



Memo To: Faculty Senate

From: Missouri S&T Campus Curriculum Committee Meeting

RE: Revised 04/10/09, Report for March 3, 2009 & April 7, 2009 Meetings

**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 0301, ALP, Theatre, approved effective Fall 2009. A proposal to create a new minor in Theatre.

DC 0307, Global Studies Minor, approved effective Fall 2009. This DC proposal was originally approved at the Jan. 6, 2009, meeting. At the request of the RP&A committee, this proposal was reconsidered after soliciting and obtaining from the Global Studies Minor committee a list of approved courses and a process for adding to the list of courses.

DC 308, Business and Information Technology, Master of Business Administration, approved effective Fall 2009. A proposal to modify the current curriculum for the Masters of Business Administration by increasing required courses from 18 to 21 hours; decreasing internship credit from 6 to 3 hours.

DC 309, Mining and Nuclear Engineering, Master of Science in Explosives Engineering, approved effective Fall 2009. A proposal to create a new Master of Science in Explosives Engineering

DC 0310, Electrical Engineering, approved effective Fall 2009. A proposal to modify the current Bachelor of Science in Electrical Engineering by increasing EE 271 to 4 credit hours and deleting EE 272 which is a 1 hour lab, from the curriculum.

DC 0311, Computer Engineering, approved effective Fall 2009. A proposal to modify the current Computer Engineering elective requirements for the Bachelor of Science in Computer Engineering.

DC 0312, Electrical Engineering, approved effective Fall 2009. A proposal to modify the current Electrical Engineering elective requirements for the Bachelor of Science in Electrical Engineering.

DC 0313, Biomaterials, approved effective Fall 2009. A proposal to place on Inactive Status the Master of Science in Biomaterials.

DC 0314, Psychology, approved effective Fall 2009. A proposal to add the following courses as Capstone courses to fulfill the requirement for the BS and BA degree: Psych 375 or 380 or 302 or 312 or 350.

DC 0315, Geological Engineering, approved effective Fall 2009. A proposal to modify the current curriculum for the Bachelor of Science in Geological Engineering by allowing GE 352 for senior design credit.

DC 0316, Geological Engineering, approved effective Fall 2009. A proposal to modify the current geophysics elective for the Bachelor of Science in Geological Engineering.

DC 0317, Geological Engineering, approved effective Fall 2009. A proposal to modify the current Earth Energy electives for the Bachelor of Science in Geological Engineering.

DC 0318, Geological Engineering, approved effective Fall 2009. A proposal to modify the requirements for the following emphasis areas under Geological Engineering: Geological Engineering, Environmental Protection and Hazardous Waste Management, Groundwater Hydrogeology and contaminant Transport, Engineering Geology and Geotechnics, Petroleum, Energy and Natural Resources, and Quarry Engineering.

DC 0319, Chemistry non-ACS certified, approved effective Fall 2009. A proposal to inactivate the BS in Chemistry non-ACS certified.

DC 0320, Civil Engineering, approved effective Fall 2009. A proposal to modify the current curriculum for the BS in Civil Engineering by eliminating two free electives, making both CE 221 and CE 223 required, and adding a CE technical elective.

DC 0321, Architectural Engineering, approved effective Fall 2009. A proposal to modify the current curriculum for the BS in Architectural Engineering by eliminating one free elective, making both ArchE 103 and ArchE 205 three credit hour courses, and add Chem 4 as required.

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

**Approved CC forms:**

CC 7617, Theatre 341, Directing. New course approved effective Fall 2009.

Catalog Description: This course studies the theories, technique, and approaches of directing for the stage, culmination in the preparation, rehearsal, and presentation of directing scenes.

Credit Hours: 3 hour lecture

Prerequisite: Theatre 141

CC 7618, Theatre 141, Acting I. New course approved effective Fall 2009.

Catalog Description: Covers basic techniques for comprehension of theory and practice of acting. Explores inner/outer techniques to create a role. Follows working steps to create performance of a fully realized characterization. Designed as an introductory course.

Credit Hours: 3 hour lecture

Prerequisites: None

CC 7619, Theatre 241, Acting II. New course approved effective Fall 2009.

