

Graduate Council Report
December 3rd, 2015

New Course Request:

AERO 651. Human Spaceflight Operations. (3-0). Credit 3. Essential aspects of human spaceflight operations as performed NASA; in-depth understanding of the state-of-the-art in spacecraft operations, including spacecraft systems, ground and launch operations, mission management and on-orbit activities such as science, robotics, spacewalking, and human health maintenance; applications to future space systems. Prerequisite(s): Graduate classification.

ANTH 680. Teaching Anthropology. (1-0). Credit 1. Introduction to course planning for future instructors anthropology courses. Topics include course design, student motivation and engagement, assessment of design and implementation, and technology use in education. Prerequisite(s): Graduate classification; admission to graduate program in Department of Anthropology

ARCH 637. Seminar in Japanese Architecture History and Theory. (3-0). Credit 3. Background and exploration of traditional, modern, and contemporary Japanese architecture, including consideration of region, materials, structure and style, as well as the social and economic factors that include architectural form and contents; discussion of the works and writings and building models of case study of Japanese architects' design. Prerequisite(s): Graduate classification or approval of instructor.

ATMO 618. Numerical Methods for the Geosciences. (3-0). Credit 3. Mathematical theory and numerical techniques for modeling physical systems and processes in the Geosciences; discretization of continuum equations for solids and fluids; finite difference methods convergence, consistency, and stability; finite element and spectral methods in fluid dynamics and seismology; iterative solvers; implicit and explicit methods for diffusion and advection. Prerequisite(s): Graduate classification or approval of instructor.

ATMO 634. Fundamentals of High Performance Computing for the Geosciences. (3-2). Credit 4. Architecture of High Performance Computing (HPC) systems; Unix operation system, shell environment; algorithms and programming languages for the Geosciences; concurrency, dependency, parallelism; parallel performance, scalability, structured programming; serial, parallel patterns; parallel programming models; parallel algorithms and software design for the Geosciences; techniques for empirical parallel performance analysis. Prerequisite(s): Graduate classification or approval of instructor.

BAEN 642. Water-Energy-Food Nexus: Toward Sustainable Resource Management. (3-0). Credit 3. Study the principles and application of the Water-Energy-Food nexus to state, national and international Water-Energy-Food securities and the interlinkages between them. Explore quantitative framework to develop and assess sustainable tradeoffs of resources. Hands on experiences: following subject matter fundamentals, students will work on relevant real world projects or case studies. Prerequisite(s): Strong analytical background with consent of instructor.

BMEN 637. Pathological Basis of Implantable Devices. (3-0). Credit 3. Understanding the relationship that clinical presentation has for patients with primary heart disease; inflammation and repair, systematic pathology emphasis on cardiovascular disease, and the implantable device intervention as a therapeutic adjunct in the heart. Prerequisite(s): Graduate classification or approval of instructor.

BMEN 676. Professional Development for Biomedical Engineering. (3-0). Credit 3. Advanced concepts in professional interactions including oral and written communications; skills related to interviewing and obtaining job offers and understanding employment compensation and benefits; professional ethics. Prerequisite(s): Graduate classification or approval of instructor.

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CVEN 602. Remote Sensing in Hydrology. (3-0). Credit 3. Precipitation; evaporation; soil moisture; snow and ice; terrestrial water storage variations; land surface properties; water quality.

CVEN 642. Water-Energy-Food Nexus: Toward a Sustainable Resource Management. (3-0). Credit 3. Study the principles and application of the Water-Energy-Food nexus to state, national and international Water-Energy-Food securities and the interlinkages between them. Explore quantitative framework to develop and assess sustainable tradeoffs of resources. Hands on experiences: following subject matter fundamentals, students will work on relevant real world projects or case studies. Prerequisite(s): Strong analytical background with consent of instructor.

CVEN 650. Stochastic Mechanics. (3-0). Credit 3. This course introduces the use of Bayesian inference methods to solve mechanical inverse problems with varying evidence conditions: experimental observations, model complexity and expert beliefs. This solution represents the probabilistic calibration of models with varying parameters in space and time, in the form of boundary conditions, material properties, and even numerical parameters. The course is intended to improve significantly the scientific and engineering inferences stemmed from research practice. Prerequisite(s): STAT 201

ECEN 765. Machine Learning and Networks. (3-0). Credit 3. Scientific analysis of large-scale data may discover useful knowledge. While many machine learning courses focus on analyzing data in a matrix format without taking care of relationships among variables, the major focus on this course is to introduce advanced methods that are designed to analyze structured data represented as networks. Prerequisite(s): Approval of instructor.

