

Graduate Council Report

New Course Request:

BIED 621. Methods for Bilingual Research. (3-0). Credit 3. Understanding educational research and research methodologies; use of research findings to appropriately inform school and classroom practices; overview of the research methodology to develop skills as future researchers and consumers of research; examination of qualitative and quantitative research methodologies and mixed methods in relation to their application to diverse populations. Prerequisite(s): Graduate classification; approval of department head.

ECEN 704. VLSI Circuit Design. (3-3). Credit 3. Analysis and design of monolithic analog and digital integrated circuits using NMOS, CMOS, and bipolar technologies; device modeling; CAD tools and computer-aided design; design methodologies for LSI and VLSI scale circuits; yield and economics; test and evaluation of integrated circuits. Prerequisite(s): Graduate classification.

ECEN 714. Digital Integrated Circuit Design. (2-2). Credit 2. Analysis and design of digital devices and integrated using MOS and bipolar technologies and computer aided simulation. Stacked with ECEN 454.

ECEN 749. Microprocessor Systems Design. (2-2). Credit 2. Introduction to microprocessors; 16/32 bit single board computer hardware and software designs; chip select equations for memory board design, serial and parallel I/O interfacing; ROM, static and dynamic RAM circuits for no wait-state design; assembly language programming, stack models, subroutines, and I/O processing. Prerequisite(s): Graduate classification. Stacked with ECEN 449.

EDTC 642. Designing for Mobile Learning. (3-3). Credit 3. Introduction to basics of designing educational applications for mobile devices; emphasis on instructional, visual, and human-computer interaction design principles; hands-on design and development work combined with a theoretical approach to designing learning experiences; previous programming experiences; previous programming experience is not required. Prerequisite(s): Graduate classification; approval of department head.

EPSY 650. Multiple Regression and Other Linear Models in Education Research. (3-0). Credit 3. Overview of basic and advanced topics in regression analysis; equal emphasis on developing procedural knowledge, statistical theory, research design, and practical issues and methods using statistics in empirical research; basis of linear regression models and logistic regression models. Prerequisite(s): EPSY 641 or STAT 652 or SOCI 631; graduate classification or approval of department head.

FINC 641. Valuation. (3-0). Credit 3. Theory and application of various approaches to valuation; measuring and managing the value of corporations; principles of value methodology; application of value creation principles to managerial problems; special cases and complex valuation issues. Prerequisite(s): ACCT 229, ACCT 610, or ACCT 640; FINC 631, FINC 632, or FINC 629; graduate classification; approval of department head.

FINC 646. Technical Analysis of Financial Markets. (3-0). Credit 3. Use of price, volume, and other non-fundamental, market, and behavioral data to analyze and predict security prices; emphasis on pattern recognition and correlation analysis over theory and casual analysis; application of technical analysis as an investment discipline for institutional portfolio management; principles, terminology, techniques, and emerging theories of technical analysis. Prerequisite(s): FINC 351, FINC 361, FINC 629, or FINC 632.

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FINC 648. Advanced Investments. (3-0). Credit 3. Application of finance theory to complex investment problems; implementation of assets pricing models, portfolio theory, and arbitrage strategies; implications of principles of market efficiency and behavioral finance for selection of individual securities and portfolios. Prerequisite(s): FINC 351, FINC 361, FINC 629, or FINC 632.

GEOP 631. Seismic Data Processing. (3-3). Credit 3. Methods used to image the Earth using seismic reflection data, including deconvolution, f-k-filtering, velocity analysis, and migration; processing software; emphasis on field data. Prerequisite(s): Graduate classification or approval of instructor.

ICPE 601. Environmental Issues of Energy Systems. (1.5-0). Credit 1.5. Introduction to energy-related engineering principles and energy conservation efficiency; basic processes and chemicals/materials used in the current and emerging energy systems; impact on the environment; approaches for minimizing contaminants released by usage of energy sources. Prerequisite(s): Graduate classification.

ICPE 602. Reservoir Characterization and Modeling. (1.5-0). Credit 1.5. Application of geostatistical techniques to build reservoir models through integration of geological core/well log, seismic and production data to generate a consistent reservoir description; background and insights to geostatistical modeling techniques and situation where the application of geostatistics could add value. Prerequisite(s): Graduate classification.

