

**OFFICE OF THE REGISTRAR**

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

Minutes
Campus Curricula Committee Meeting
September 26, 2006 Meeting
12:30 p.m. Room 117 Fulton Hall

Approval of May 02 and August 15, 2006 minutes.

Barry Flachsbart (substitute for Richard Hall), Shannon Fogg, Lance Gentry, Angie Huffman, Irina Ivliyeva, Keith Nisbett, and Jennifer Thorpe attended the meeting. Guests were Henry Wiebe.

Review of submitted DC forms:

DC 0202, School of Engineering, Architectural Engineering, approved effective FS2007. A proposal to modify the current curriculum for the BS in Architectural by changing History 274 to History 375.

DC 0203, School of Engineering, Environmental Engineering, approved effective FS2007.

A proposal to modify the current curriculum for the BS in Environmental Engineering by changing the current History 270 requirement to History 270 or History 275.

DC 0205, School of Engineering, Interdisciplinary Engineering, approved effective FS2007.

A proposal to modify footnote 4 for the BS in Interdisciplinary Engineering to read: English 60, English 160 or SP&M 85. Students may petition to substitute another course dealing with teams/organizational behavior.

Review of submitted CC forms:

CC 7058, Mining Engineering 351, Demolition of Buildings and Structures. New course approved effective Spring 2007.

Catalog Description: Provide participants with basics and solid grounding in the equipment, techniques and processes required for the demolition and remediation of mine plant and processing equipment sites and non-mining structures such as buildings, factories, bridges, etc.

Credit Hours: Lecture: 2 Lab: 1 Total: 3

Prerequisites: IDE 50 or 140, and IDE 110 or Min Eng 232, + US citizen or permanent resident. *Req. due to Safe Explosives Act – Jan 03

CC 7059, Petroleum Engineering 316, Production Applications. The following change is approved effective Spring 2007.

Prerequisites – Present: Pet Eng 131, preceded or accompanied by Civ Eng 230 and Pet Eng 241

Proposed: Preceded or accompanied by Pet Eng 241



OFFICE OF THE REGISTRAR

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

CC 7060, Petroleum Engineering 335, Secondary Recovery of Petroleum. The following changes are approved effective Spring 2007.

Catalog Description – Proposed: Oil recovery by water injection. Effects of wettability, Capillary pressure, relative permeability, mobility ratio on displacement, sweep, and recovery efficiencies. Piston-like permeability, mobility ratio on displacement, sweep, and recovery efficiencies. Piston-like and Buckley-Leverett models. Fractional flow and frontal advance equation. Oil recovery prediction methods for linear and pattern water floods in single and multi-layered reservoirs.

Prerequisites – Present: PE 241, PE 242, ME 227
Proposed: PE 241, PE 242

CC 7061, Petroleum Engineering 320, Fundamentals of Petroleum Reservoir Simulation. The following change is approved effective Spring 2007.

Prerequisites – Present: Cmp Sc 73, Math 204
Proposed: Math 204

CC 7062, Business 400, Special Problems. New course approved effective Spring 2007.

Course Description: Problems or readings on specific subjects or projects in the department.

Credit Hours: Variable 0-6

Prerequisites: Admission to the MBA program.

CC 7063, Business 420, Integrated Business Core. New course approved effective Spring 2007.

Catalog Description: The MBA core areas of management, marketing, operations, accounting, finance, and human resource are integrated using a case study approach with emphasis on enterprise resource planning software. Coverage includes ethical issues, legal environment, and skills development in negotiations, teambuilding, leadership, and communications.

Credit Hours: Lecture: 12 Lab: 6 Total: 18

Prerequisites: Admission to the MBA program and completion of all prerequisites for the program.



OFFICE OF THE REGISTRAR

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

CC 7064, Business 490, Research. New course approved effective Summer 2007.

Catalog Description: The research project will involve students applying research techniques and discipline specific knowledge working on a project designed by the advisor, often working with a business organization. Requires major report and formal presentation to sponsoring organization.