Catalog Description: Continuation of Acting I, covering acting styles, more complicated, nuanced roles, and more detailed character analysis and performance-Special emphasis on Shakespearean performance.

Credit Hours: 2 hour lecture, 1 hour lab, Total: 3

Prerequisites: Theatre 141

CC 7620, Theatre 243, Entertainment Design. New course approved effective Fall 2009.

Catalog Description: Students will learn the fundamentals of design for live theatre, film, theme parks, clubs, concerts, and dance events.

Credit Hours: 1 hour lecture, 2 hour lab, Total: 3

Prerequisites: None

CC 7621, Theatre 143, Stagecraft. New course approved effective Fall 2009.

Catalog Description: Students will learn the fundamentals of theatrical construction, production, and organization.

Credit Hours: 2 hour lecture, 1 hour lab, Total: 3

Prerequisites: None

CC 7547, Business 422, Business Opportunity Analysis. The following changes are approved effective Fall 2009.

Course Title – Proposed: International Marketing

Catalog Description – Proposed: This course focuses on the challenges faced by business managers as they deal with a competitive global market. The course will examine various topics related to international marketing such as cultural differences, economic differences, differences in prior and technical standards, global advertising, and international pricing and segmentation.

Prerequisites – Present: Bus 421

Proposed: Mkt 307/407 or equivalent

CC 7548, Business 423, Decision Analysis. The following changes are approved effective Fall 2009.

Course Title – Proposed: Management Information Systems and Databases

Catalog Description – Proposed: This course covers the use of management information systems and databases as used by business managers as they deal with a competitive global market.

Prerequisites – Present: Bus 421

Proposed: Bus 312/412 or equivalent

CC 7549, Business 424, Implementation. The following changes are approved effective Fall 2009.

Course Title – Proposed: Managerial Accounting for Monitoring and Control

Catalog Description – Proposed: This course covers managerial accounting and its critical role in decision making, monitoring, and controlling business processes.

Prerequisites – Present: Bus 421

Proposed: Bus 305/405 or equivalent

CC 7550, Business 425, Project Management. The following changes are approved effective Fall 2009.

Course Title – Proposed: Operations and Project Management

Catalog Description – Proposed: This course covers operations management and its critical role in developing and maintaining effective and efficient processes in the organization. The use of project management tools is covered for purposes of effectively managing organizational change.

Prerequisites – Present: Bus 421

Proposed: Bus 308/408 or equivalent

CC 7651, Business 426, Integration Using Enterprise Resource Planning. The following changes are approved effective Fall 2009. Formerly University of Missouri-Rolla

Course Title – Proposed: Business process Integration Using Enterprise Resource Planning

Catalog Description – Proposed: This course identifies the key integration points between the different business disciplines supporting each business process cycle. Emphasis will be on how organizations make business decisions based on the analysis and reporting from the operations and financial information on ERP.

Prerequisites – Present: Bus 421

Proposed: Bus 305/405 and Bus 308/408 or equivalent

CC 7552, Business 427, Managerial Finance. New course approved effective Fall 2009.

Catalog Description: This course covers the use of financial tools to manage the organization. The main focus is the strategic decision-making process of modern managers responsible for major financial decisions. Topics include financial policy, capital investment analysis, dividend policy, capital structure, and other contemporary corporate finance issues.

Credit Hours: 3 hour lecture

Prerequisites – Present: Bus 421

Proposed: Fin 305/405 or equivalent

CC 7567, Petroleum Engineering 241, Petroleum Reservoir Engineering. The following change is approved effective Fall 2009.

Prerequisites – Present: Math 22, accompanied or preceded by Pet Eng 141 or senior standing.

Proposed: Accompanied or preceded by Pe Eng 240

CC 7568, Petroleum Engineering 242, Petroleum Reservoir Laboratory. The following change is approved effective Fall 2009.

Prerequisite – Present: Accompanied by PE Eng 241

Proposed: Accompanied or preceded by Pe Eng 241

CC 7569, Petroleum Engineering 302, Offshore Petroleum Technology. The following change is approved effective Fall 2009.

Prerequisite – Present: PE 131 recommended

Proposed: None

CC 7570, Petroleum Engineering 303, Environmental Petroleum Applications, effective Fall 2009. Formerly University of Missouri-Rolla

Prerequisite – Present: Senior Standing  
Proposed: Chem 1

CC 7571, Petroleum Engineering 308, Applied Reservoir Simulation. The following change is approved effective Fall 2009.