ICPE 603. Bioenergy. (1.5-0). Credit 1.5. Introduction to the fundamentals of biomass (biochemistry and resources); basics of important processing technologies for the pre-treatment and conversion of biomass to useful products. Prerequisite(s): Graduate classification.

ICPE 604. Energy Systems Engineering I. (1.5-0). Credit 1.5. State-of-the-art topics for energy systems engineering including modelling of energy systems, mixed integer and continuous optimization techniques for the analysis of energy systems, model based control, and interactions of design, control and scheduling of power and energy systems. Prerequisite(s): Graduate classification.

ICPE 605. Energy Systems Engineering II. (1.5-0). Credit 1.5. State-of-the-art topics for energy systems engineering, including modeling of hybrid feedstock energy systems, ebergy supply chain networks, polygeneration systems, model predictive control, fuel cells, and combined heat and power systems. Prerequisite(s): ICPE 604.

ICPE 606. Introduction to Optimization. (1.5-0). Credit 1.5. Basics of deterministic optimization, with focus on modeling and computer solutions; practical examples to develop understanding of modeling and solution techniques that can be used to improve decision-making; linear, non-linear, mixed integer, combinatorial, and network optimization problems. Prerequisite(s): Graduate classification.

ICPE 607. Energy Accounting. (1.5-0). Credit 1.5. Exploration of the financial aspects of the energy industry; emphasis on oil and gas with additional attention placed on all sources of power generation, including alternatives; interactive with cases worked in each session; advance preparation guided by the instructor. Prerequisite(s): Graduate classification.

ICPE 608. Beyond Science and Technology: The Role of Policy in Future of Energy in the U.S. (1.5-0). Credit 1.5. Introduction to the history of U.S. science and technology policy with a specific emphasis on energy; focus on regulatory rules, the key government agencies at the national level, the role states and localities play, how government funds are allocated in research and technology transfer related to

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energy innovations, the role of universities, the threats and opportunities to energy-related educational success at all levels. Prerequisite(s): Graduate classification.

ICPE 609. Introduction to U.S. Energy Law and Policy. (1.5-0). Credit 1.5. Introduction to energy law and regulation in the United States; focus on the key sources of energy (both nonrenewable and renewable) driving the U.S. economy, and identifies the various challenges facing the industry in their production and distribution; key regulations and laws governing energy production as well as the jurisdictional and regulator divisions between federal and state governments. Prerequisite(s): Graduate classification.

ICPE 610. The Global Energy Future. (1.5-0). Credit 1.5. Global energy outlook, including energy demand, population growth and humanitarian issues, environmental and climate concerns, and the energy/water nexus and water scarcity; evolution of the global oil and gas industry; controlling nations, laws, and agencies (OPEC, IEA, etc.); international and domestic climate change laws and policies; global future of climate change adaptation and mitigation. Prerequisite(s): Graduate classification.

ICPE 611. Economics of Energy. (1.5-0). Credit 1.5. Basics of economics concepts as they relate to energy applications; how the government policies affect the energy economy; present the economics of energy and climate change; introduction to renewable technologies and their impact. Prerequisite(s): Graduate classification.

ICPE 612. Entrepreneurship in Energy. (1.5-0). Credit 1.5. Focus on developing an understanding of the techniques and issues for growing emerging organizations in the energy field; participants will be guided through a range of issues faced by a venture team in building and growing a new organization or pursuing innovative projects inside existing organizations. Prerequisite(s): Graduate classification.

ICPE 613. Natural and Shale Gas Monetization: Technologies, Fundamentals, Economics, and Applications. (1.5-0). Credit 1.5. Focuses on important role played by natural and shale gas in energy market and the potentials to grow; major monetization processes including production, treatment, processing, and conversion; key economic and technical aspects as they pertain to the processing technologies and the supply chains of natural and shale gas. Prerequisite(s): Graduate classification.

ICPE 614. CO₂ Sequestration. (1.5-0). Credit 1.5. Introduction to the goals and methods of CO₂ sequestration in the subsurface and of monitoring its effectiveness; discussion and explanation of current technological challenges and problems in monitoring CO₂ in the subsurface and in implementing sequestration for mitigating climate change; addresses how carbon is transferred between atmosphere, hydrosphere, biosphere, and geosphere by natural processes; basic geologic processes influencing sequestration programs.