Credit Hours: Variable 0-6

Prerequisites: Bus 420

CC 7065, Business 491, Internship. New course approved effective Summer 2007.

Catalog Description: Students apply critical thinking skills and discipline specific knowledge in a work setting based on a project designed by the advisor and employer. Activities will vary depending on the student's background and the setting. Requires major report and formal presentation to sponsoring organization.

Credit Hours: Variable 0-6

Prerequisites: Bus 420

CC 7077, Engineering Management 408, Advanced Engineering Economy. The following changes are approved effective Spring 2007.

Course Title – Proposed: Financial Risk Management

Catalog Description – Proposed: Techniques and methods for managing financial risk, including portfolio theory, Monte Carlo methods, ARIMA, time series forecasting, Value-at-Risk, stress testing, extreme value theory, GARCH and volatility estimation, random variables and probability distributions, real options, decision trees, utility theory, statistical decision techniques, and game theory.

Prerequisites – Present: EMgt 209 or 308

Proposed: EMgt 308, 352, or equivalent

CC 7078, Engineering Management 480, Investment. The following changes are approved effective Spring 2007.

Catalog Description – Proposed: An introduction to the theory and practice of investment, including financial markets and instruments, security trading, mutual funds, investment banking, interest rates, risk premiums, the capital asset pricing model, arbitrage pricing theory, market efficiency, bonds and the fixed income market, equity valuation, fundamental and technical analysis.

Prerequisites – Present: EMgt 208, or equivalent

Proposed: EMgt 208, 308, 352, or equivalent

CC 7079, Engineering Management 481, Financial Engineering. The following changes are approved effective Spring 2007.

Catalog Description – Proposed: An introduction to financial engineering, with an emphasis on financial derivatives, including the future markets, the pricing of forwards and futures, forward rate agreements, interest and exchange rate futures,

**OFFICE OF THE REGISTRAR**

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

swaps, the options markets, option strategies, the binomial and Black-Scholes models for option valuation, the option Greeks, and volatility smiles.

Prerequisites – Present: EMgt 480

Proposed: EMgt 308, EMgt 352; EMgt 480 or Sys Eng 480; or equivalent

CC 7080, Environmental Engineering 265, Civil Engineering 265, Water and Wastewater Engineering. New course approved effective Spring 2007.

Catalog Description: A study of the engineering design principles dealing with the quantity, quality and treatment of water, and the quantity, characteristics, treatment and disposal of wastewater.

Credit Hours: 3 hour lecture

Prerequisites: Civ Eng 230 with grade of “C” or better, Civ Eng 261.

Co-listing: Civil Engineering 265

CC 7081, Environmental Engineering 298, Civil Engineering 298, Architectural Engineering 298, Senior Design Project. New course approved effective Spring 2007.

Catalog Description: Open-ended design projects involving one or more areas of engineering. Planning design projects, philosophy of design, and application of engineering principles to design problems.

Credit Hours: 3 hour lecture

Prerequisites: Civ Eng 248 or Arch Eng 248

Co-listing: Civil Engineering 298, Arch Engineering 298

CC 7082, Environmental Engineering 390, Undergraduate Research. New course approved effective Spring 2007.

Catalog Description: Designed for the undergraduate student who wishes to engage in research. Not for graduate credit. Not more than six (6) credit hours allowed for graduation credit. Subject and credit to be arranged with the instructor.

Credit Hours: Variable 0-6

Prerequisites: None

CC 7083, IST 444, Essentials of Data Warehouses. New course approved effective Spring 2007.

Catalog Description: This course presents the topic of data warehouses and the value to the organization. It takes the student from the database platform to structuring a data warehouse environment. Focus is placed on simplicity and addressing the user community needs.

Credit Hours: 3 hour lecture

Prerequisites: IST 223 or CS 304 or equivalent relational database experience.

CC 7086, Computer Engineering 318, Digital System Modeling. The following change is approved effective Spring 2007.