Prerequisite – Present: Co-requisite: Pe Eng 257  
Proposed: Pe Eng 241

CC 7572, Petroleum Engineering 314, Advanced Drilling Technology. The following changes are approved effective Fall 2009.

Catalog Description – Proposed: In-depth studies of directional well planning and bottom hole assemblies, hole problems and wellbore stability in deviated wells; computer aided drilling optimization and drill bit selection for directional wells.

Prerequisites – Present: Pe Eng 131, Cv Eng 230, Cmp Sc 73 Co-requisite: Pe Eng 257  
Proposed: Pe Eng 331

CC 7573, Petroleum Engineering 331, Drilling and Well Design. The following change is approved effective Fall 2009.

Prerequisites – Present: Preceded or accompanied by Civ Eng 230  
Proposed: Pe Eng 121. Preceded or accompanied by  
Civ Eng 230

CC 7574, Petroleum Engineering 333, Reservoir Characterization. The following change is approved effective Fall 2009.

Prerequisites – Present: None  
Proposed: Pe Eng 241, Pe Eng 232; Geo 332 or Geo 340

CC 7577, Petroleum Engineering 341, Well Test Analysis. The following change is approved effective Fall 2009.

Prerequisites – Present: Pe Eng 241 and Math 204  
Proposed: Pe Eng 241

CC 7578, Civil Engineering 369, Environmental Engineering 369, Sanitary Engineering Design. The following changes are approved effective Spring 2010.

Course Title – Proposed: Environmental Engineering Design

Catalog Description – Proposed: Functional design of water and wastewater facilities and other environmental cleanup systems.

Prerequisites – Present: Civ Eng 265  
Proposed: Civ Eng 265 or Env Eng 265

CC 7679, Environmental Engineering 369, Civil Engineering 369, Sanitary Engineering Design. The following changes are approved effective Spring 2010.

Course Title – Proposed: Environmental Engineering Design

Catalog Description – Proposed: Functional design of water and wastewater facilities and other environmental cleanup systems.

Prerequisites – Present: CE 265

Proposed: CE 265 or Env Eng 265

CC 7580, Civil Engineering 263, Environmental Engineering 263, Chemical Fundamentals of Environmental Engineering. The following changes are approved effective Fall 2009.

Credit Hours – Present: 3 hour lecture

Proposed: 2 hour lecture, 1 hour lab, Total: 3

CC 7581, Environmental Engineering 263, Civil Engineering 263, Chemical Fundamentals of Environmental Engineering. The following change is approved effective Fall 2009.

Credit Hours – Present: 3 hour lecture

Proposed: 2 hour lecture, 1 hour lab, Total: 3

CC 7582, Spanish 302, Phonetics & Phonology of Spanish. New course approved effective Fall 2009.

Catalog Description: Theoretical and practical approach to the phonetics and phonology of Spanish from the dual perspective of the mental representation of the sound system and pronunciation within syllables, words and phrases. Practice in listening comprehension, and sound discrimination with transcription exercise.

Credit Hours: 3 hour lecture

Prerequisites: Spanish 80

CC 7583, Psychology 290, History of Psychology. The following change is approved effective Fall 2009.

Catalog Description – Proposed: An examination of the origin of psychology within the framework of philosophy and science. Traces the major trends, schools, and individuals. Major scientific, cultural, philosophical and personal influences in the development of psychology.

CC 7684, Psychology 380, Cross-Cultural Psychology. The following changes have been approved effective Fall 2009. Formerly University of Missouri-Rolla

Catalog Description – Proposed: Study of the impact of ethnic and national culture on psychological processes and behaviors. Topics include the effects of individualism and collectivism on patterns of socialization, personality, motivation, emotion and cognition; cultural differences in diagnosis and treatment of mental and physical health; and group and organizational behavior.

Prerequisites – Present: Psych 50 and Psych 155 or Psych 270  
Proposed: Psych 50

CC 7585, Psychology 375, Health Psychology. The following change is approved effective Fall 2009.