ICPE 615. Smart Grid Fundamentals. (1.5-0). Credit 1.5. Fundamentals of electricity grid development; monitoring, control and protection; renewable generation; microgrids and grid integration; electricity markets; long term planning and associated risk, and grid robustness. Prerequisite(s): Graduate classification.

ICPE 616. Multi-functional Materials for Energy Conversion. (1.5-0). Credit 1.5. Focus on the two most important multi-functional materials (MFMs): Piezoelectric materials and shape memory alloys (SMA); understanding the materials, and how devices are designed using these materials; energy conversion will be studied via: (1) actuators that convert electrical or thermal energy into mechanical work; and (2)

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energy harvesting, in which mechanical work is converted into electrical energy. Prerequisite(s): Graduate classification.

ICPE 617. Gas Separations for Energy: Fundamentals, Applications and New Directions. (1.5-0). Credit 1.5. Robust foundation of advanced expertise in gas separation technologies including (i) solid-phase absorbent technologies, (ii) liquid amine-based absorption technologies, (iii) polymeric and inorganic membrane technologies, and (iv) emerging reactive separation for process intensification. Prerequisite(s): Graduate classification.

ICPE 618. Carbon capture, Utilization and Storage, CCUS. (1.5-0). Credit 1.5. Introduction to technologies for carbon capture, modeling and techno-economic analysis and comparison of different carbon capture technologies, and economics of carbon capture, utilization, and storage statewide and nationwide. Prerequisite(s): Graduate classification. Prior knowledge of an undergraduate engineering level of familiarity of chemistry and physics is desirable.

ICPE 619. Nanomaterials Engineering and Energy Storage. (1.5-0). Credit 1.5. Nanomaterial synthesis and processing with an emphasis on the creation of materials relevant to energy storage (batteries, capacitors, etc.). Prior knowledge of an undergraduate engineering level of familiarity of chemistry and physics is desirable. Prerequisite(s): Graduate classification.

ICPE 620. Thermoelectric Materials and Devices. (1.5-0). Credit 1.5. Methods useful for the synthesis of both bulk crystals and nanomaterials (nanoparticles and nanowires); focus on the underlying thermodynamics and kinetic principles involved in the synthesis of these materials; pathways useful for the integration of nanomaterials into functional thermoelectric devices, methods used for ascertaining the thermoelectric performance of materials and devices. Prerequisite(s): Graduate classification.

ICPE 621. Thermoelectrics: Fundamentals of Electronic and Thermal Transport. (1.5-0). Credit 1.5. Fundamentals of electronic and phononic phenomena; understanding of thermodynamics and transport properties from a microscopic viewpoint; thermal transport theories for analyzing and designing energy conversion devices, nanomaterials, and nano/micro-electromechanical systems (NEMS/MEMS). Prerequisite(s): Graduate classification.

ICPE 622. Energy Efficiency in Buildings. (1.5-0). Credit 1.5. Introduction to energy efficiency in buildings; understanding the energy use in buildings, the heating and cooling requirements, the role of renewable energy resources, the impact of lighting, the role of optimal control measures in existing and new buildings, the verification of energy savings, and the building energy simulation. Prerequisite(s): Graduate classification.

ICPE 623. Water-Energy-Food Nexus: Towards Sustainable Resource Allocation. (1.5-0.5). Credit 1.5. Securing energy, clean water, and greening agriculture; principles of the Water-Energy-Food nexus and its application to the corresponding three themes; includes hands on laboratory.

ICPE 624. Energy-Water-Nexus. (1.5-0). Credit 1.5. Various aspects of energy-water nexus including the fundamentals, technologies, applications, and economics; focus on energy production, conversion and utilization; connection with water production, treatment, delivery and usage. Prerequisite(s): Graduate classification.

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ICPE 625. Integrated Risk Management for Exploration and Production Projects. (1.5-0). Credit 1.5. Structured introduction to project systems and advance analysis of integrated project risks to practicing engineers and decision makers in the energy sector; emphasis on risks in context of a) project phase-gate process, b) systems representation, and c) flow across different functional and design requirements, areas of expertise /specialization, and construction/installation methods. Prerequisite(s): Graduate classification.

