IE 5302-004 Fall 2016

Thursday 5:30PM-8:20PM - Room 227 PKH

Instructor: Dr. Karthik Ayodhiramanujan Phone: 817-272-3092
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Office: To Be Announced Email: karthik.ayodhiramanijan@uta.edu
Office Hours: Before and after class (other times by appointment as requested)
Required Text: No specific book is prescribed. References will be provided during the semester.

Course Description IE5302 –Introduction to Industrial Engineering 3- Lecture Hours · 0 Lab Hours

A survey of the foundation areas of industrial engineering illustrating the measurement, evaluation, and design of systems of work involving people, machines, the environment, and complex operational methodologies. Six subject areas of IE are covered, namely: Metrics and Measurement; Quality Systems; Human Factors Engineering; Production and Inventory Control; Simulation and Optimization; and Facilities Planning and Design.

Course Schedule

The course contains five subject areas. Each subject will be covered in approximately 2 and ½ weeks.

1. Metrics and Measurement (Aug 25, Sep 1, Sep 8)

   Understanding the importance and role of metrics in our lives, work and other disciplines, and how work measurement is used to improve company metrics.

   a. Cost reduction and quality improvement
   b. Metrics for different disciplines/groups
   c. Classic IE work measurement: Benefits, fair division of labor, increase productivity
   d. Which technique is best for particular application - Time studies, MTM, work sampling
   e. Incentive pay (piece work, bonuses based on performance) - hourly, salary, executive pay

2. Quality Systems (Sep 8, Sep 15, Sep 22)
   a. Introduction – basic concepts
   b. Tools of Statistical Process Control
   c. Process validity
   d. Process Control
   e. Control Chart

3. Human Factors Engineering/Ergonomics (Sep 22, Sep 29, Oct 6)

   a. Introduction to human-work interaction, including mental and physical human capacities and job demands; and consequences of mismatches
   b. Body Size, Workspace, and Equipment Design
   c. Strength and Range of Motion in Work and Workspaces
   d. Physiological Principles in Work Design
   e. Mental Work and Cognitive Processes in Work

4. Production and Inventory Control (Oct 6, Oct 13, Oct 20)

5. Simulation and Optimization (Oct 27, Nov 3, Nov 10)

a. Introduction to Discrete-Event Simulation
b. Discussion of the Discrete-Event Simulation Project Methodology
c. Introduction to Simulation Model Building Techniques
d. Simulation Model Analysis and Optimization

6. Facilities Planning and Design (Nov 17, Nov 24, Dec 1)

As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in the course.

General Policies/Guidelines:

- Class attendance is expected – "showing up" is the first step toward excellence in any endeavor.
- If you require an accommodation based on disability, I would like to meet with you in the privacy of my office, during the first week of the semester, to make sure you are appropriately accommodated.

Course Evaluation & Final Grade: Grades are based on performance. No curves planned. Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels.

Course grade will be comprised of performance on exams, homework, and projects.

- Homework 30%
- Mid-Term Exam 30%
- Final Exam 40%

A make-up examination is not available to you for any absence unless you can provide proof of illness, or personal or family emergency that caused you to miss an examination. Homework could include critical thinking exercises such as case study, and/or critiquing a journal paper. Performance standard: D >= 60%, C >= 70%, B >= 80%, A >= 90%

Key Dates:

10/13 Mid-Term Exam (1/2 session)

12/14 Final Exam [11:00AM-12:30PM]

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center.

Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance.

Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA), and Section 504 of the Rehabilitation Act. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Non-Discrimination Policy: The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.

Title IX Policy: The University of Texas at Arlington ("University") is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.

Academic Integrity:
All students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

Per UT System Regents' Rule 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be

disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit http://www.uta.edu/news/info/campus-carry/

Distance Education Policies: The Industrial & Manufacturing Systems Engineering Department offers most graduate IE courses on-line through streaming-video and Blackboard. This allows graduate students in the IE Program who are enrolled off-campus or part-time to access their classes at their convenience. Log on using your netID and password at http://elearn.uta.edu for access to class notes and assignments. A distance student is defined as a student enrolled in the distance section (typically "002" or "003") of an IE course. Please visit the IMSE website http://www.uta.edu/ie/distance_education_policy.html for details. Pay special attention to Policy #2: Distance students are required to communicate with the faculty before the second class period. This "first contact" helps insure that the distance student is not left behind at the beginning of the semester.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete a Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located immediately next to the classroom door. When exiting the building during an emergency, one should never take an

elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist handicapped individuals.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses.

Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Librarian to Contact: Go to http://www.uta.edu/library/help/subject-librarians.php to see the engineering librarian who may be able to help you with library searches, etc.
Subject guide for IMSE: http://libguides.uta.edu/IMSE

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