposal document, with a copy of the signed proposal form attached to each proposal copy, to the Office of the Dean of the Graduate School, 211 Kern Building, University Park. For more information about the process, see the Overview of the Graduate Council Curricular Review Process.

The Program Proposal Procedures provide guidance for the development of a graduate program proposal. If you have questions regarding the preparation of a graduate program proposal or how to complete this Graduate Council proposal form, contact the Office of the Dean of the Graduate School.

College/School: College of Health and Human Development
Department or Instructional Area: Social Behavioral Neuroscience dual-title

New Graduate Program, Option, or Minor: Add

Designation of new graduate program:
Classification of Instructional Programs (CIP) Code: ____________
Designation of new graduate option:
Designation of new graduate minor:

Indicate effective semester:
First semester following approval
Second semester following approval

Existing Graduate Program Option, or Minor: Change Drop

Current designation of graduate program: Dual-title in Social Behavioral Neuroscience
Current designation of graduate option:
Current designation of graduate minor:

New designation of existing graduate program (if changing):
New designation of existing graduate option (if changing):
New designation of existing graduate minor (if changing):

Brief description of the change (if not noted above): Change Neuro 521: Systems Neuroscience from a required course to an elective. Add requirement for neuroanatomy course

Indicate effective semester:
First semester following approval Yes
Second semester following approval

Submitted by Graduate Program Head
Lisa Kopp
Printed name
Signature
Date: 2/13/19

Noted by College/School Representative to Graduate Council Subcommittee on New and Revised Programs and Courses:
Maureen Jones
Printed name
Signature
Date: 3/13/19

Approved by College/School Dean/Chancellor (or Designee):
Kathryn Drager
Printed name
Signature
Date: 3-14-2019
Recommended by Chair, Graduate Council Subcommittee on New and Revised Programs and Courses:

On Behalf of David Babb  __________________________  [Signature]  Date: 6/15/2019
Printed name

Recommended by Chair, Graduate Council Committee on Programs and Courses:

On Behalf of C. Andrew Cole  __________________________  [Signature]  Date: 6/15/2019
Printed name

Noted by Dean of the Graduate School:

On Behalf of Regina Vasilatos-Younken  __________________________  [Signature]  Date: 6/15/2019
Printed name
Program Change Proposal

Master of Software Engineering

Contact:
Raghu Sangwan,
Professor-in-Charge, Software Engineering,
School of Graduate Professional Studies,
Penn State Great Valley,
(rsangwan@psu.edu)

March 21, 2019
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  Consultation responses ............................................................................................................................... 10
Description of Changes

The Master of Software Engineering degree program is offered in residential format at the Penn State Great Valley campus and online through Penn State World Campus. Since the most recent program update precedes Graduate School policies regarding bulletin listing information, a program change proposal is necessary. In addition, the program faculty have been evaluating the program according to the Learning Outcomes Assessment process instituted across the University, and this has revealed several necessary curricula changes. Those changes are:

- Specifying the required courses in the Bulletin. Currently the Bulletin states that “candidates must take two required 9-credit core modules for a total core curriculum of 18 credits and two other 9-credit elective modules.”
- Specifying the culminating experience. Currently the Bulletin does not mention the capstone explicitly.

Justification for the proposed changes

The purpose of the Master of Software Engineering program is to prepare computer professionals to develop software products and services for industry and government through software analysis, design and architecture; system verification; data storage and retrieval; and managing globally-distributed development. Therefore, software engineering discipline is significantly driven by the needs of its practitioners. As the state of practice has evolved, tools and methods to address the emerging needs have also evolved warranting the Software Engineering Program faculty at Penn State Great Valley to suggest the following change to our current Software Engineering Program:

- An 18-credit core curriculum covering the major phases and activities of the software engineering lifecycle in line with the Software Engineering Body of Knowledge (SWEBOK)

The proposed program changes will ensure effective delivery of software engineering concepts in online and resident instruction format. The addition of new core courses capture advances in the software engineering discipline and reflect the knowledge areas that are critical for today’s software engineers.