ICPE 626. Safety in Energy Systems. (1.5-0). Credit 1.5. Role of leadership and development of management systems to ensure safety performance in energy systems, a systems approach to safety management for energy systems, lifecycle analysis and the energy supply chain, and applications of engineering principles of process safety and hazards analysis. Prerequisite(s): Graduate classification.

ICPE 627. Interfacial Phenomena of Energy Systems. (1.5-0). Credit 1.5. Fundamentals of interfacial phenomena, energy related interfacial materials, and interfacial issues of energy systems; specific energy-related applications include oil recovery, lubrication, thermal management, photovoltaics, battery, fuel cells, and supercapacitors. Prerequisite(s): Graduate classification.

ICPE 628. Multi-physics Geomechanisms for Energy Applications. (1.5-0). Credit 1.5. Focuses on main physical phenomena and processes that control the behavior of porous media; formulation for non-isothermal multiphase flow and transport problems in deformable porous media; problems of practical interest in broad field geo-engineering and geo-mechanics. Prerequisite(s): Graduate classification.

INTA 636. International Development in Theory and Practice. (3-0). Credit 3. Course reviews various definitions of development and the theories which explain why some countries development and other do not, current controversies will be examined about which factors lead to economic growth; what role good governance and democratic institutions play; the cultural values of a society; social services play in government. Prerequisite(s): Graduate classification.

KINE 631. Specialized Strength & Conditioning Techniques. (3-0). Credit 3. Research based physiological responses and adaptations associated with power, speed, quickness, flexibility and mobility are covered in conjunction with laboratory demonstration/implementation of specific practical experiences based on available scientific research. Practical mastery as well as theoretical understanding is required. Prerequisite(s): KINE 629 or approval of instructor.

MARB 635. Marine Invertebrate Zoology. (3-3). Credit 3. General biology of marine invertebrate animals; morphology, evolution, and systematics. Laboratory will stress studies of local fauna. Prerequisite(s): Graduate classification. Stacked with MARB 435.

MARS 626. Advanced GIS for Coastal Systems. (2-2). Credit 2. Conceptual and technical expansion of GIS and spatial analysis methods. Hands on experience with multidisciplinary data sets relevant to coastal systems; spatial and statistical methods, creation, manipulation, and analysis of various datasets that address the interaction of human and natural systems in coastal habitats. Prerequisite(s): MARS 625, ESSM 351, ESSM 651, RENR 405, or similar course; graduate classification or approval of instructor.

OCNG 603. Communicating Ocean Science. (3-0). Credit 3. Instruction and practice with presenting scientific information on the ocean to a variety of audiences under different time constraints. Critical components for any presentation; knowing your audience; designing effective visual aids and graphics; leading your audience through complex concepts; and communication with non-scientists.

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PSYC 605. Memory & Consciousness. (3-0). Credit 3. Research on consciousness and memory; all levels of conscious awareness associated with memory retrieval , from detailed personal experiences of remembering to unaware uses of memory; implicit and explicit memory; automatic and controlled processes; metacognitive explorations of consciousness. Prerequisite(s): Graduate classification or approval of instructor.

VIBS 621. Endocrine Toxicology. (3-0). Credit 3. Impacts of endocrine toxicology on the endocrine system; prevalence, environmental and occupational use and disposal of environmental endocrine disrupting chemicals (EDCs); and structure, toxicokinetics and mechanism of action of EDCs; effects of EDCs on the development and function, disorders, and diseases of endocrine and reproductive organs. Prerequisite(s): Graduate classification or approval of instructor.

VTMI 602. Animal Models of Obesity. (4-0). Credit 4. Overview of animal models of obesity; emphasis on rodent genetically engineered models of obesity related to diabetes mellitus type 2 (“obesity related diabetes”) and leptin research to understand metabolism, molecular biology, and origin of lipids as signaling molecules important in obesity. Prerequisite(s): Graduate classification or approval of instructor; minimum 3 credit hours of undergraduate or graduate biochemistry.

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Course Change Request:

ANSC 615: Comparative Ruminant Animal Nutrition

COURSE TITLE AND CATALOG DESCRIPTION:

FROM: Comparative Ruminant Animal Nutrition. (3-0). Credit 3. Contrast two scenarios of ruminant production in Brazil; the effects of globalization on the two different production systems.