Catalog Description – Proposed: This course examines Health Psychology. Topics include basic behavioral pharmacology (involving alcohol & other drugs), illusions of invulnerability to risk, stress and coping, and the science of persuading people to protect their health. Students learn how to construct a public service announcement towards a societal problem as part of the course.

CC 7586, Psychology 316, Psychology of Leadership. The following change is approved effective Fall 2009.

Catalog Description – Proposed: Examination of conceptual and empirical research on determinants of effective vs. ineffective leadership. Topics include leadership measurement, traits, skills, leader-member exchange, charismatic and transformational leadership, change management, team leadership, and ethical leadership. Practical guidelines for developing leadership skills are discussed.

CC 7587, Psychology 312, Practicum. The following changes have been approved effective Fall 2009.

Catalog Description – Proposed: Practicum involves experience in a human service setting. Depending on the student background and setting, activities may involve learning psychological testing, interviewing, assessment and/or counseling skills.

Prerequisites – Present: Psych 50 and psych 262 or 364 or 268 or 356, and instructor approval.  
Proposed: Psych 50; Psych 356, 362, 364, or 368.



CC 7588, Psychology 315, Environmental Psychology. The following change is approved effective Fall 2009. *Formerly University of Missouri-Rolla*

Catalog Description – Proposed: An examination of the psychological effects of various environmental designs and ways to design environments effectively. Topics include: environmental attitudes, perception, and cognition; environmental influences, crowding, and the application of environmental design principles to living, educational, work, and recreational settings.

CC 7589, Psychology 372, Group Dynamics. The following change is approved effective Fall 2009.

Catalog Description – Proposed: A review of the concepts and theories related to group dynamics. Topics include group goals, communication within groups, group structure, norms, leadership, decision making, controversy, conflict resolution, power, diversity issues, and team development.

CC 7590, Psychology 390, Undergraduate Research, The following change is approved effective Fall 2009.

Prerequisite – Present: None  
Proposed: Instructor Consent

CC 7591, Psychology 354, Psychology of the Exceptional Child. The following change is approved effective Fall 2009.

Catalog Description – Proposed: Study of the psychology of children on both ends of the educational spectrum. The course presents the fundamentals of providing services as well as understanding the abilities and disabilities of children classified as exceptional. Includes coverage of various disabilities, and the implications of dealing with personal, family and classroom issues.

CC 7592, Psychology 364, Theory and Practice of Psychological Testing. The following changes are approved effective Fall 2009.

Course Title – Proposed: Tests and Measurements

Catalog Description – Proposed: Theoretical and statistical basis of psychological testing and measurement; test development and validation; examination of standardized tests of intelligence, aptitude, interest, personality, attitudes, and psychopathology; use of test and test batteries for diagnostics and prediction of criteria.

CC 7593, Psychology 368, Clinical Psychology. The following change is approved effective Fall 2009.

Prerequisites – Present: Psych 50 and Psych 262  
Proposed: psych 50 and Psych 362

CC 7604 Psychology 370, Advanced Social Psychology. The following change is approved effective Fall 2009. Formerly University of Missouri-Rolla

Prerequisites – Present: Psych 270  
Proposed: Psych 308

CC 7595, Psychology 155, Educational Psychology. The following change is approved effective Fall 2009.

Catalog Description – Proposed: Principles of psychology relevant to the field of education. Course covers theoretical and applied information on such topics as human growth and development, and cognitive and behavioral views of learning and intelligence. The course also covers motivation, creation of learning environments, measurement and evaluation of learning.

CC 7596, Psychology 208, Adolescent Psychology. The following change is approved effective Fall 2009.

Catalog Description – Proposed: An examination of the biological, social, and cognitive transitions that occur during adolescence. Other topics include the role of families, the role of peers, the adolescent identity, sexuality, the impact of schools, the role of achievement, how adolescents spend their time (work, leisure), the role of the media, and problems encountered by the adolescent.

CC 7597, Psychology 246, Motivation & Emotion. The following change is approved effective Fall 2009.

Catalog Description – Proposed: An examination of the ways in which situational, cognitive, and emotional factors influence, and are influenced by, human motivation.

CC 7598, Psychology 250, Developmental Psychology. The following change is approved effective Fall 2009.