Prerequisites – Present: Cp Eng 111 and Cp Eng 112; or Cp Sc 234



OFFICE OF THE REGISTRAR

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

Proposed: Cp Eng 111 with a grade of "C" or better

CC 7087, Chemical Engineering 470, Civil Engineering 462, Environmental Engineering 462, Physiochemical Operations in Environmental Engineering Systems. New course approved effective Spring 2007.

Catalog Description: Course covers physiochemical operations and design in water, wastewater and aqueous hazardous waste treatment systems including coagulation, precipitation, sedimentation, filtration, gas transfer, chemical oxidation and disinfection, adsorption, ion exchange.

Credit Hours: 3 hour lecture

Prerequisites: CE 230 or equivalent

Co-listing: Civil Engineering 462, Environmental Engineering 462

CC 7088, Interdisciplinary Engineering 202, Cooperative Engineering Training. New course approved effective Spring 2007.

Catalog Description: On-the-job experience gained through cooperative education with industry, with credit arranged through the student's advisor. Grades received depends on the quality of the reports submitted and work supervisor's evaluation

Credit Hours: Variable 0-6

Prerequisites: None

CC 7089, Systems Engineering 408, Engineering Management 408, Financial Risk Management. New course approved effective Spring 2007.

Catalog Description: Techniques and methods for managing financial risk, including portfolio theory, Monte Carlo methods, ARMA, time series forecasting, Value-at-Risk, stress testing, extreme value theory, GARCH and volatility estimation, random variables and probability distributions, real options, decision trees, utility theory, statistical decision techniques, and game theory.

Credit Hours: 3 hour lecture

Prerequisites: EMgt 308, 352, or equivalent

Co-listing: Engineering Management 408

CC 7090, Systems Engineering 410, Seminar. New course approved effective Spring 2007.

Catalog Description: Discussion of current topics.

Credit Hours: Variable 0-6

Prerequisites: None

CC 7091, Systems Engineering 480, Engineering Management 480, Investment. New course approved effective Spring 2007.

Catalog Description: An introduction to the theory and practice of investment, including financial markets and instruments, security trading, mutual funds, investment banking, interest rates, risk premiums, the capitol asset pricing model, arbitrage



OFFICE OF THE REGISTRAR

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

pricing theory, market efficiency, bonds and the fixed income market, equity valuation, fundamental and technical analysis.

Credit Hours: 3 hour lecture

Prerequisites: EMgt 208, 308, 352, or equivalent

Co-listing: Engineering Management 480

CC 7092, Systems Engineering 481, Engineering Management 481, Financial Engineering. New course approved effective Spring 2007.

Catalog Description: An introduction to financial engineering, with an emphasis on financial derivatives, including the future markets, the pricing of forwards and futures, forward rate agreements, interest and exchange rate futures, swaps, the options markets, options strategies, the binomial and Black-Scholes models for option valuation, the option Greeks, and volatility smiles.

Credit Hours: 3 hour lecture

Prerequisites: EMgt 308, EMgt 352; EMgt 480 or Sys Eng 480; or equivalent

Co-listing: Engineering Management 481

CC 7093, Systems Engineering 493, Oral Examination. New course approved effective Fall 2006.

Catalog Description: After completion of all other program requirements, oral examination for on-campus MS/PhD students may be processed during intersession. Off-campus MS students must be enrolled in oral examination and must have paid an oral examination fee at the time of the defense/comprehensive exam (oral/written). All other students must enroll for credit commensurate with uses made of facilities and/or faculties. In no case shall this be for less than three (3) semester hours for resident students.

Credit Hours: 0.0

Prerequisites: None

CC 7094, Systems Engineering 495, Continuous Registration. New course approved effective Spring 2007.

Catalog Description: Doctoral candidates who have completed all requirements for the degree except the dissertation, and are away from campus must continue to enroll for at least one credit hour each registration period until the degree is completed. Failure to do so may invalidate the candidacy. Billing will be automatic as will registration upon payment.