TO: Brazil: Comparative Ruminant Animal Nutrition. (3-0). Credit 3. Contrast two scenarios of ruminant production in Brazil; the effects of globalization on the two different production systems.

BIOL 611: Molecular Biology Differentiation & Development

COURSE TITLE AND CATALOG DESCRIPTION:

FROM: Molecular Biology Differentiation & Development. (3-0). Credit 3. Major paradigms of eukaryotic gene regulation in terms of the role of gene expression during ontogeny and the effect of dysfunction in these processes on the neoplastic state.

TO: Brazil: Developmental Genetics. (3-0). Credit 3. Major paradigms of eukaryotic gene regulation in terms of the role of gene expression during ontogeny and the effect of dysfunction in these processes on the neoplastic state.

ECEN 773: Introduction to Nanophotonics

PREREQUISITE(S):

FROM: PHYS 370, PHYS 322

TO: Instructor Approval

FSTC 611: Poultry Processing and Distribution Technology

COURSE TITLE AND CATALOG DESCRIPTION:

FROM: Poultry Processing and Distribution Technology. (3-2). Credit 4. Poultry and egg composition, mechanisms of poultry and egg quality preservation, effects of storage environments, time and product treatment; evaluation of commercial methods of product assembly, processing, distribution and quality control; evaluation of physical, microbiological, functional and chemical methods of quality determination. Cross-listed with POSC 611.

TO: Poultry Further Processing. (3-0). Egg and poultry meat processing; egg markets, egg processing, grading, packaging, safety, quality and consumer acceptance of shell eggs; poultry meat processing

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(specifically turkey and broilers), meat quality, markets, consumer acceptance of poultry meat and safety. Cross-listed with POSC 611.

INTA 662: Nuclear Security Threat Assessment and Analysis

Withdrawal (reason): Course was already submitted for permanent number, INTA 669.

MARS 625: GIS Use in Costal Resources

COURSE TITLE AND CATALOG DESCRIPTION:

FROM: GIS Use in Costal Resources. (1-3). Credit 2. Basic concepts of design, planning, and implementation of Geographical Information Systems; computer hardware and software evaluation; practical experience in data entry, analysis and update of spatial and characteristic data; use of maps and remotely sensed data as data. Prerequisite(s): Any computer science course or equivalent; graduate classification or special approval.

TO: GIS Use in Costal Resources. (2-2). Credit 3. Basic concepts of design, planning, and implementation of Geographical Information Systems; computer hardware and software evaluation; practical experience in data entry, analysis and update of spatial and characteristic data; use of maps and remotely sensed data as data. Prerequisite(s): Any computer science course or equivalent; graduate classification or special approval.

POSC 611: Poultry Processing and Distribution Technology

COURSE TITLE AND CATALOG DESCRIPTION:

FROM: Poultry Processing and Distribution Technology. (3-2). Credit 4. Poultry and egg composition, mechanisms of poultry and egg quality preservation, effects of storage environments, time and product treatment; evaluation of commercial methods of product assembly, processing, distribution and quality control; evaluation of physical, microbiological, functional and chemical methods of quality determination. Cross-listed with FSTC 611.

TO: Poultry Further Processing. (3-0). Egg and poultry meat processing; gg markets, egg processing, grading, packaging, safety, quality and consumer acceptance of shell eggs; poultry meat processing (specifically turkey and broilers), meat quality, markets, consumer acceptance of poultry meat and safety. Cross-listed with FSTC 611.

POSC 628: Advanced Poultry Meat Processing

COURSE TITLE AND CATALOG DESCRIPTION:

FROM: Advanced Poultry Meat Processing. (3-0). Credit 3. Farm-to-table review of quality and safety effects of processing steps converting chicken broilers into poultry meat and derived products;

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discussion of current research and events influencing the poultry processing industry; preparation of research proposals needs in the field. Prerequisite(s): Graduate classification.

TO: Advanced Poultry Further Processing. (3-0). Credit 3. The science and practice of value added products; physical, chemical, microbiological, and functional characteristics of value-added poultry products as they affect consumer acceptance, efficiency of production, and regulatory approval.

SPSY 612: Individual Assessment of Children's Intelligence

PREREQUISITE(S):

FROM: EPSY 622; approval of department head.

