**IE 5302 – 001, 002, 003**

**Introduction to Industrial Engineering**

**Fall 2015**

**Tues & Thu: 9:30-10:50 am, WH 402**

**Instructor:** Aera Kim LeBoulluec, Ph.D.

**Contact:** aeral@uta.edu

**Office:** 420L Woolf Hall **Phone:** 817-272-3167

**Office Hours:** T/TH 3:30 –5:00 pm, by appointment.

**Faculty Profile:** https://www.uta.edu/profiles/leboulluec-aera

**Teaching Assistant:** Rangwala, Taher Ammar [taher.rangwala@mavs.uta.edu]

Office Hours: M/W 10:00 am – 12:00 pm.

**Course Description:**

A survey of the foundational areas of industrial engineering illustrating the measurement, evaluation, and design of systems of work involving people, machines, the environment, and complex operational methodologies. An overall introduction to Industrial Engineering and 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.

**Student Learning Objectives:** At the end of this course students should be able to understand or have knowledge of:

1. Overall concept of Industrial Engineering
2. The importance and role of metrics in our lives, work and other disciplines, and how work measurement is used to improve company metrics
3. Basic concept of quality systems
4. Human-work interaction, including mental and physical human capacities and job demands and consequences of mismatches
5. Basic concept of production and inventory Control
6. Basic concept of simulation and optimization
7. Basic concept of facilities planning and design

**Course Topics:**

**Part I:** Overall introduction to industrial engineering

**Part II:** Metrics and Measurement

* + - Cost reduction and quality improvement
    - Metrics for different disciplines/groups:
    - Classic IE work measurement: Benefits.
    - Fair division of labor, increase productivity
    - Best technique for particular application-

Time studies, MTM, Work sampling

* Incentive pay - hourly, salary, executives

**Part III:** Quality Systems

* + - Introduction – Basic Concepts
    - Tools of Statistical Process Control
    - Process validity
    - Process Control
    - Control Chart

**Part IV:** Human Factors Engineering/Ergonomics

* + - Introduction to human Factors engineering
    - Body Size, Workspace, and Equipment Design
    - Strength and Range of Motion in Work and Workspaces
    - Physiological Principles in Work Design
    - Mental Work and Cognitive Processes in Work

**Part V:** Production and Inventory Control

**Part VI:** Simulation and Optimization

* + - Introduction to Discrete-Event Simulation
    - Discussion of the Discrete-Event Simulation Project Methodology
    - Introduction to Simulation Model Building Techniques
    - Simulation Model Analysis and Optimization

**Part VII:** Facilities Planning and Design

**Course Requirements:**

**Assignments**: There will be many in class and out of class assignments throughout the semester. All assignments must be turned in at the beginning of the class on the day they are due, no late assignments will be accepted. You must be in class in order to do the in class assignments. No makeup assignments will be given.

**Examinations**: There will be one midterm and a final given during this course. You must take all tests at their scheduled times. If you miss a test you must have either a **certified medical excuse or prior instructor approval**. A makeup test at a designated time during the last week of the semester will be provided for those with excused exam absences. The makeup exam will be fair but comprehensive (covering all the course material) and challenging. Only one missed test can be made up. The final exam is scheduled for Thursday, Dec. 17, 2015, 8:00-10:30am.

**Attendance:** Participation in classroom exercises will be part of your assignments grade.

**Distance Student Policies:** Assignments for distance students are due within 24 hours of the in- class due date. Please submit all assignments with a single PDF file. Students who live within 50 miles of campus must take the exam on campus at the scheduled class time. Students who live outside of the 50 miles radius must get a **test-taking procedure approved by me before census date.**

**Grading (tentative):**

(35%) Midterm, Tuesday, Oct. 6, 2015 (Subject to change), Parts 1-3

(35%) Final, Thursday, Dec. 17, 2015 @ 8:00 – 10:30 am, Parts 4-7

(15%) Term paper due Monday, Dec. 14, 2015 @ 11:00 am

(15%) Class Assignment

**Letter grades correspond to the following score system:**

A = 90-100; B = 80-89; C = 70-79; D = 60-69; F = below 60.

