# EM COURSE OFFERINGS – SPRING 2018

**EM 500 Thesis**
CRN 27679 Prof. Simonton
CRN 28913 Prof. Yu

**EM 501 Capstone**

CRN 22043 Prof. Tolk

**EM 502 Registration for Use of Facilities**

CRN 22044 Prof. Simonton
CRN 29703 Prof. Yu

**EM 533 Theory and Practice of Engineering Management**

SEC. 001 CRN 22045 Students participating at Tullahoma classroom
002 CRN 22046 Students participating by distance ed.
003 CRN 22047 Students participating at Knoxville DE classroom
TEXT: TBA

TIME: Monday 4:00 – 6:35 (Central time) E-113
PROFESSOR: Dr. Denise Jackson

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 534 Financial Management for Engineering Managers**

SEC. 001 CRN 22049 Students participating at Tullahoma classroom
002 CRN 22050 Students participating by distance ed.
003 CRN 22051 Students participating at Knoxville DE classroom

TEXT: *Introduction to Management Accounting*, 15th edition, C. T. Horngren, G.L. Sundem, W. Stratton, D. Burgstahler, and J. Schatzberg, ISBN-13: 978-0-13-610265-6
TIME: Tuesday 4:00 – 6:35pm (Central time) E-113
PROFESSOR: Dr. Andrew Yu

Financial and managerial accounting in engineering and technology management. Transaction recording, financial statements, ratios and analysis, activity-based accounting, and standard practices for costing, budgeting, assessment, and control.

**EM 538 New Venture Formation**

SEC. 001 CRN 27688 Students participating at Tullahoma classroom
002 CRN 27689 Students participating by distance ed.
003 CRN 27690 Students participating at Knoxville DE classroom

TEXTS:

**Required:** *Technology Ventures: From Idea to Enterprise*, Thomas H. Byers, Richard C. Dorf, Andrew Nelson, 4th edition, McGraw-Hill, ISBN # 13: 978-0073523422.

**Reference only:** *Entrepreneurship and New Venture Formation*, 1st edition, Thomas W. Zimmerer and Norman M. Scarborough ISBN-13: 978-0024317407.

TIME: Thursday 4:00 – 6:35pm (Central time) E-113

PROFESSOR: Dr. Sandra Affare

Factors other than mechanical or chemical which enter into successful establishment of manufacturing or service enterprise. Organizational and financial planning and evaluation. Cost and location studies and market analysis to determine commercial feasibility of new ventures.
*(RE) Prerequisite(s): 539.*

**EM 541 Managing Change and Improvement in Technical Organizations**

Sec 001 CRN 22053 Pre-recorded

TEXTS: *The Prince*, Niccolo Machiavelli, Anthony Grafton, George Bull, Penguin Classics, Reissue edition (Feb 4, 2003), ISBN# 0140449159.
*The New Economics*, W. Edwards Deming, MIT Press, 2nd ed, ISBN# 9780262541169.
*Organizational Culture & Leadership*, Edgar H. Schein, Jossey-Bass Publisher, 4th ed, ISBN# 9780470190609.

PROFESSOR: Dr. Janice Tolk

Current topics, theories, and applications for managing change and innovation for performance improvement in organizations. Multi-initiative approaches: quality management, organizational effectiveness, employee empowerment, performance measurement, and application of statistical tools and techniques. Self-assessment and Baldrige criteria for performance excellence. Change agent, team building, and leadership issues. Case studies.
(RE) Prerequisite(s): Industrial Engineering 516

**EM 600 Doctoral Research/Dissertation**

Sec. 001 CRN 25267 Simonton
Sec. 002 CRN 28923 Yu

# IE COURSES OFFERINGS – SPRING 2018

**IE 516 Statistical Methods in IE**

Sec. 002 CRN 31908 Record Only
TEXT: *Probability and Statistics for Engineers and Scientists*, Hayter, A. (2002). (2nd ed), Duxbury Publishing, Belmont, CA. ISBN 10: 0534386695 / 0-534-38669-5
ISBN 13: 9780534386696
TIME: Tuesday UTSI campus 4:00 – 6:35pm (Central time) E-113
PROFESSOR: Dr. James Simonton