GEOL 647. Radiogenic Isotope Geology. (3-0). Credit 3. The use of radiogenic isotopes in addressing problems in high- and low-temperature geochemistry, including their use as tracers for past and present-day processes at the surface and interior of the Earth. Prerequisite(s): Permission of instructor.

GEOP 618. Numerical Methods for the Geosciences. (3-0). Credit 3. Mathematical theory and numerical techniques for modeling physical systems and processes in the Geosciences; discretization of continuum equations for solids and fluids; finite difference methods, convergence, consistency, and stability; finite element and spectral methods in fluid dynamics and seismology; iterative solvers; implicit and explicit methods for diffusion and advection. Prerequisite(s): Graduate classification or approval of instructor.

GEOP 634. Fundamentals of High Performance Computing for the Geosciences. (3-2) Credit 4. Architecture of High Performance Computing (HPC) systems; Unix operating systems, shell environment; algorithms and programming languages for the Geosciences; concurrency, dependency, parallelism; parallel performance, scalability; structured programming, serial, parallel patterns, parallel programming models; parallel algorithms and software design for the Geosciences; techniques for empirical parallel performance analysis. Prerequisite(s): Graduate classification or approval of instructor.

INTA 638. Political Economy of Development in Africa. (3-0). Credit 3. Course uses political economy lens to examine how political forces shape economic outcomes and how political institutions develop and respond to socio-economic realities.

INTA 640. The Politics and Practice of the Democracy Promotion. (3-0). Credit 3. Course will examine the contemporary challenges of promoting democracy worldwide; explore existing theoretical and empirical literature in democracy promotion as a topic within international relations and comparative politics.

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INTA 662. Intelligence Threats to National Security in the Modern Era. (3-0). Credit 3. Course focuses on the threats presented by the intelligence and security services of Russia, China, and Iran; will include in-depth discussion of the culture, mission, structure, and recent foreign intelligence threat activity both in the domestic and international arena.

INTA 664. The Middle East State System. (3-0). Credit 3. Course focuses on key challenges facing post-war societies; how recovery and development programs work; three main themes to be discussed, conflict, and humanitarian intervention and development

INTA 668. The Politics and History of the Arab Spring. (3-0). Credit 3. Course explores and examines socioeconomic, geopolitical, and cultural factors behind uprising in the region.

MEEN 604. Time Frequency Nonlinear Vibration Control. (3-0). Credit 3. Deployment of simultaneous vibration and frequency control in real-time to efficiently negate nonlinear dynamic instability. Address nonlinear vibrations in the joint time-frequency domain; theories on incorporating nonlinear dynamics and nonlinear time-frequency control into the control of bifurcation and route-to-chaos; integration on basic and advance topics from several engineering disciplines into the creation of an innovative, new control theory effective in denying bifurcation and chaotic state from emerging. Prerequisite(s): Graduate classification.

MSEN 610. Principles of Composite Materials. (3-0). Credit 3. Classification and characteristics of composite materials; micromechanical and macromechanical behavior of composite laminate; macromechanical behavior of laminates using classical laminate theory; interlaminar stresses and failure modes; structural design concepts, testing and manufacturing techniques. Prerequisite(s): MEMA 602

MSEN 618. Data-Driven Discovery of Materials. (3-0). Credit 3. Use of informatics approaches to establish quantitative structure-property relations (QSPRs) in materials and materials systems. Topics include: basic concepts of data mining, introduction to QSPRs, unsupervised learning, supervised learning, search algorithms applied to materials discovery. Prerequisite(s): Knowledge of basic materials science, permission from instructor

MSEN 655. Materials Design Studio. (2-3). Credit 3. Project-driven studio course based on the integration of informatics and engineering systems design to address problems in materials discovery and development. Student teams select projects derived from real industry-driven needs. Prerequisite(s): MEEN 601, MSEN/ECEN 618, MSEN 618 or equivalent, Permission from instructor.

