FALL 2015 COURSE OFFERINGS

EM 500 Thesis
CRN 48654 Professor: Dr. James Simonton
CRN 50865 Professor: Dr. Janice Tolk (Cancelled)
CRN 50866 Professor: Dr. Andrew Yu

EM 501 Capstone Project
CRN 43182 Professor: Dr. James Simonton
CRN 49605 Professor: Dr. Janice Tolk (Cancelled)
CRN 45598 Professor: Dr. Andrew Yu

EM 502 Registration for Use of Facilities for EM Students
CRN 43183 Professor: Dr. James Simonton
CRN 50870 Professor: Dr. Janice Tolk (Cancelled)
CRN 50871 Professor: Dr. Andrew Yu

EM 532 Productivity and Quality Engineering
Professor: Dr. Janice Tolk
Sections: 001 CRN 45600 UTSI students participating at Tullahoma (Cancelled)
002 CRN 45601 UTSI students participating elsewhere (Prerecorded – Online Only)
003 CRN 45602 UTK students participating elsewhere (Cancelled)

Course Description: Productivity and quality measures defined and used to analyze current competitive position of important sectors of American industry with respect to national and international competition. Study of management theorists and systems which promote or inhibit productivity or quality improvements.

EM 533 Theory and Practice of Engineering Management
Time: Wednesday – 4:00-6:30 – E113
Professor: Dr. James Simonton
Sections: 001 CRN 43184 UTSI students participating at Tullahoma
002 CRN 43185 UTSI students participating elsewhere
003 CRN 43186 UTK students participating elsewhere

Course Description: Principles of engineering management, including: business and organization design, culture, leadership, marketing and competition in global economy, motivation and performance management, empowerment, organizational behavior, and diversity. Systems thinking, learning organizations, and systems dynamics modeling. Principle application to work settings and case studies.
EM 537 Analytical Methods for Engineering Managers
Time: Tuesday – 4:00-6:15 – E113
Professor: Dr. Andrew Yu
Sections: 001 CRN 45604 UTSI students participating at Tullahoma
002 CRN 45605 UTSI students participating elsewhere
003 CRN 45606 UTK students participating elsewhere

Course Description: Survey of management analysis and control systems through industrial engineering techniques. Qualitative and quantitative systems: methods analysis, work measurement, incentive systems, wage and salary development, production and inventory control, facility layout, linear programming, and applied operations research techniques. Credit Restriction: No credit for student with undergraduate degrees in industrial engineering.

EM 539 Strategic Management in Technical Organizations
Professor: Dr. Janice Tolk
Sections: 001 CRN 45608 UTSI students participating at Tullahoma (Cancelled)
002 CRN 45609 UTSI students participating elsewhere (Prerecorded – Online Only)
003 CRN 45610 UTK students participating elsewhere (Cancelled)

Course Description: Strategic planning process and strategic management in practice; corporate vision and mission; product, market, organizational, and financial strategies; external factors; commercialization of new technologies; and competition and beyond. (RE) Prerequisite(s): 533 and Industrial Engineering 518 or consent of instructor.

EM 542 Design of Experiments
Time: Thursday – 4:00-6:30 – E113
Professor: Dr. Andrew Yu
Sections: 002 CRN 50867 UTSI students participating at Tullahoma
003 CRN 50868 UTSI students participating elsewhere
004 CRN 50869 UTK students participating elsewhere

Course Description: Methodology for experiments in product, service, and process improvements. Factorial experiments, screening designs, variance reduction, and other selected topics for engineering managers. Taguchi philosophy and concepts. Optimization and response surface methods. Case studies. (RE) Prerequisite(s): Industrial Engineering 516.

EM 600 Doctoral Research and Dissertation
CRN 45614 Professor: Dr. James Simonton
CRN 45616 Professor: Dr. Janice Tolk (Cancelled)
CRN 49710 Professor: Dr. Andrew Yu
Industrial Engineering

IE 516 Statistical Methods in Industrial Engineering
Professor: Dr. Oleg Shylo
Section: 001 CRN 45685
002 CRN 45686
003 CRN 45687 UTSI students
Text: TBD

Course Description: Application of classical statistical techniques to industrial engineering problems. Statistics and statistical thinking in managerial context of organizational improvement; descriptive statistics and distribution theory; relationship between statistical process control techniques and classical statistical tools; parameter estimation and hypothesis testing; goodness-of-fit testing; linear regression and correlation; analysis of variance; single and multiple factor experimental design. Recommended Background: Statistics 251 or equivalent.

IE 529 Application of Linear Algebra in Engineering Systems
Professor: Dr. Monty Smith
Section: 001 CRN 43411
002 CRN 47560 UTSI students

Fundamental concepts of linear algebra to problems in engineering systems: steady state and dynamic systems. Geometric and physical interpretations of relevant concepts: least square problems, LU, QR, and SVD decompositions of system matrix, eigenvalue problems, and similarity transformations in solving difference and differential equations; numerical stability aspects of various algorithms; application of linear algebra concepts in control and optimization studies; introduction to linear programming. Computer projects. Cross-listed: (See Chemical and Biomolecular Engineering 529.)
Comment(s): Graduate standing or consent of instructor required.

IE 550 Graduate Seminar
Professor: Dr. Ming Jin
Section: 003 CRN 46144 UTSI students

Seminar provides an opportunity for Master’s and Doctoral students to acquaint themselves with research being conducted by both faculty and graduate students in the Industrial and Information Engineering Department, as well as select campus-wide and off-campus researchers from both academia and industry. Research work and relevant results are presented in a professional environment that promotes continued interaction among interested parties. Presentations are not restricted to thesis and dissertation work. Grading Restriction: Satisfactory/No Credit grading only.

IE 591 Special Topics: Supply Chain
Professor: Dr. Ming Jin
Section: 001 CRN 43412
002 CRN 45704
003 CRN 46146

Individual or group research projects. Repeatability: May be repeated if topic differs. Maximum 6 hours. Registration Permission: Consent of instructor.


IE 602  Nonlinear Optimization
Professor:  Dr. James Ostrowski
Section:  001 CRN 50544
         002 CRN 49448
         003 CRN 49449

Kuhn-Tucker theory in nonlinear programming, solution procedures for constrained and unconstrained nonlinear programs, search techniques, quadratic programming, duality and sensitivity analysis.

Cross-listed: (See Management Science 651.)

RE) Prerequisite(s): Management Science 531 or equivalent and proficiency in computer language.
Registration Restriction(s): Minimum student level – graduate.

IE 608  Advanced Optimization via Simulation
Professor:  Dr. Li
Section:  001 CRN 50550
         002 CRN 50912
         003 CRN 50813

Advanced topics in optimization via simulation with applications to areas of business and industry with focus on healthcare systems and supply chain and logistics: agent-based modeling and simulation, system dynamics, and discrete event simulation.

Recommended Background: Discrete-event Simulation.
Registration Restriction(s): Minimum student level – graduate.