Comparison of Changes

The following table indicates the changes in the proposed program in comparison to the current program as specified in the Bulletin.

<table>
<thead>
<tr>
<th>PROPOSED</th>
<th>CURRENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required courses</td>
<td>All candidates must take two required 9-credit core modules for a total core curriculum of 18 credits and two other 9-</td>
</tr>
<tr>
<td>SWENG 861 Software Construction</td>
<td></td>
</tr>
<tr>
<td>SWENG 505 Software Project Management</td>
<td></td>
</tr>
<tr>
<td>Course</td>
<td>Course Title</td>
</tr>
<tr>
<td>----------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>SWENG 586</td>
<td>Requirements Engineering</td>
</tr>
<tr>
<td>SWENG 581</td>
<td>Software Testing</td>
</tr>
<tr>
<td>SWENG 587</td>
<td>Software Systems Architecture</td>
</tr>
<tr>
<td>SWENG 837</td>
<td>Software Systems Design</td>
</tr>
</tbody>
</table>

**Culminating experience**

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
<th>Culminating Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWENG 894</td>
<td>(GCAPSTONE – Prof Master’s-Capstone Project)</td>
<td>As part of the 18-credit core curriculum, students who are nearing the end of their program complete a capstone research experience</td>
</tr>
</tbody>
</table>

In summary:

We are specifying the 18-credits of required courses and the 6 credit culminating experience. The required courses reflect the knowledge areas from the SWEBoK that reflect the learning outcomes the program faculty identified as critical to the discipline.
Evidence of Consultation

Consultation on the proposed program change was sought from a wide range of units across the university as shown below. Responses received are included in Appendix A.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Respondent</th>
<th>Remarks</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Graduate Professional Studies</td>
<td>James Nemes, Chancellor and Chief Academic Officer (<a href="mailto:jan16@psu.edu">jan16@psu.edu</a>)</td>
<td>Full support</td>
<td></td>
</tr>
<tr>
<td>Penn State World Campus</td>
<td>Karen Pollack, Assistant Vice Provost for Online and Blended Programs (<a href="mailto:kiw1@psu.edu">kiw1@psu.edu</a>)</td>
<td>Full support</td>
<td></td>
</tr>
<tr>
<td>College of Engineering</td>
<td>Peter Butler, Associate Dean (<a href="mailto:pibbio@engr.psu.edu">pibbio@engr.psu.edu</a>)</td>
<td>Full support</td>
<td></td>
</tr>
<tr>
<td>College of Information Science &amp; Technology</td>
<td>Mary Beth Rosson, Associate Dean of Graduate and Undergraduate Studies (<a href="mailto:mrosson@ist.psu.edu">mrosson@ist.psu.edu</a>)</td>
<td>Full support</td>
<td></td>
</tr>
<tr>
<td>Penn State Harrisburg</td>
<td>Peter Idowu, Assistant Dean for Graduate Studies (<a href="mailto:pbi1@psu.edu">pbi1@psu.edu</a>)</td>
<td>Full support</td>
<td></td>
</tr>
<tr>
<td>Penn State Erie, The Behrend College</td>
<td>Ivor Knight, Associate Dean for Research and Graduate Studies (<a href="mailto:itk2@psu.edu">itk2@psu.edu</a>)</td>
<td>Full support: One edit to add software engineering as a suitable undergraduate degree for admission.</td>
<td>We made the requested addition.</td>
</tr>
</tbody>
</table>
Revised Graduate Bulletin Listing

GRADUATE BULLETIN STATEMENT

Program Home Page
JAMES A. NEMES, Professor and Director of Academic Affairs
School of Graduate Professional Studies
Penn State Great Valley
30 E. Swedesford Road
Malvern, PA 19355-1443
610-725-3335

COLIN J. NEILL, Associate Professor and Director of Engineering Programs
School of Graduate Professional Studies
Penn State Great Valley, Engineering Division
610-648-3277
www.sgps.psu.edu

