Memo To: Faculty Senate
From: Missouri S&T Campus Curricula Committee Meeting
RE: May 4, 2011

The Missouri S&T Campus Curricula Committee recommends to the Faculty Senate that the curriculum changes and degree proposals on the following DC forms be approved.

Approved DC forms:
DC 0382, Petroleum Engineering, Bachelor of Science, approved effective Fall 2011. A proposal to modify the current Bachelor of Science degree in Petroleum Engineering.

DC 0384, Sustainability minor, approved effective Fall 2011. A proposal to create a multi-disciplinary undergraduate minor program in sustainability.

DC 0387, Metallurgical Engineering, Bachelor of Science, approved effective Fall 2011. A proposal to modify the current Bachelor of Science degree in Metallurgical Engineering.

DC 0388, Electrical Engineering, Bachelor of Science, approved effective Fall 2011. A proposal to revise the current emphasis areas of circuits and electronics, electromagnetic, and computer engineering for the Bachelor of Science in Electrical Engineering.

DC 0389, Philosophy, minor in Philosophy of Technology, approved effective Fall 2012. A proposal to create a new minor called Philosophy of Technology.

DC 0390, Arts, Languages, & Philosophy, minor in Ethics, approved effective Fall 2012. A proposal to create a new minor called Ethics.

DC 0391, Electrical Engineering, Bachelor of Science, approved effective Fall 2011. A proposal to revise and re-name the current emphasis areas of power, communications/signal processing, controls, and to also create a new one called optics and devices.

The Missouri S&T Campus Curricula Committee recommends to the Faculty Senate that the course changes on the following CC forms be approved.

Approved CC forms:

CC 8088, Architectural Engineering 371, Environmental Controls. New course approved effective Fall 2011.
Catalog Description: Theory and applications of principles of heating, ventilating, and air conditioning equipment and systems; design problems. Physiological and psychological factors relating to environmental control.
Credit Hours: 3 hour lecture
Prerequisites: ME 221 and accompanied or preceded by ME 225; or ME 227 and Civ Eng 230
Co-listing: ME 371

CC 8089, Mechanical Engineering 371, Environmental Control, The following change is approved effective Fall 2011.
Course Title – Proposed: Environmental Controls
Co-listing: ArchE 371

CC 8124, Physics 456, Advanced Chaos, Fractals, and Nonlinear Dynamics, New course approved effective Fall 2011.
Catalog Description: An introduction into nonlinear dynamics, deterministic chaos, and fractals. Topics include phase plane analysis, routes to chaos, and pattern formation with applications in physics, chemistry and biology. Graduate students will be required to do extra work upon consultation with their advisor.
Credit Hours: 3 hour lecture
Prerequisites: Math 204; Physics 24 or Physics 25; Graduate standing

CC 8138, Environmental Engineering 365, Civil Engineering 365, Architectural Engineering 365, Sustainability, Population, Energy, Water, and Materials, New course approved effective Fall 2012.
Catalog Description: This course will examine the concepts regarding the continued advancement of humankind while maintaining our ecological niche on earth. Key topics include: population growth, poverty, and impacts of development; energy consumption, sources, storage, conservation and policy; water quality and quantity; materials and building; and policy implications.
Credit Hours: 3 hours lecture
Prerequisites: Senior or graduate standing

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CC 8140, Electrical Engineering 371, Grounding and Shielding. The following changes are approved effective Spring 2012.
Course Title – Proposed: Interference Control in Electronic Systems
Catalog Description – Proposed: Principles of high frequency effects in PCBs and components, generation of unwanted radio-frequency (RF) signals by ICs, RF radiation mechanisms, shielding, and immunity against electrostatic discharge and RF signals.
Prerequisites – Proposed: EE 217 and 271

CC 8143, Civil Engineering 356, Concrete Pavement Design. New course approved effective Spring 2012.
Catalog Description: Design of rigid pavements including loading characteristics, properties of pavement components, stress distribution, and the effects of climatic variables on design criteria.
Credit Hours: 3 hour lecture
Prerequisites: CE 216 with a grade of "C" or better

CC 8144, History 221, Making of Modern Germany. New course approved effective Spring 2012.
Catalog Description: A survey of modern Germany from 1815 through the present. Major themes include social intellectual, cultural, political, and economic aspects of modern and contemporary Germany, with emphasis on developments during the twentieth century.
Credit Hours: 3 hour lecture
Prerequisites: Hist 112 or Hist 176

CC 8145, Geology 481, Geodynamics. The following change is approved effective Fall 2011.
Co-listing: Petroleum Engineering 481

CC 8146, Petroleum Engineering 481, Geodynamics. New course approved effective Fall 2011.
Catalog Description: The applications of continuum physics to geological and petroleum engineering problems. Topics include plate tectonics, stress and strain in solids, elasticity and flexure, heat transfer, gravity, fluid mechanics, rock rheology, faulting, and flow in porous media.
Credit Hours: 3 hour lecture
Prerequisites: Math 22 and Geo 220
Co-listing: Geo 481

CC 8147, Mining Engineering 235, Underground Mine Design. The following change is approved effective Spring 2012.
Prerequisites: Mining 225

For the information of the Faculty Senate, the following EC forms have been submitted by the University departments for an experimental course that will be offered in the near future.