**Course Policies / Expectations:**

* Students are responsible for checking MavMail.
* Information regarding the class will be sent via MavMail.
* Attendance and Drop Policy: Regular and punctual attendance are expected in accordance with UTA’s policies (for drop policy see graduate catalog).
* Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 8 hours per week of their own time in course-related activities, including reviewing lecture content, reading required materials, completing assignments, etc.
* Test Policy: please bring your **UTA ID card** to all tests.
* All cell phones must be off or silenced (not on vibrate) when class begins.
* Be on time; when you are tardy you will disturb the class when you enter. Let’s avoid  this entirely.
* Remain in class until you have been dismissed.
* Come prepared for exams for there is no sharing of anything, during exams.
* Cell phones calculators **CANNOT** be used for an exam.

***The instructor reserves the right to modify this syllabus as needed during the semester, either in class or on the website. Students are responsible for such changes.***

**Emergency Phone Numbers:** In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial **911**.

**For non-emergencies**, contact the UTA PD at **817-272-3381**

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online 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.

**Americans with Disabilities Act:** The University of Texas at 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). 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 that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

**Title IX:** The University of Texas at Arlington is committed to upholding U.S. Federal Law “Title IX” such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

**Academic Integrity:** Students enrolled all UT Arlington courses 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.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. 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.

**Academic Dishonesty:** It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

"Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents’ Rules and Regulations, Part One, Chapter VI, Section 3, Subsection 3.2, Subdivision 3.22)

**Final Review Week:** A period of five class days prior to the first day of final examinations will be designated as FINAL REVIEW WEEK. The purpose of this week is to allow UT Arlington students sufficient time to prepare for final exams. During this week, there will be no schedule or required activities such as field trips, seminars, 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 will not give any exams constituting 10% or more of the final grade, except make-up tests and laboratory examinations. In addition, no instructor will give any portion of the final exam during Final Review Week.

**Inclement Weather Policy:** If the University is closed, this class will not meet. Any scheduled assignments or examinations will be rescheduled to the next class period that the class meets. You can get information by dialing 972-601-2049 or checking the main website at www.uta.edu.

**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. 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:** [Required for all undergraduate courses] 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.

22. The English Writing Center (411LIBR): Hours are 9 am to 8 pm Mondays-Thursdays, 9 am to 3 pm Fridays and Noon to 5 pm Saturdays and Sundays. Walk In Quick Hits sessions during all open hours Mon-Thurs. Register and make appointments online at http://uta.mywconline.com. Classroom Visits, Workshops, and advanced services for graduate students and faculty are also available. Please see www.uta.edu/owl for detailed information.

**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.

**This final section is not part of the syllabus template, but a message from the UT Arlington Library.**

Faculty members should feel free to incorporate any of the following information into your course syllabus or other course materials.

Library Home Page http://www.uta.edu/library

Subject Guides http://libguides.uta.edu

Subject Librarians http://www.uta.edu/library/help/subject-librarians.php

Database List http://www.uta.edu/library/databases/index.php

Course Reserves http://pulse.uta.edu/vwebv/enterCourseReserve.do

Library Tutorials http://www.uta.edu/library/help/tutorials.php

Connecting from Off- Campus http://libguides.uta.edu/offcampus

Ask A Librarian http://ask.uta.edu

**The following URL houses a page where we have gathered many commonly used resources needed by students in online courses:** http://www.uta.edu/library/services/distance.php.

The subject librarian for your area can work with you to build a customized course page to support your class if you wish. For examples, visit http://libguides.uta.edu/os and http://libguides.uta.edu/pols2311fm. If you have any questions, please feel free to contact Suzanne Beckett, at sbeckett@uta.edu or at 817.272.0923