Catalog Description – Proposed: A study of human growth and development across the lifespan. The course emphasizes the interaction of physical, psychological, and social changes and their resulting impact on the developing person at all stages in life.

CC 7599, Psychology 302, Internship. The following change is approved effective Fall 2009.

Prerequisites – Present: Senior. Must have completed 24 hours in major  
Proposed: Junior or Senior Psychology major; consent of instructor; must have completed 9 hours in major

CC 7600 Psychology 305, Cognitive Psychology. The following change is approved effective Fall 2009. Formerly University of Missouri-Rolla

Catalog Description – Proposed: This course covers basic cognitive processes and their application. Theory and research are presented on attention, perception, memory, problem solving, decision making and language.

CC 7601, Chemical Engineering 346, Introduction to Nanomaterials. New course approved effective Fall 2009.

Catalog Description: Introduction of the fundamentals of nanomaterials and recent developments on nanomaterials. Topics include physical and chemical properties, synthesis, processing, and applications of nanomaterials. Example nanomaterials include nanoparticles, nanotubes, and nanowires.

Credit Hours: 3 hour lecture

Prerequisites: Ch Eng 145, or Mt eng 125, or Chem 3

CC 7602, Chemical Engineering 382, Hazardous Materials Management. New course approved effective Fall 2009.

Catalog Description: Major themes: hazard identification and characterization; safety, health and environmental management; and the protection of safety, health and environment. Students will have an understanding of work place and environmental hazards in order to be able to facilitate their management and control. The course will include an intensive 30 hour hands-on workshop.

Credit Hours: 2 hour lecture, 1 hour lab, Total: 3

Prerequisites: Chem Eng 235 or graduate standing

CC 7603, IST 487, Research Methods in Human-Computer Interaction. The following changes are approved effective Fall 2009.

Catalog Description – Proposed: This course covers quantitative and qualitative research methods for exploring the interaction between people and information technologies. The course covers techniques and tools for carrying out literature reviews, forming research goals, designing research, conducting data analyses; and preparing manuscripts and live presentations.

Prerequisites – Present: IST 387

Proposed: IST 385

CC 7604, Engineering Management 309, The Six Sigma Way. The following changes are approved effective Summer 2009. formerly University of Missouri-Rolla

Course Title – Proposed: Six Sigma

Catalog Description – Proposed: The course is an introduction to the principles of implementing the six Sigma philosophy and methodology. Topics include tools and methods including process flow diagrams, cause and effect diagrams, failure mode and effects analysis, gage R&R, capability studies, design of experiments and strategy for organizing six sigma techniques in industry.

CC 7609, Chemistry 428, Spectrometric Identification of Organic Compounds. New course approved effective Fall 2009.

Catalog Description: Overview of MS and IR techniques in the characterization of organic compounds; CD/ORD; <sup>1</sup>H, <sup>13</sup>C, and heteronuclear NMR spectroscopy in the structural analysis; applications of APT, DEPT, <sup>1</sup>H-<sup>1</sup>H COSY, HETCOR, HMQC, HMBC, INADEQUATE, TOCSY, NOE and NOESY, and dynamic NMR.

Credit Hours: 3 hour lecture

Prerequisites: Chem 223

CC 7610, Metallurgical Engineering 363, Metal Coating Processes. The following change is approved effective Fall 2009.

Prerequisites – Present: Mt Eng 202, 203

Proposed: Senior or Graduate Standing

CC 7611, Geological Engineering 331, Subsurface Hydrology. The following change is approved effective Fall 2009.

Credit Hours – Present: 2 hour lecture, 1 hour lab, Total: 3

Proposed: 3 hour lecture

CC 7613, Geological Engineering 374, Engineering Geologic Field Methods. The following changes are approved effective Spring 2010.

Course Title – Proposed: Geological Engineering Field Methods

Catalog Description – Proposed: Instruction in methods of field investigation required for geological engineering studies. Course will include procedures for qualitative and quantitative data collection for characterizing surficial geologic conditions, groundwater and surface water investigations, and other engineering activities.

Written reports are required.