MSEN 657. Multiscale Modeling in Materials. (2-3). Credit 3. Introduction to a wide range of computational methods to simulate materials behavior at multiple scales. The school consists of 10 days of instruction, with each day divided into theoretic and practical sessions. Prerequisite(s): Permission of instructor.

MSEN 660. Data-Driven Discovery of Materials. (3-0). Credit 3. Use of informatics approaches to establish quantitative structure-property relations (QSPRs) in materials and materials systems. Topics include: basic concepts of data mining, introduction to QSPRs, unsupervised learning, supervised learning, search algorithms, applied to materials discovery. Prerequisite(s): Knowledge of basic materials science, permission from instructor

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OCNG 634. Fundamentals of High Performance Computing for the Geosciences. (3-2) Credit 4. Architecture of High Performance Computing (HPC) systems; Unix operating systems, shell environment; algorithms and programming languages for the Geosciences; concurrency, dependency, parallelism; parallel performance, scalability; structured programming, serial, parallel patterns, parallel programming models; parallel algorithms and software design for the Geosciences; techniques for empirical parallel performance analysis. Prerequisite(s): Graduate classification or approval of instructor.

OCNG 656. MATLAB Programming for Ocean Sciences. (2-2). Credit 3. This course is designed to train students in computation techniques for oceanographic data processing using MATLAB. Each class will be a combination of lecture and lab on the day's topic. Students will be given background information and an assignment that will be worked on during the allotted time. Whenever possible, the assignments will focus on the analysis of oceanographic-related data sets and real-world oceanographic applications. Students are encouraged to bring their own data sets to analyze. Prerequisite(s): Graduate classification.

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Course Change Requests:

**BMEN 604: FDA Good Laboratory and Clinical Processes
PREREQUISITE(S)**

From: BMEN 430 or BMEN 630 and graduate classification, or approval of instructor

To: Graduate classification or approval of instructor

**BMEN 608: Optical Diagnostic and Monitoring Principles
PREREQUISITE(S), COURSE TITLE, COURSE DESCRIPTION**

From:

Prerequisite(s): MATH 308; PHYS 208

Course Title: Optical Diagnostic and Monitoring Principles

Course Description: Principles of optical spectroscopy, including absorption, fluorescence and scattering spectroscopy; emphasis on understanding how light interacts with biological samples and how these interactions can be optically measured, quantified and used for medical diagnosis and sensing.

To:

Prerequisite(s): BMEN 625 or approval of instructor

Course Title: Biophotonics II

Course Description: Photon transport in tissue; photon scattering and absorption; Mie scattering; Monte Carlo; optical spectroscopy, including absorption, fluorescence, and Raman scattering; multiphoton processes; and plasmonics.

**BMEN 631: Thermodynamics of Biomolecular Systems
PREREQUISITE(S), COURSE TITLE, COURSE DESCRIPTION**

From:

Prerequisite(s): BMEN 240, PHYS 208, MATH 308

Course Title: Thermodynamics of Biomolecular Systems

Course Description: Introduces equilibrium and non-equilibrium statistical mechanics and applies them to understand various biomolecular systems; including ensemble theory, reaction kinetics, non-linear dynamics, and stochastic processes; with applied examples such as enzyme-ligand binding kinetics, conformational dynamic of proteins and nucleic acids, population dynamics, and noise in biological signals.

To:

Prerequisite(s): Graduate classification or approval of instructor

Course Title: Bioengineering Thermodynamics

Course Description: Biothermodynamics; quantitative framework for describing materials behavior and processes as they relate to the properties and interactions of microscopic constituents; application to bioengineering and biomedicine problems.