TO: Approval of instructor; approval of department head.

COURSE TITLE AND CATALOG DESCRIPTION:

FROM: Individual Assessment of Children's Intelligence. (3-0). Credit 3. Educational and clinical applications of assessment; diagnostic measures of intelligence, language abilities, perception and achievement; videotaping of student test administration is required for purposes of supervision and self-evaluation. Limited to 12 students per semester.

TO: Individual Assessment of Children's Intelligence. (3-0). Credit 3. Educational and clinical applications of assessment; diagnostic measures of intelligence, achievement, language abilities, and perception; videotaping of student test administration is required for purposes of supervision and self-evaluation. Limited to 12 students per semester.

SPSY 614: Integrated Assessment Practicum

PREREQUISITE(S):

FROM: SPSY 612; approval of department head

TO: SPSY 612; SPSY 617; approval of department head

SPSY 617: Emotional Disturbance in Children

PREREQUISITE(S):

FROM: SPSY 610; SPSY 612

TO: SPSY 610; SPSY 612; SPSY 642

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SPSY 628: Consultation Theory and Techniques

PREREQUISITE(S):

FROM: SPSY 612 and SPSY 614 or approval of instructor; approval of department head.

TO: Approval of instructor; approval of department head.

SPSY 638: Systems Consultation and Prevention Science

PREREQUISITE(S):

FROM: SPSY 628; approval of department head.

TO: Approval of department head.

SPSY 641: Child Therapy for School Behavior Problems

PREREQUISITE(S):

FROM: PSYC 628; approval of department head

TO: SPSY 610; approval of department head

SPSY 657: Bilingual Psychoeducational Assessment

PREREQUISITE(S):

FROM: EPSY 622; approval of department head.

TO: SPSY 612; approval of department head.

SPSY 683: Field Experience/Externship in School Psychology

PREREQUISITE(S):

FROM: Approval of department head.

TO: Approval of instructor and department head.

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SPSY 684: Professional Internship

PREREQUISITE(S):

FROM: Completion of required substantive coursework; approval of department head.

TO: Completion of required substantive coursework; approval of instructor and department head.

VPAT 640: Advanced Mechanisms of Disease

COURSE TITLE AND CATALOG DESCRIPTION:

FROM: Advanced Mechanisms of Disease. (3-0). Credit 3. Concepts of pathogenesis of disease processes. Prerequisite(s): DVM degree or approval of instructor.

TO: Advanced Mechanisms of Disease. (2-0). Credit 2. Concepts of pathogenesis of disease processes. Prerequisite(s): DVM degree or approval of instructor.

VPAT 642: Mechanisms of Metabolic Disease

COURSE TITLE AND CATALOG DESCRIPTION:

FROM: Advanced Mechanisms of Disease. (3-0). Credit 3. Characteristics and mechanisms of diseases caused either by deficiency, imbalance, excess of specific nutrients or chemicals, or by regulatory disturbances of metabolism. Prerequisite(s): DVM degree or approval of department head.

TO: Advanced Mechanisms of Disease. (2-0). Credit 2. Characteristics and mechanisms of diseases caused either by deficiency, imbalance, excess of specific nutrients or chemicals, or by regulatory disturbances of metabolism. Prerequisite(s): DVM degree or approval of department head.

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Curriculum Change Requests:

Master of Real Estate Degree

CREDIT HOURS DEGREE:

FROM: 38

TO: 36

B.A. 3+2 in Sociology

Changes make to Undergraduate Portion

B.S. 3+2 in Sociology

Changes make to Undergraduate Portion

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Special Consideration Items:

Texas A&M Energy Institute

Professional Master of Science in Energy Degree Program
Proposal for Degree Program

Texas A&M Energy Institute

Certificate in Energy
Proposal for Certificate Program/Grad Certificate

College of Education

Department of Health and Kinesiology
Master of Science in Athletic Training
Request for 2 member committee instead of 3 member committee

College of Liberal Arts

Department of Economics
Master of Science in Economics
Request to change CIP code

Dwight College of Engineering

Department of Aerospace Engineering
Master of Engineering in Aerospace Engineering
Proposal for Master of Engineering in Aerospace Engineering

College of Geosciences

Department of Oceanography
Master of Ocean Science and Technology
Proposal for Master of Ocean Science and Technology