Program Chair
Colin J. Neill
Associate Professor, Software Engineering and Systems Engineering
School of Graduate Professional Studies
Penn State Great Valley
30 E. Swedesford Road
Malvern, PA 19355-1443
610-648-3277

Professor-in-Charge
Raghvinder S. Sangwan
Associate Professor of Software Engineering
School of Graduate Professional Studies
Penn State Great Valley
30 E. Swedesford Road
Malvern, PA 19355-1443
610-648-3288

The Graduate Faculty

- Youakim Badr, Ph.D. (NSA-Lyon) Associate Professor of Data Analytics
- Adrian Barb, Ph.D. (University of Missouri) Assistant Associate Professor of Information Science
- Joanna Defranco, Ph.D. (New Jersey Institute of Technology) Assistant Professor of Software Engineering
- Everton Guimarães, Ph.D. (Pontifical Catholic University of Rio de Janeiro) Assistant Professor of Software Engineering
The Program

This professional master's degree program, available at Penn State Great Valley, focuses on various aspects of software engineering. The primary goal of the program is to prepare students to develop the next generation of software products and services for consumers, industry, and government. The curriculum includes comprehensive, intensive coverage of modern software concepts and techniques, and emphasizes a holistic approach, encompassing financial, legal, and presales issues; technical concepts; software design techniques; methods; and project management.

The program is constituted by four, 9-credit modules of study. Each module is designed for in-depth coverage of a specific area of study (e.g., modern software methods, algorithms, information science). Two of the modules are required; one centers on professional, skill-based topics such as software project management or business communications, and includes the option to select a professional paper or the advanced software studio. The second required module comprises 9 credits of advanced software engineering coursework. Graduate instruction is under the direction of a faculty committee.

The Master of Software Engineering program prepares computer professionals to develop software products and services for industry and government through software analysis, design and architecture; system verification; data storage and retrieval; and managing globally-distributed development.

Admission Requirements

Requirements listed here are in addition to general Graduate School requirements stated in the GENERAL INFORMATION section of the Graduate Bulletin.

The Master of Software Engineering (MSE) program is designed for students with technical backgrounds. Admission will be granted if the applicant has the necessary program prerequisites and a faculty member in the student's interest area agrees to serve as adviser. Candidates lacking in a modern programming language can meet that requirement by scheduling the 400-level software engineering studio. Scores from the Graduate Record Examinations (GRE) are not an entrance requirement unless the applicant has a junior/senior grade-point average below 3.00 (on a 4.00 scale).
Students with a 3.00 junior/senior average in an appropriate technical degree program will be considered for admission. The best-qualified applicants will be accepted. Exceptions to the minimum 3.00 grade-point average may be made for students with special backgrounds, abilities, and interests. Entering graduate students for whom English is not their first language are required to have a score of at least 550 on the TOEFL (Test of English as a Foreign Language).

Applicants apply for admission to the program via the Graduate School application for admission. Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 General Admissions Standards.”

Admission to the Master of Software Engineering program will be based on baccalaureate academic records, applicable work experience, and one letter of recommendation from a previous professor or supervisor who can attest to the applicant’s academic potential. Applicants with an undergraduate degree in software engineering, computer science, information systems, or similar quantitative disciplines such as science or engineering may apply. Students from other disciplines will be considered based on prior course work and/or standardized test scores. Normal admission requirements include background in operating systems, programming languages, data structures and algorithm analysis. Applications must include a statement of professional goals and a curriculum vitae or resume. Test scores from the GMAT or GRE exams are not required. An undergraduate cumulative grade-point average of 3.0 or better on a 4.0 scale in the final two years of undergraduate studies is required.

The language of instruction at Penn State is English. English proficiency test scores (TOEFL/IELTS) may be required for international applicants. Consult the English Proficiency section of the Graduate Bulletin Application and Admission Procedures page for more information.

**Degree Requirements**

All candidates must complete two required 9-credit core modules, for a total core curriculum of 18 credits, and two other 9-credit modules. At least 15 credits of selected courses must be at the 500 level.