Credit Hours: 1 hour lecture

Prerequisites: None

CC 7096, MSE 291, Characterization of Inorganic Solids, effective Spring 2007.

Withdrawn by department.

Review of submitted EC forms:



OFFICE OF THE REGISTRAR

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

EC 1834, Electrical Engineering 401, Signal Integrity, High Speed Digital & RF Design Laboratory, approved effective Spring 2007.

Course Description: High-frequency and high-data rate circuits are impacted by layout and component parasitics that can compromise meeting the design specifications. This is a course designed around laboratory experiments and a semester project that emphasizes practical issues in digital and RF circuit layout and design.

Credit Hours: 3 hour lab

Prerequisites: EE 271

EC 1835, Electrical Engineering 401, Advanced Topics in Optics & Devices, approved effective Spring 2007.

Course Description: Advanced topics of current interest in optics and devices. Selected topics include semiconductor materials, electronic devices, wave-based sensing, fiber optic systems, optoelectronics, and photonic engineering.

Credit Hours 3 hour lecture

Prerequisites: Graduate standing

EC 1836, MSE 301, Energy Materials, approved effective Spring 2007.

Course Description: A survey for cleaner, smaller, cost effective and more efficient energy technologies driven by materials science and engineering. Solar cells, fuel cells, rechargeable batteries, hydrogen storage, capacitors, high-temperature superconductivity. Renewable energy; solar, geothermal, ocean, hydropower, wind, hydrogen, bioenergy, and related term projects.

Credit Hours: 3 hour lecture

Prerequisites: Senior standing

EC 1837, MSE 401, Advanced Energy Materials, approved effective Spring 2007.

Course Description: A survey for cleaner, smaller, cost effective and more efficient energy technologies driven by breakthroughs in materials science and engineering. Solar cells, rechargeable batteries, hydrogen storage, capacitors, high-temperature superconductivity. Renewable energy; solar, geothermal, ocean, hydropower, wind, hydrogen, bioenergy.

Credit Hours: 3 hour lecture

Prerequisites: Graduate standing

EC 1838, Mining Engineering 301, Stage Pyrotechnics and Special Effects, approved effective Fall 2007.

Course Description: Use of energetic materials in close proximity to audiences. Provide participants with training preparing for Missouri Pyrotechnic Display Operators License. Covers: close proximity indoor and outdoor pyrotechnics and special effects. Working with stage crews and talent, safety and permitting.

Credit Hours: Lecture: 1 Lab: 2 Total: 3



OFFICE OF THE REGISTRAR

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

Prerequisites: Chem 1, US Citizen or permanent resident (to fulfill the requirements of the SAFE EXPLOSIVES ACT 2003). Resident enrollment at UMR (e.g. not distance or internet)

EC 1840, Civil Engineering 301, International Senior Design, approved effective Summer 2007.

Course Description: This is a capstone design course whereby the students will prepare a project manual for a multi faceted design project in a developing country. The manual will require engineering designs, cost analysis, and scheduling. Team leaders will conduct an on-site investigation and team members will spend time in country finalizing documents.

Credit Hours: Lecture: 2 Lab: 1 Total: 3

Prerequisites: Senior standing and Instructor approval

EC 1841, Computer Engineering 301, Electrical Engineering 301, Systems Engineering 301, Evolvable Hardware, approved effective Spring 2007.

Course Description: This course deals with adaptive evolvable systems operating in a changing environment. Components/building blocks approach for the design of evolvable systems and the mathematical theory of evolvable machines and the idea of virtual reconfigurable circuits for the design of more adaptive, competitive and innovative engineering products will be taught.

Credit Hours: 3 hour lecture

Prerequisites: Comp Eng 367 or Elec Eng 367

EC 1845, Engineering Management 401, Design for Six Sigma, approved effective Spring 2007.

Course Description: The course will cover modern design methodology based on the Six Sigma paradigm. Design for Six Sigma (DFSS) is a roadmap for the development of robust products.