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 517 Reliability of Lean Systems**

SEC. 001 CRN 26984 UTK students participating at Knoxville classroom
002 CRN 26985 UTK students participating by distance ed
003 CRN 27020 UTSI students participating by distance ed
TEXT: TBA
TIME: Monday & Wednesday John D. Tickle Building Room 410
PROFESSOR: TBA

Course is divided into two major components. First half of the course will focus on introducing the students to the concepts of reliability and maintainability and the impact of lean on the reliability of complex systems. The concepts of reliability engineering are utilized to address lean system failures, including equipment failures, human failures, material failures and scheduling failures. Will develop the ability to design systems that are both lean and reliable. The second half of the course will introduce students to specific case studies of systems failures and ask student to develop solutions by considering different dimensions including financial, technical feasibility, risk, safety, security and others. Multi criteria decision making methodologies will be presented to allow students to make decisions when different criteria lead to conflicting solutions.
*(RE) Prerequisite(s): 516. Recommended Background: Background in lean and reliability.*

**IE 518 Advanced Engineering Economic Analysis**

SEC. 001 CRN 21755 UTK students participating at Knoxville classroom
002 CRN 21756 UTK students participating by distance ed
003 CRN 21757 UTSI students participating by distance ed
TEXT: TBA
TIME: Monday & Wednesday John D. Tickle Building Room 410
PROFESSOR: Dr. Reid L. Kress

Application of engineering economic analysis in complex decision situations. Inflation and price changes; uncertainty evaluation using non-probabilistic techniques; capital financing and project allocation; evaluations involving equipment replacement, investor-owned utilities, and public works projects; probabilistic risk analysis including computer simulation and decision trees; multi-attribute decision analysis; and other advanced topics.
*(RE) Prerequisite(s): 405 Recommended Background: Statistics 251.*

**IE 522 Optimization Methods for Engineering Managers**

SEC. 001 CRN 21759 UTK students participating at Knoxville classroom
002 CRN 21760 UTK students participating by distance ed
003 CRN 21761 UTSI students participating by distance ed
TEXT: TBA
TIME: Tuesday & Thursday John D. Tickle Building Room 410
PROFESSOR: Dr. Alberto Garcia

Classical optimization applied to constrained and unconstrained, non-linear, multi-variable functions; search techniques; decision making under uncertainty; game theory; and dynamic programming.
*Recommended Background: Linear Algebra.*

**IE 529 Application Linear Algebra in Engineering Systems**

CRN 21767
TEXT: TBA
TIME: Tuesday & Friday UTSI Campus 9:30 – 10:45am (Central time) E-111
PROFESSOR: Dr. Monty Smith

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**

SEC. 001 CRN 25277 UTK students participating at Knoxville classroom
002 CRN 25278 UTK students participating by distance ed
003 CRN 27021 UTSI students participating by distance ed

TIME: Friday John D. Tickle Building Room 410

**IE 602 Nonlinear Optimization**

SEC. 001 CRN 21781 UTK students participating at Knoxville classroom
002 CRN 29656 UTK students participating by distance ed
003 CRN 29657 UTSI students participating by distance ed
TEXT: TBA
TIME: Tuesday & Thursday John D. Tickle Building Room 410
PROFESSOR: Dr. James Ostrowski

Kuhn-Tucker theory in nonlinear programming, solution procedures for constrained and unconstrained nonlinear programs, search techniques, quadratic programming, duality and sensitivity analysis.
*Recommended Background: Differential equation and proficiency in computer programming.*
*Registration Restriction(s): Minimum student level – graduate.*

**IE 610 Heuristics in Optimization**

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| SEC. | 001 | CRN | 29000 | UTK students participating at Knoxville classroom |
| | 002 | CRN | 29001 | UTK students participating by distance ed |
| | 003 | CRN | 29002 | UTSI students participating by distance ed |

TEXT: TBA
TIME: Tuesday & Thursday John D. Tickle Building Room 410
PROFESSOR: Dr. Oleg Shylo

Heuristic methods and their applications to optimization problems, including neighborhood search and major meta-heuristics methods.
*Recommended Background: Linear Programming.*
*Registration Restriction(s): Minimum student level – graduate.*

**For more options see Timetable of Classes**