Prerequisites – Present: GE 373

Proposed: None

CC 7604, Petroleum Engineering 323, Artificial Lift. The following change is approved effective Fall 2009. Formerly University of Missouri-Rolla

Prerequisites – Present: PE 241 or equivalent  
Proposed: PE 316

CC 7615, Electrical Engineering 271, Electromagnetics. The following change is approved effective Fall 2009.

Credit Hours – Present: 3 hour lecture  
Proposed: 4 hour lecture

CC 7616, Electrical Engineering 272, Electromagnetics Laboratory. Course deletion approved effective Fall 2009.

CC 7622, Computer Science 406, Software Engineering II. The following change is approved effective Fall 2009.

Prerequisites – Present: CS 306  
Proposed: CS 206

CC 7623, Psychology 330, Neuroscience. The following change is approved effective Fall 2009.

Catalog Description – Proposed: The neurophysiological bases of behavior and cognition are examined. Topics covered include neuroanatomy, neurotransmission, neuropharmacology, brain systems, learning and memory, emotion, attention and consciousness, and neurologic/psychological disorders.

CC 7624, Geological Engineering 477, Discontinuous Rock. The following change is approved effective Fall 2009.

Prerequisites – Present: Mi Eng 231 or Ge Eng 371  
Proposed: Mi Eng 331 or Ge Eng 371

CC 7625, Geological Engineering 356, Renewable Energy Systems. New course approved effective Fall 2009.

Catalog Description: Introduction to the theory and performance prediction of typical renewable energy systems such as, but not limited to, those based on energy from the sun, wind and water, and geothermal. The use of environmental data, including stochastic modeling, for renewable energy system (including wind turbine, photovoltaic, and geothermal) design is addressed.

Credit Hours: 3 hour lecture

Prerequisites: Math 204, Phys 24, and preceded or accompanied by stat 217 or GE 315.  
Junior or senior status is required.

CC 706, Civil Engineering 211, Transportation Engineering. The following change is approved effective Fall 2009. formerly University of Missouri-Rolla

Prerequisites – Present: CE 1, IDE 50

Proposed: CE 1, CE 3

CC 7627, Civil Engineering 241, Economy of Engineering Design. Course deletion approved effective Fall 2009.

CC 7628, Civil Engineering 299, Civil Engineering Design. Course deletion approved effective Fall 2009.

CC 7629, Civil Engineering 385, Patent Law. Course deletion approved effective Fall 2009.

CC 7630, Architectural Engineering 103, Architectural Materials and Methods of Construction. The following change is approved effective Fall 2009.

Credit Hours – Present: 2 hour lecture

Proposed: 2 hour lecture, 1 hour lab, Total: 3

CC 7631, Architectural Engineering 205, Building Electrical and Lighting Systems. The following change is approved effective Fall 2009.

Credit Hours – Present: 2 hour lecture

Proposed: 3 hour lecture

CC 7632, Civil Engineering 351, Transportation applications of Geophysics. New course approved effective Fall 2009.

Catalog Description: Overview of geophysical and non-destructive test methods that are commonly used to investigate transportation structures and their foundations.

Emphasis is placed on bridge system substructure, bridge system superstructure, pavement, roadway subsidence, subsurface characterization and vibration measurements.

Credit Hours: 2 hour lecture, 1 hour lab, Total: 3

Prerequisites: Junior level standing or higher

Co-listing: GE 361, Geophysics 361

CC 7633, Geological Engineering 361, Transportation applications of Geophysics.

Adding co-listing effective Fall 2009.

Co-listing: CE 351

CC 1684 Computer Science 345, Introduction To Robotic Systems. The following changes are approved effective Fall 2009. Formerly University of Missouri-Rolla

Course Title – Proposed: Computational Robotic Manipulation

Catalog Description – Proposed: Analysis of methods for the design and operation of robotic systems. Spatial descriptions and transformations. Arm control: coordinate transformations. Manipulator Kinematics and inverse Kinematics. Jacobians: velocities and static forces. Robot path trajectory generation. Project: programming robot motion control visualization.

Prerequisite – Present: Math 22, Physics 24, (Cmp Sc 158 or Cmp Sc 228)

Proposed: CS 253; Math 208; Physics 24 or Physics 25

**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 2135, Computer Engineering 401, Electrical Engineering 401, Systems Engineering 401, Statistics 401, Clustering Algorithms, approved effective Fall 2009.