Credit Hours: 3 hour lecture

Prerequisites: EMgt 309 and EMgt 375

EC 1846, Computer Engineering 401, Advanced Topics in Computational Intelligence, approved effective Spring 2007.

Course Description: This course will explore cutting-edge research topics in computational intelligence. Consideration will be given to learning methods, computational complexity, data mining, sensor fusion, system integrations, or similar issues. Students will complete a semester project for their grade.

Credit Hours: 3 hour lecture

Prerequisites: EE 368 or Cp Eng 367 or Cp Eng 458 or Cp Eng 457

EC 1847, Electrical Engineering 401, Intelligent Telecommunication Network Modeling, approved effective Spring 2007.

**OFFICE OF THE REGISTRAR**

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

Course Description: Software modeling of telecommunication systems includes brief description of computational intelligence techniques and emphasizes network modeling tools such as NS2.

Credit Hours: 3 hour lecture

Prerequisites: Previous AI, neural net or computational intelligence course; and previous communications/signal processing-related course.

Review of Tabled Items:

CC 6068, History 274, Recent American Art and Technology. The following changes are approved effective Fall 2007.

Course Number – Proposed: 375

Course Title – Proposed: Architecture, Technology and Society; 1750 to Present

Catalog Description – Proposed: This course investigates the relationships between architecture and technology and, as a consequence, architecture's impact on modern culture and society. A field trip to Chicago is an integral part of the course. Topics include; the industrial revolution, housing styles, new materials, Bauhaus and international style, and post modern architecture.

Prerequisites – Present: Hist 175 or 176 or Pol Sc 90

Proposed: Hist 111 or 112 or 175 or 176 or Pol Sc 90. Recommended: Junior or Senior Standing. Recommended for Arch E Majors: Art 203 taken prior to course.

EC 1794, MSE 301, Materials Selection in Mechanical Design, approved effective Spring 2007.

Course Description: The course will introduce the basics of materials selection in mechanical design. It will also introduce the benefits of computational materials and process selection. The students will also learn to use commercially available materials selection software.

Credit Hours: 3 hour lecture

Prerequisites: Met 121

Items Still Tabled:

CC 5946 – CC 5959 tabled pending approval of the new BS degree in BioEngineering by UM and CBHE.

CC 7031, Biological Sciences 211, Cellular Biology. Tabled, department needs to do a DC form.

Course Title – Proposed: Cell Biology

Catalog Description – Proposed: The structure and function of eukaryotic and prokaryotic cells. Emphasis on macromolecules, organelles, metabolic pathways, bioenergetics, cell signaling, the cycle, and information processing.

Credit Hours – Present: Lecture: 3 Lab: 1 Total: 4

Proposed: 3 hour lecture



OFFICE OF THE REGISTRAR

103 Parker Hall
1870 Miner Circle
Rolla, MO 65409-0930
Phone: 573.341.4181
Fax: 573.341.4362
registrar@umr.edu
campus.umr.edu/registrar

CC 7032, Biological Sciences 212, Cell Biology Laboratory. Tabled, department needs to do a DC form.

Catalog Description: Laboratory course to accompany Cell Biology (Biol 211).

Laboratory work includes microscopy, biochemical assays, enzymology, and genetic analysis (PCR, mapping, electrophoresis, transfection, sequencing).

Credit Hours: 1 hour lab

Prerequisites: Preceded or accompanied by Biol 211

New Business

Dr. Nisbett was re-elected by the attending Curricula Committee members to continue serving as Chair of the committee.

EC 1805, IST 301, Financial Information Systems, was approved at the May 2006 meeting for effective term FS2007. The department decided they wanted to teach the course starting Spring 2007 and asked the committee to change the effective term in which they agreed to do.

The meeting adjourned at 2:20 pm. The next meeting will be Tuesday October 24, 2006 at 12:30 p.m. in room 117 Fulton Hall.

J. Keith Nisbett, Chair
UMR Campus Curricula Committee