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Requirements.

The Master of Software Engineering degree is conferred upon students who earn a minimum of 36 credits of course work while maintaining an average grade-point average of 3.0 or better in all course work, including at least 18 credits at the 500 or 800 level (with at least 6 credits at the 500 level). The program curriculum includes 18 credits of core courses, 12 credits of electives, and 6 credits of capstone experience.

**Required Courses:**

Prescribed courses for the degree include the following 18 credits of core courses:
- SWENG 505: Software Project Management (3 credits)
- SWENG 581: Software Testing (3 credits)
- SWENG 586: Requirements Engineering (3 credits)
- SWENG 587: Software Systems Architecture (3 credits)
- SWENG 837: Software System Design (3 credits)
- SWENG 861: Software Construction (3 credits)

**Additional Courses:**
An additional 12 credits of elective courses must be selected from a list of approved elective courses maintained by the graduate program office.

**Culminating Experience:**
All students will complete their program of study with a capstone project that provides students with an opportunity to apply their knowledge of the software engineering theories, methods, processes, and tools learned throughout their program, in a culminating and summative experience. Students complete the capstone project while enrolled in SWENG 894.

**Student Aid**
Graduate assistantships available to students in this program and other forms of student aid are described in the Tuition & Funding section of The Graduate School’s website. Students on graduate assistantships must adhere to the course load limits set by The Graduate School.

World Campus students in graduate degree programs may be eligible for financial aid. Refer to the Tuition and Financial Aid section of the World Campus website for more information.

**Courses**
Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.
Appendix A
Consultation responses
Colin,

I have reviewed the proposed program change proposal which has the support of the division faculty, so I am happy to provide my enthusiastic support as well. The proposed changes will significantly enhance the program.

Thanks,

Jim

James A. Nemes, D.Sc.
Chancellor and Chief Academic Officer
Professor of Mechanical Engineering
School of Graduate Professional Studies
Penn State Great Valley
30 East Swedesford Road
Malvern, PA 19355-1443
Phone: 610-648-3206
jan16@psu.edu

From: Neill, Colin
Sent: Tuesday, December 18, 2018 11:57 AM
To: Nemes, James A <jan16@psu.edu>; Knight, Ivor Thomas <itk2@psu.edu>; Pollack, Karen Irene <kiw1@psu.edu>; Forster, Peter Kent <pkf1@psu.edu>; Butler, Peter J <pjb28@psu.edu>; Idowu, Peter <pbi1@psu.edu>
Cc: Sangwan, Raghu <rxs69@psu.edu>
Subject: Consultation request: Program change proposal Master of Software Engineering

Dear Colleagues:

I am seeking your consultation on the attached program change proposal for the Master of Software Engineering. With the transition of the University Bulletin to LionPath, the Graduate School requires we update the program’s listing through a program change proposal. Admittedly, our current listing is very vague and required updating. In the proposed revision we have added the necessary language for admission requirements and we are now specific about the degree requirements and the culminating capstone experience.

If you have any questions, please don’t hesitate to ask.

Best Regards,
Colin

Dr. Colin J. Neill
Director of Engineering Programs
Associate Professor of Software & Systems Engineering
School of Graduate Professional Studies
Penn State University
Hi Colin,
This looks really good. No concerns on our part.

Thank you!
Karen

Karen I. Pollack, Ph.D.
Associate Vice Provost for Online Education
Penn State Online, The World Campus
222 Outreach Building
University Park, PA  16802
(814) 863-6347 (w)
kiw1@psu.edu

Hi Karen:
I was wondering if I could answer any questions you might have about the program change proposal I sent you. If you have specific questions or concerns I’d be happy to speak with you on the phone.

Cheers,
Colin

Dr. Colin J. Neill
Director of Engineering Programs
Associate Professor of Software & Systems Engineering
School of Graduate Professional Studies
Penn State University
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If you have any questions, please don’t hesitate to ask.

Best Regards,

Colin
Thanks, Colin. I took a look at the updated program, and these changes make sense and as you indicate are bringing the program up to date. Good luck!