Course Description: An introduction to the cluster analysis and clustering algorithms rooted in computational intelligence, computer science and statistics. Clustering in sequential data, massive data and high dimensional data.

Credit Hours: 3 hour lecture

Prerequisite: Graduate standing plus at least one graduate course in either statistics, data mining, neural networks or permission of the instructor.

EC 2145, History 301, Nazi Germany and the Holocaust, approved effective Fall 2009.

Course Description: This course focuses on the rise of Nazism and its consequences for politics, society, and culture in Europe. The period's history will be examined from the perspective of perpetrators, victims, and bystanders with emphasis on the Holocaust and its legacy.

Credit Hours: 3 hour lecture

Prerequisites: Hist 112

EC 2146, Chemistry 401, Organometallic Chemistry, approved effective Fall 2009

Course Description: This course will cover the use of transition metal in organic synthesis with particular emphasis placed on issues of selectivity (regioselectivity and stereoselectivity).

Credit Hours: 3 hour lecture

Prerequisites: None

EC 2147, Speech 201, Orality and Public Speaking, approved effective Fall 2009.

Course Description: Theory and practices of orality applied to various communication situations with particular emphasis on effective public speaking. Formerly University of Missouri-Rolla

Credit Hours: 3 hour lecture

Prerequisites: Speech 85 or 181; 250 or 265

EC 2148, Psychology 401, Seminar in Industrial/Organizational Psychology, approved effective Fall 2009.

Course Description: Review of the most recent theoretical and applied research in advanced personnel and organizational psychology. Topics will include personnel selection, training and performance appraisal, job attitudes, motivation, work groups and teams, leadership, organizational culture, and organizational development.

Credit Hours: 3 hour lecture

Prerequisites: None

EC 2149, Electrical Engineering 301, Computational Intelligence Methods in Electric Power (CIMEP), approved effective Fall 2009.

Course Description: Review of Computational Intelligence (CI) Methods, CI methods for identification/modeling, control and optimization in electric power networks; load forecasting; wind energy prediction; Harmonic Estimation & Scheduling of power system maintenance.

Credit Hours: 3 hour lecture

Prerequisites: EE 207 or EE 301; EE 301 (Real Time Power System Simulation); EE 367

EC 2150, Electrical Engineering 301, Computer Engineering 301, Real-Time Power System Simulation, approved effective Fall 2009.

Credit Hours: 1 hour lecture, 2 hour lab, Total: 3

Prerequisites: EE 207

EC 2151, Electrical Engineering 401, Wireless Communications, approved effective Fall 2009.

Course Description: Introduction to the principle of wireless communications in modern cellular and satellite communication systems. Topics include: wireless channel characteristics, cellular concepts, capacity analysis, transceiver architectures, diversity techniques, multiple access schemes, practical wireless systems and wireless networks.

Credit Hours: 3 hour lecture

Prerequisites: EE 343: EE 344 or Stat 343

EC 2152, Biological Sciences 101, Genetics: Decoding your genes, approved effective Fall 2009.



Course Description: We will explore the questions: What are genes? How do genes affect our health? How are genes inherited? What are the societal implications of genetic knowledge? What is the Human Genome Project and what can we learn from it? (Does not fulfill requirement for BioSci majors).

Credit Hours: 3 hour lecture

Prerequisites: None

EC 2153, Computer Engineering 401, Computer Science 401, Network Performance Analysis, approved effective Fall 2009.

Course Description: This course provides an introduction to performance modeling and analysis for computer communication networks. Topics covered include stochastic processes; performance measurement and monitoring; quantitative models for network performance, e.g., Markovian models for queues; simulation; and statistical analysis of experiments.

Credit Hours: 3 hour lecture

Prerequisites: CpE 319 or CS 385; Stat 217 or Stat 343

EC 2154, Biological Sciences 301, Biomedical Problems, approved effective Fall 2009.

Course Description: This course will use a problem-based learning approach to examine biological aspects of various medical conditions. Students will work in groups and individually to answer problems related to diagnostic testing and evaluation of diseases and other medical conditions.

Credit Hours: 3 hour lecture

Prerequisites: Bio 211 and 221

EC 2155, Biological Sciences 401, Computer Science 401, Advanced Bioinformatics, approved effective Fall 2009.