Approved EC forms:
EC 2331, Nuclear Engineering 301, Monte Carlo Approach to Reactor Analysis, effective Fall 2011.
Course Description: An introduction to stochastic methods in solving particle transport problems with a view to utilizing the methods in reactor design and analysis, shielding problems, flux calculations, reaction rate determinations and general steady-state reactor physics analysis.
Credit Hours: 3 hour lecture
Prerequisites: Math 22; both CS 73 and 77 or both CS 74 and 78; accompanied or preceded by NE 205

EC 2337, Architectural Engineering 301, Building performance and System Optimization, approved effective Fall 2011.
Course Description: This course introduces the concept of total building performance, delineating the full range of performance mandates required for today's architecture, including building integrity. The course will explore the relationships, opportunities, and conflicts of the performance mandates, and the integration of building systems necessary to achieve total building performance.
Credit Hours: 2 hour lecture, 1 hour lab
Prerequisites: ME 371 or ArchE 371 or CE 242, with a "C" or better

EC 2338, Architectural Engineering 301, Civil Engineering 301, Structural Masonry Design, effective Fall 2011.
Course Description: Theory and practice of analyzing and designing low-rise masonry structures. Materials and assembly types, constructability considerations, structural masonry components, repair and strengthening, and model code requirements to ensure adequate load resisting buildings.
Credit Hours: 3 hour lecture
Prerequisites: ArchE 217 or CivE 217

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EC 2339, Nuclear Engineering 301, Radiochemistry and Nuclear Forensics, effective Spring 2012.
Course Description: This course provides an overview of radiochemistry and nuclear forensics including properties of radiation, the effect of radiation interaction with matter and biological systems, the use of radioactive tracers, the chemistry and separation of radioactive species, a survey of environmental radioactivity, spread of radioisotopes in the environment, attribution and trafficking.
Credit Hours: 3 hour lecture
Prerequisites: Chem 1 and Chem 2

EC 2340, Biological Sciences 201, Vegetation of the Ozarks, approved effective Summer 2011.
Course Description: Field-based class introducing the common and characteristic plants that define the different natural communities in the Ozarks. Class runs from 8:00 until 5:00 pm for one week. Mornings: lecture; Afternoon: field work in the Rolla area.
Credit Hours: 1 hour lecture, 1 hour lab
Prerequisites: Bio Sci 110 or Bio Sci 111

EC 2341, Chemistry 401, Nuclear Magnetic Resonance Spectroscopy and Imaging, effective Fall 2011.
Course Description: Fundamental 1D & 2D NMR spectroscopy and imaging including: Chemical Shielding, Nuclear Quadrupole Interaction, Dipolar Coupling, J-Coupling, Spin Relaxation, Spin Decoupling, Polarization Transfer, Homo-And Heteronuclear Spin Correlations, Spin Exchange, Spin Echoes, Projection-Reconstruction Imaging, Rotating-Frame Imaging, and Diffusion Measurements.
Credit Hours: 2 hour lecture, 1 hour lab
Prerequisites: Chem 251

EC 2342, Speech & Media 201, Environmental Communication & the Public Sphere, effective Fall 2011.
Course Description: Explores communication messages, methods, processes, participants, and stakeholders in addressing environmental controversies aimed to protect wilderness, natural resources, health, consumers, citizens, producers, retailers, and global climate in struggles to achieve a more just and sustainable world.
Credit Hours: 3 hour lecture
Prerequisites: Sp&M 085 or Sp&M 181

EC 2343, Explosives Engineering 301, Commercial Display Fireworks Manufacturing, effective Fall 2011.

Course Description: The theory and practice of manufacturing commercial display fireworks. Focus on safety, chemical interaction, color development, and basic theory. Hands on building of canister and ball shells. Production of mines, comets, and other pyrotechnic effects. Instruction on BATFE and state law.

Credit Hours: 1 hour lecture, 2 hour lab

Prerequisite: Chem 4 and at least junior standing

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Daniel Tauritz, Chair
Missouri S&T Campus Curricula Committee