Memo To: Faculty Senate
From: Missouri S&T Campus Curricula Committee Meeting
RE: February 29, 2012

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 0413, Computer Engineering, Bachelor of Science, effective Fall 2012. A proposal to change the current Math Elective requirements.

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 8217, Electrical Engineering 231, Control Systems. The following change has been
    approved effective Fall 2012.
Prerequisites – Current: EE 217 with a grade of "C" or better
            Proposed: EE 153 and Math 204 each with a grade of "C" or better;
    passing the EE Advancement Exam II

CC 8218, Computer Science 253, Algorithms. The following change is approved
effective Fall 2012.
Catalog Description – Proposed: Students will solve recurrence relations, analyze
    algorithms for correctness and time/space complexity, apply these analysis
    techniques to fundamental dynamic programming, greedy, shortest-path, minimal
    spanning trees, and maximum flow algorithms and validate these analyses through
    programming.

CC 8219, Computer Science 461, Privacy-Preserving Data Integration and Analysis. New
course approved effective Fall 2012.
Catalog Description: This course covers basic tools, in statistics and cryptography,
    commonly used to design privacy-preserving and secure protocols in a distributed
    environment as well as recent advances in the field of privacy – preserving data
    analysis, data sanitization and information retrieval.
Credit Hours: 3 hour lecture
Prerequisites: CmpSc 325 and either Stat 343 or both a 200 or higher level Stat course
    and instructor approval

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CC 8220, Computer Science 263, Introduction to Computer Security. The following change is approved effective Fall 2012.
Prerequisites – Present: At least Sophomore standing
Proposed: CmpSc 253

CC 8222, ERP 341, Enterprise Portal Application Development. New course approved effective Fall 2012.
Catalog Description: This course provides a conceptual foundation and hands on experience in web based applications development deployed through and Enterprise portal platform. SAP Netweaver Enterprise portal and tools including Visual Composer and Web Dynpro will be used to develop the applications.
Credit Hours: 3 hour lecture
Prerequisites: Programming knowledge and either ERP 246 or preceded or accompanied by ERP 346

CC 8223, ERP 345, Use of Business Intelligence. The following change is approved effective Fall 2012.
Prerequisites – Present: ERP 246 or preceded or accompanied by ERP 346
Proposed: IST 223 or equivalent; ERP 246 or preceded or accompanied by ERP 346

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 2396, Geological Engineering 401, Advanced Geophysical Field Methods, approved effective Summer 2012.
Course Description: Geophysical field data will be acquired by registrants at selected study sites with the objective of imaging the shallow subsurface and built structures. Registrants will process and interpret the acquired geophysical data using commercial state-of-the- art geophysical processing and interpretational software. Interpretations will be constrained using borehole control and/or construction plans, as available.
Credit Hours: 1 hour lecture, 2 hour lab
Prerequisites: Instructor Approval

EC 2397, Nuclear Engineering 401, Radiation Transport and Modeling, approved effective Fall 2012.
Course Description: Experiment data and error analysis techniques including mathematical modeling; Monte Carlo simulation of radiation transport problems pertinent to radiation shielding, medical physics, and health physics using advanced Monte Carlo simulation codes, such as MCNPX or Geant4.
Credit Hours: 3 hours lecture
Prerequisites: NE 303 or equivalent

EC 2398, Electrical Engineering 401, Neural Network Control of Nonlinear Continuous-time Systems, approved effective Fall 2012.
Course Description: Neural network topologies, universal function approximation property, background on Lyapunov stability and dynamic systems, control of a class of nonlinear systems and robot manipulators, feedback linearization, backstepping control, force control, neural observers, decentralized neural network control, neural network-based optimal control and applications.
Credit Hours: 3 hour lecture
Prerequisites: EE 431

EC 2399, Electrical Engineering 401, Discrete-time Neural Network Control, effective Fall 2013.
Course Description: Neural network topologies, universal function approximation property, background on Lyapunov Stability and dynamic systems, control of a class of nonlinear systems using single layer and multilayer neural networks, feedback linearization, strict feedback systems, non-strict feedback systems, MIMO system, system identification, output feedback control, hardware implementation, and applications.
Credit Hours: 3 hour lecture
Prerequisites: EE 431

EC 2400, Electrical Engineering 401, Adaptive Control, approved effective Spring 2014.
Course Description: Introduction to adaptive control, Lypunov stability, positive real and strictly positive real, Kalman Yukabovich lemma, system identification, direct and indirect adaptive control, adaptive observers, adaptive control design, nonlinear adaptive design tools-adaptive control with multiple models, adaptive neural network control, decentralized adaptive control design.
Credit Hours: 3 hour lecture
Prerequisites: EE 431

EC 2401, Computer Science 401, Search-Based Software Engineering, approved effective Fall 2012.

Course Description: This course will introduce students to reformulating software engineering problems from the life cycle, requirements engineering to testing and evolution, as search problems by adapting different meta-heuristic search algorithms. Topics covered during this course include evolutionary testing, cost/effort prediction, multi-objective software management, and requirements validation.

Credit Hours: 3 hour lecture

Prerequisites: CmpSc 347 or CmpSc 348; CmpSc 206

EC 2402, Business 301, Using Business Models, approved effective Fall 2012.

Course Description: Developing entrepreneurship skills and attitudes through Business Model application. Developing skills in both oral and written professional business presentations. Working effectively in teams to develop entrepreneurially oriented research and product development skills. Mastering the ability to deal with ambiguity and uncertainty working with scalable actual products and services.

Credit Hours: 3 hour lecture

Prerequisites: Senior Standing

EC 2403, Finance 301, Derivative Markets I, approved effective Fall 2012.

Course Descriptions: The fundamentals of quantitative pricing of equity-based financial derivatives such as forwards, futures, vanilla, exotic and path-depended options using methods based on risk-free portfolios of random assets. Black-Scholes theory is developed. Spreadsheets and mathematical software packages are used for valuation.

Credit Hours: 3 hour lecture

Prerequisites: Math 12 or Math 15 or Math 21; Stat 211 or Stat 213 or Stat 215 or Stat 217 or Stat 343

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Daniel Tauritz, Chair
Missouri S&T Campus Curricula Committee

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