

EM COURSE OFFERINGS – SPRING 2019

See [Timetable of Classes](#) for more options

EM 500 Thesis

CRN 27464 Prof. Simonton

CRN 28645 Prof. Yu

EM 501 Capstone

CRN 22010 Prof. Tolk

EM 502 Registration for Use of Facilities

CRN 22011 Prof. Simonton

CRN 29389 Prof. Yu

EM 533 Theory and Practice of Engineering Management

Sec. 002 CRN 22013 UT Space Institute Campus

003 CRN 22014 UT Knoxville Campus

004 CRN 22015 Distance Education Campus

TEXT: **Required:** *Organizational Behavior*; Fred Luthans; McGraw-Hill Irwin; 13th Edition,
ISBN-13: 978-1681231204 ISBN-10: 1681231204

References: *The Fifth Discipline*, Peter M. Senge, ISBN-10: 9780385517256
ISBN-13: 978-0385517256

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 22016 UT Space Institute Campus

002 CRN 22017 UT Knoxville Campus

004 CRN 22019 Distance Education Campus

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: Monday 10:00am – 12:30pm (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 27471 UT Space Institute Campus
003 CRN 27473 UT Knoxville Campus
004 CRN 32308 Distance Education Campus

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: Tuesday 1:00 – 3:30pm (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 22020 UT Space Institute Campus
003 CRN 22022 UT Knoxville Campus
004 CRN 22023 Distance Education Campus

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.

TIME: Pre-recorded

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 25141 Simonton
003 CRN 28655 Yu

EM 601 Systems Theory & Engineering

Sec. 001 CRN 32309 UT Space Institute Campus
002 CRN 32310 UT Knoxville Campus
003 CRN 32311 Distance Education Campus

Text: *Systems Engineering Principles and Practice*, Alexander Kossiakoff, William N. Sweet, Sam Seymour, Steven M. Biemer, 2nd edition, Wiley Publisher ISBN #978-1-119-09504-0
Amazon ISBN #13: 978-0470405482

Time: Thursday 10:00am – 12:30pm (Central time) E-113

PROFESSOR: Dr. Sandra Affare

Technology course that will examine theoretical foundations of General System Theory applied to engineering and organizational enterprises addressing issues concerning systems, the effectiveness of organizations in the context of traditional management related issues, as well as incorporating the critical impact of systems thinking on the socio-technical environment. Among the topics to be covered in the course are: the meaning of General Systems Theory (GST); GST and the unity of science; the concept of Equifinality; the characteristics and modeling of open systems; the concepts of the Learning Organization; the principle of Leverage; building Learning Organizations; and issues related to Socio-Technical Systems. Systems Engineering focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem including operations, performance, test, manufacturing, cost, and schedule. This subject emphasizes the links of systems engineering to fundamentals of decision theory, statistics, and optimization. (RE) Prerequisite(s): 533.

IE COURSES OFFERINGS – SPRING 2019

IE 517 Reliability of Lean Systems

SEC. 001 CRN 26787 UT Knoxville Campus
002 CRN 26788 Distance Education Campus
003 CRN 26823 UT Space Institute Campus

TEXT: TBA

TIME: Monday & Wednesday 12:20 pm – 1:35 pm (Eastern Time) John D. Tickle Building Room 410

PROFESSOR: Dr. Rapinder Sawhney

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 21722 UT Knoxville Campus
002 CRN 21723 Distance Education Campus
003 CRN 21724 UT Space Institute Campus

TEXT: TBA

TIME: Monday & Wednesday 2:10 pm – 3:25 pm (Eastern Time)

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 21726 UT Knoxville Campus
002 CRN 21727 Distance Education Campus
003 CRN 21728 UT Space Institute Campus

TEXT: TBA

TIME: Monday & Wednesday 9:45 am – 11:15 am (Eastern Time) John D. Tickle Building Room 410

PROFESSOR: Dr. James Ostrowski

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

Sec. 001 CRN 21734 UT Space Institute Campus
002 CRN 29645 UT Knoxville Campus
003 CRN 32269 Distance Education Campus

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 25149 UT Knoxville Campus
002 CRN 25150 Distance Education Campus
003 CRN 26824 UT Space Institute Campus

TIME: Friday 2:30 pm – 3:20 pm (Eastern Time) John D. Tickle Building Room 410

PROFESSOR: Dr. Mingzhou Jin

IE 607 Stochastic Processes

SEC. 001 CRN 28725 UT Knoxville Campus
002 CRN 28726 Distance Education Campus
003 CRN 28727 UT Space Institute Campus

TEXT: TBA

TIME: Tuesday & Thursday 3:40 pm – 4:55 pm (Eastern Time) John D. Tickle Building Room 410

PROFESSOR: Dr. Anahita Khojandi

Basic models and algorithms in stochastic processes and their Engineering application: the renewal theory, discrete-time and continuous-time Markov Chains, Queuing theory, and Markovian Decision Processes.

(DE) Prerequisite(s): 516.

Recommended Background: Probability.

Registration Restriction(s): Minimum student level – graduate.

IE 609 Stochastic Programming

SEC. 001 CRN 29344 UT Knoxville Campus
002 CRN 29345 Distance Education Campus
003 CRN 29346 UT Space Institute Campus

TEXT: TBA

TIME: Tuesday & Thursday 12:40 pm – 1:55 pm (Eastern Time) John D. Tickle Building Room 410

PROFESSOR: Dr. Oleg Shylo

Topics include modeling of uncertainty, two-stage stochastic programs, the value of information, Benders decomposition, L-shaped method, stochastic integer programs and multistage stochastic programs.

Recommended Background: Linear Programming and Probability.

Registration Restriction(s): Minimum student level – graduate.