**BMEN 641: Numerical Methods in Biomedical Engineering
PREREQUISITE(S)**

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From: BMEN 207, BIOL 213, and VTPP 435; graduate classification or approval of instructor

To: Graduate classification or approval of instructor

BMEN 650: Biomedical Optics Laboratory
PREREQUISITE(S)

From: MATH 308, PHYS 208

To: Graduate classification or approval of instructor

BMEN 652: Cell Mechanobiology
PREREQUISITE(S)

From: BMEN 282, CHEN 282

To: Graduate classification or approval of instructor

BMEN 661: Cardiac Mechanics
PREREQUISITE(S)

From: BMEN 240 and BMEN 602; MEMA 467; or equivalents

To: Graduate classification or approval of instructor

BMEN 663: Soft Tissue Mechanics and Finite Element Methods
PREREQUISITE(S)

From: BMEN 240 or equivalent

To: Graduate classification or approval of instructor

BMEN 682: Polymeric Biomaterials
PREREQUISITE(S)

From: BMEN 342, or approval of instructor

To: Graduate classification or approval of instructor

EDHP 504: Teaching Practicum
GRADE TYPE

To:
Grade Type: Grade

EDHP 505: Thesis
CREDIT

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From:

Credit: Lecture 1-3. Other 1-3.

To:

Credit: Other-3. SCH-3.

EDHP 506: Project

GRADE, COURSE DESCRIPTION, CREDIT

From:

Credit: Lecture 1-3. Other 1-3.

To:

Grade Type: Grade

Course Description: This course will guide students through the process of conducting a clinical or educational research project. Coursework will include development of a proposal from topic and title selection to citing the significance of the project, reviewing related literature, explaining the methodology and conducting research to the degree appropriate. The culminating action will be an oral presentation.

Credit: Other- 3. SCH- 3.

FINC 705: Corporate Finance

GRADE TYPE, COURSE TITLE

From:

Course Title: Corporate Finance

To:

Grade Type: Grade

Course Title: Corporate Financial Decision

GEOG 616: Digital Image Processing and Analysis

CREDITS

From:

Credit: (3-0). Credit 3.

To:

Credit: (3-1). Credit 3.

GEOG 651: Remote Sensing for Geographical Analysis

CREDIT

From:

Credit: (3-0). Credit 3.

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To:

Credit: (3-1). Credit 3.

GEOG 659: GeoDatabases

CREDITS

From:

Credit: (3-2). Credit 4.

To:

Credit: (3-1). Credit 3.

GEOG 660: Applications in GIS

PREREQUISITE(S), COURSE DESCRIPTION, AND CREDITS

From:

Prerequisite(s): GEOG 390; STAT 651 and STAT 652

Course Description: Integrates spatial analysis and modeling with GIS for environmental and socio-economic applications.

Credit: (3-0). Credit 3.

To:

Prerequisite(s): Graduate classification

Course Description: Basic concepts of design, planning, and implementation of geographic information systems.

Credit: (3-1). Credit 3.

GEOG 661: Digital Image Processing and Analysis

PREREQUISITE(S), COURSE DESCRIPTION, AND CREDITS

From:

Prerequisite(s): GEOG 332

Course Description: Principles of georectifying, processing, manipulating and interpreting data collected by nonphotographic sensors concentrating on solid earth resources using Thematic Mapper with supplemental data from the SPOT satellite

Credit: (3-0). Credit 3.

To:

Prerequisite(s): GEOG 651 or equivalent or approval of instructor

Course Description: Principles of georectifying, processing, manipulating and interpreting data collected by nonphotographic sensors concentrating on solid earth resources

Credit: (3-1). Credit 3.

GEOG 662: GIS in Land and Property Management

PREREQUISITE(S) AND CREDITS

From:

Prerequisite(s): Enrollment in Master of Land Economics and Real Estate; approval of instructor

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Credit: (2-2). Credit 3.

To:

Prerequisite(s): GEOG 604 or equivalent or approval of instructor
Credit: (3-1). Credit 3.

**GEOG 665: GIS-Based Spatial Analysis and Modeling
PREREQUISITE(S) AND CREDITS**

From:

Prerequisite(s): GEOG 390; STAT 651 or equivalent; approval of instructor
Credit: (3-0). Credit 3.

To:

Prerequisite(s): GEOG 660 or equivalent or approval of instructor
Credit: (3-1). Credit 3.

**GEOG 676: GIS Programming
CREDITS**

From:

Credit: (3-2). Credit 4.

To:

Credit: (3-1). Credit 3.

**GEOG 678: WebGIS
CREDITS**

From:

Credit: (3-2). Credit 4.

To:

Credit: (3-1). Credit 3.