Course Description: this course covers advanced topics in computational methods of the analysis of biological data, including advanced algorithm design and implementation, data mining, biological visualization, and the access and analysis of large data sets.

Credit Hours: 3 hour lecture

Prerequisites: CS 311 or Bio Sci 311

EC 2156, Computer Science 301, Agile Software Development, approved effective Fall 2009.

Course Description: Understand principles of agile software development and contrast them with prescriptive processes. Specifically: eliciting, organizing, and prioritizing requirements; design, implementation, test processes; understand how a particular process promotes quality; estimate costs and measure project progress and productivity. Projects will utilize agile processes.

Credit Hours: 3 hour lecture

Prerequisites: CS 206

EC 2157, Computer Science 401, Cryptography, approved effective Fall 2009.

Course Description: Foundations of Cryptography including number theory, private and public key schemes, and applications.

Credit Hours: 3 hour lecture

Prerequisites: Graduate Standing

EC 2158, Computer Science 201, Introduction to Computer Security, approved effective Fall 2009.

Course Description: This course provides an entry point for the study of computer security and encompasses threats and vulnerabilities and trust, security policies, and enforcement. Specific topics include access control, risk management, systems and application life cycle, physical security, key management, transmission security and cryptography.

Credit Hours: 3 hour lecture

Prerequisites: at least Sophomore Standing

EC 2159, ERP 401, Customer Relationship Management in ERP Environment, approved effective Fall 2009.

Course Description: This course emphasizes identification (targeting), acquisition, retention, and development (expansion) of (profitable) customers. It also covers effective and efficient management of customers with utilization of information technology. The SAP CRM and SAS BI tools are used to enhance student education with real world applications and prepare graduates for future career requirements.

Credit Hours: 3 hour lecture

Prerequisites: ERP 345

EC 2160, Business 401, Managerial Finance, approved effective Fall 2009.

Course Description: This course covers the use of financial tools to manage the organization. The main focus is the strategic decision-making process of modern

Officers responsible for major financial decisions. Topics include financial policy, capital investment analysis, dividend policy, capital structure, and other contemporary corporate finance issues.

Credit Hours: 3 hour lecture

Prerequisites: Fin 305/405 or equivalent

EC 2161, English 301, Southern Culture, approved effective Fall 2009.

Course Description: This course will survey the culture of the American south, especially since the end of the Civil War. Through fiction, non-fiction, film and music, we will examine the ways that race, religion, history and other factors have shaped southerners' understandings of themselves and their place in the American nation.

Credit Hours: 3 hour lecture

Prerequisites: English 20 and a semester of college literature

EC 2162, Russian 201, English 201, Russian Literature as cultural phenomenon, approved effective Fall 2009.

Course Description: The class provides access to Russian literature in translation (10<sup>th</sup>-19<sup>th</sup> centuries) and broadens students' Russian cultural experience by exploring epic poems, fairy tales, religious texts, legal documents, memoirs. Cultural context, philosophical concepts and historical events are analyzed through Russian art, music and film.

Credit Hours: 3 hour lecture

Prerequisites: English 20 or one semester of college literature

EC 2163, Chemical Engineering 301, Renewable Energy, approved effective Fall 2009.

Course Description: A study of renewable energy technologies, including biomass, solar, geothermal, and wind energy collection and conversion. Introduction to hydrogen technologies and fuel cells. Analysis and technical design of renewable energy processes.

Credit Hours: 3 hour lecture

Prerequisites: Senior or Graduate Standing

EC 2164, Geological Engineering 301, Surface Waves (MASW) & Ground Penetrating Radar (GPR), approved effective Summer 2009.

Course Description: Basic theory and the acquisition, processing and interpretation of surface waves (MASW and ReMi) and ground penetrating radar (GPR) data are



covered. Emphasis is placed on geotechnical and structural applications of these non-invasive imaging technologies. Numerous case studies are presented in order to illustrate the utility of these geophysical tools.

Credit Hours: 2 hour lecture, 1 hour lab, Total: 3 hours

Prerequisites: Junior level standing or higher

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J. Keith Nisbett, Chair  
Missouri S&T Campus Curricula Committee