Mary Beth

Mary Beth Rosson  
Professor and Associate Dean  
Interim Graduate Director  
College of Information Sciences & Technology  
The Pennsylvania State University  
http://mrosson.ist.psu.edu

Dear Dr. Rosson,

I am seeking your consultation on the attached program change proposal for the Master of Software Engineering. I had mistakenly sought Pete Forster’s approval previously (which he provided) only to realize that I should have sought yours.

With the transition of the University Bulletin to LionPath, the Graduate School requires we update the program’s listing through a program change proposal. Admittedly, our current listing is very vague and required updating. In the proposed revision we have added the necessary language for admission requirements and we are now specific about the degree requirements and the culminating capstone experience.

If you have any questions, please don’t hesitate to ask.

Best Regards,

Colin

Dr. Colin J. Neill  
Director of Engineering Programs  
Associate Professor of Software & Systems Engineering  
School of Graduate Professional Studies  
Penn State University
Hi Colin,
I am sorry about the delay in responding to this. We have no questions about your program change proposal, and we wish you well.

Regards,
Peter

Peter Idowu, Ph.D., P.E.
Assistant Dean of Graduate Studies, Penn State Harrisburg
Professor of Electrical Engineering

Penn State Harrisburg
W-102 Olmsted Building
777 W. Harrisburg Pike, Middletown PA 17057
(717) 948-6315 - Phone
(717) 948-6737 - Fax
idowu@psu.edu
http://sites.psu.edu/microgridtestbedpsih/
http://harrisburg.psu.edu/graduate-studies

Hi Peter:
I was wondering if I could answer any questions you might have about the program change proposal I sent you. If you have specific questions or concerns I’d be happy to speak with you on the phone.

Cheers,
Colin

Dr. Colin J. Neill
Director of Engineering Programs
Associate Professor of Software & Systems Engineering
School of Graduate Professional Studies
Penn State University
From: Neill, Colin
Sent: Tuesday, December 18, 2018 11:57 AM
To: Nemes, James A <jan16@psu.edu>; Knight, Ivor Thomas <itk2@psu.edu>; Pollack, Karen Irene <kiw1@psu.edu>; Forster, Peter Kent <pkf1@psu.edu>; Butler, Peter J <pjeb28@psu.edu>; Idowu, Peter <pbi1@psu.edu>
Cc: Sangwan, Raghu <rxs69@psu.edu>
Subject: Consultation request: Program change proposal Master of Software Engineering

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If you have any questions, please don’t hesitate to ask.

Best Regards,
Colin

Dr. Colin J. Neill
Director of Engineering Programs
Associate Professor of Software & Systems Engineering
School of Graduate Professional Studies
Penn State University
Neill, Colin

From: Knight, Ivor Thomas
Sent: Thursday, March 21, 2019 1:46 PM
To: Neill, Colin
Subject: Re: Consultation request: Program change proposal Master of Software Engineering

Neill,
I apologize for the delayed reply. I consulted with our Engineering and CS leadership. The proposal looks good to us. The only comment we have is minor and is as follows:

Here is a minor addition we may ask:

One of the sentences in the document is stated as below: “Applicants with an undergraduate degree in computer science, information systems, or similar quantitative disciplines such as science or engineering may apply.” can be added in “software engineering” to become “Applicants with an undergraduate degree in software engineering, computer science, information systems, or similar quantitative disciplines such as science or engineering may apply.”

Kind regards,

Ivor

Ivor Knight
Associate Dean
The Behrend College
Penn State University

On Mar 6, 2019, at 12:56 PM, Neill, Colin <cjn6@psu.edu> wrote:

Hi Ivor:

Have you had a chance the review our change proposal for the Master of Software Engineering program? I’m happy to answer any questions Penn State Behrend might have.

Regards,
Colin

Dr. Colin J. Neill
Director of Engineering Programs
Associate Professor of Software & Systems Engineering
School of Graduate Professional Studies
Penn State University