**MEMA 613: Principles of Composite Materials
CROSS-LISTED COURSES**

To: Cross-listed with MSEN 610

**MSEN 601: Fundamentals of Materials Science and Engineering
CREDITS**

From: (4-0). Credit 4.

To: (3-0). Credit 3.

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**MSEN 602: Advanced Materials Science and Engineering
COURSE TITLE AND COURSE DISCRIPTION**

From:

Title: Advanced Materials Science and Engineering

Course Description: Fundamentals of quantum mechanics, physics of solid state, and physical electronics and photonics for advanced materials. Topics will include: basic quantum mechanical problems, quantum basis for structural and physical properties of solids, lattice vibrational effects in solids, free electron model for magnetism in solids, semiconductor materials and devices, nanostructures and mesoscopic phenomena, superconductivity, recent advances in new materials.

To:

Title: Physics of Materials

Course Description: Understanding of modern molecular level description of underlying physico-chemical behavior and properties of materials: such as thermal, mechanical, kinetic (transport), electronic, magnetic and optical properties and provide them with a rational basis for the synthesis, characterization and processing of such material, materials systems for engineering applications.

OCNG 615: Numerical Modeling of Ocean Circulation I

PREREQUISITE(S), CROSS-LISTED COURSES, COURSE TITLE, COURSE DISCRIPTION, CREDITS

From:

Perquisite(s): OCNG 608

Title: Numerical Modeling of Ocean Circulation I

Course Description: Mathematical theory and numerical technique of model development for ocean circulation; concepts of numerical consistency and stability; Lax equivalence theorem; commonly used finite difference schemes in ocean modeling; finite element and spectral methods as alternative means of discretization; positivity and CFT model; relaxation and direct methods for solving elliptic equations
Credit: (3-2). Credit 4.

To:

Perquisite(s): Graduate classification of approval of instructor

Title: Numerical Methods for the Geosciences

Course Description: Mathematical theory and numerical techniques for modeling physical systems and processes in the Geosciences; discretization of continuum equations for solids and fluids; finite difference methods, convergence, consistency, and stability; finite element and spectral methods in fluid dynamics and seismology; iterative solvers; implicit and explicit methods for diffusion and advection

Cross-List: ATMO 618 and GEOP 618

Credit: (3-1). Credit 3.

OCNG 616: Numerical Modeling of Ocean Circulation II

PREREQUISITE(S) AND COURSE TITLE

From:

Perquisite(s): OCNG 615

Title: Numerical Modeling of Ocean Circulation II

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To:

Prerequisite(s): OCN 618

Title: Numerical Modeling of Ocean Circulation

PSAA 610: Comparing Domestic and Intl Organization in Public Administration

COURSE TITLE AND COURSE DESCRIPTION

From:

Course Title: Comparing Domestic and International Organizations in Public Administration

Course Description: Overview of federal, state, and international public organizations; public agencies under the cabinets of the executive branch; universal patterns in organizational that promote the most “desirable” policy outcomes used nationally and internationally.

To:

Course Title: Comparative Public Administration and Management

Course Description: Addresses challenges in policy implementation, public administration and public management; draws on experiences of a wide range of developed and developing countries; explores factors behind variations in institutional and social contexts; utilizes case discussion to help students confront challenges and constraints faced in public organizations and public managers worldwide.

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Curriculum Change Request:

Texas A&M Health Science Center
College of Nursing

Master of Science in Nursing Education

Reduction of degree program offering from 41 hours to 36 hours

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Special Consideration Items:

Bush School of Government and Public Service
Graduate Certificate in Homeland Security
Change in Approved Course Delivery Methods

Bush School of Government and Public Service
Master of Public and Service and Administration
Addition of PSAA 643: Foundations of the Nonprofit Sector as Core Course Requirement

Bush School of Government and Public Service
Master of Public and Service Administration
Deletion of Nonprofit Management Concentration

Computer Engineering
Master of Engineering
Distance Education

Electrical Engineering
Master of Engineering
Distance Education

Maritime Administration
Maritime Administration and Logistics
Residency Waiver

Sociology
Latino/a and Mexican American Studies Minor
Graduate Certificate

Technical Engineering
Master of Engineering
Distance Education