

The University of Texas at El Paso



INDUSTRIAL AND SYSTEMS ENGINEERING IN HEALTHCARE

Course Number: IE 4395/ IE 5390/ MFG 5390

Fall 2019

Class Details:

Instructor	: Sreenath Chalil Madathil, Ph.D.
Schedule	: Thursday 6:00 PM – 8:50 PM
Location	: Liberal Arts Building 211
Office Hours	: Tuesday 3:00 PM – 5:00 PM at Engineering Building A-243 : By Appointment
Email	: schalil@utep.edu
Course Link	: UTEP Blackboard

Course Objectives:

Management in all industries is moving toward more objective decision making; the healthcare industry, however, has lagged behind many other industries in this respect. This particular course in operations analysis places emphasis on the application of quantitative techniques to problem solving and decision making related to the management of health care providers, including, but not limited to: hospitals, physician group practices, health maintenance organizations, and nursing homes. This course will be taught from the perspectives of decision-making and control systems in general and their applications in healthcare provider management in particular. The emphasis of the course will be to learn various concepts and techniques and apply the techniques to diverse decision-making contexts.

The primary program objectives pursued in this course are as follows:

- Understand the application of statistical, industrial engineering, operations research, and scientific research techniques in planning, managing and evaluating health care programs and organizations.
- Ability to apply selected quantitative techniques in addressing problems or opportunities relating to planning, managing and evaluating health services programs and health delivery organizations.
- Ability to plan and conduct organizational evaluations and management audits and ability to design and implement integrated management and planning systems, and organize and perform reengineering in healthcare organizations
- Ability to evaluate alternative approaches to corporate planning, ability to evaluate alternative planning methods/techniques, and ability to apply selected planning methodologies in health care organizations

Preferred Reference Books:

- Daniel B. McLaughlin, and John R. Olson, Healthcare Operations Management, 3rd Edition, (ISBN: 9781567938517)

Other Reference Books:

- Yasar A. Ozcan, (will be referred as **Ozcan**) Quantitative Methods in Healthcare Management, 2nd Edition, 2009

Class Attendance:

The students are expected to attend all class sessions. It is the responsibility of the student to inform each instructor of extended absences. When, in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor can drop the student from the class with a grade of W before the course-drop deadline or with a grade of F after the course-drop deadline.

Course Materials and Office Hours:

I will post lectures, links to other relevant reading materials, homework questions, and project details on blackboard. All submissions **MUST** be submitted through blackboard. Paper submissions will not be accepted. The office hours are on Monday between 3:00 PM and 5:00 PM at Engineering Building A-243. However, I can also meet with you using video conferencing services such as Blackboard Collaborate based on a pre-determined meeting time.

Course Projects:

All students are required to do a course project in this class. Projects is team project for undergraduate (UG) students and individual deliverables for graduate (G) students. The instructor assigns the students to the teams for undergraduate students. The projects should reflect the application of industrial engineering concepts such as operations research, simulation, and data analysis for decision making in healthcare application. Prior approval from your instructor is required to conduct the course project.

Exam Make-up Policy:

There will be **NO** make-up policy for exams, homework, and quizzes in this class.

Late-Submission Policy:

All late submissions for homework, quizzes, and exams are automatically awarded zero points.

Evaluation:

Students will be evaluated according to their performance on two examinations, class projects, homework, and quizzes. Class members are expected to be prepared for each class by reading the assigned material before each session, and by attending each class session.

Grades:

A	90 and above
B	80 to 89
C	70 to 79
D	60 to 69
F	59 and below

The course grade will be aggregated as follows:

	Item			Weight
1	Mid-term Examination			20%
2	Final Examination			20%
3	Project			30%
		UG	G	
3.1	Project Proposal Presentation	5%	10%	
3.2	Mid-project update	5%		
3.3	Final Project Presentation	5%	10%	
3.4	Project Report	10%	10%	
3.5	Self and Peer Evaluation and Project Postmortem	5%		
4	Homework			20%
5	Quiz			5%
6	Attendance and Other Miscellaneous			2%
7	Current Affairs in Healthcare			3%
8	Total			100%

Center for Accommodations and Support Services:

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. Schedule an appointment with the professor(s) during the first week of classes to clarify any accommodation needs and resolve all questions pertaining to course assignments and the classroom environment. Students should present a Faculty Accommodation Letter for Student Disability Services when they meet with instructors. Accommodations are not retroactive and new Faculty Accommodation Letters must be presented each semester.

Academic Integrity:

The University of Texas at El Paso prides itself on its standards of academic excellence. In all matters of intellectual pursuit, UTEP faculty and students must strive to achieve excellence based on the quality of work produced by the individual. In the classroom and in all other academic activities, students are expected to uphold the highest standards of academic integrity. Any form of scholastic dishonesty is an affront to the pursuit of knowledge and jeopardizes the quality of the degree awarded to all graduates of UTEP. It is imperative, therefore, that the members of this academic community understand the regulations pertaining to academic integrity and that all faculty members insist on adherence to these standards.

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes 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; and any act designed to give unfair advantage to a student or the attempt to commit such acts. Proven violations of the detailed regulations, as printed in the Handbook of Operating Procedures (HOP) and available in the Office of Student Life and the homepage of the Office of Student Life at www.utep.edu/dos, can result in sanctions ranging from disciplinary probation, to failing a grade on the work in question, to a failing grade in the course, to suspension or dismissal, among others.

Civility Statement:

Please be respectful of all students' right to learn without disruptions. In line with this statement please make an active effort to keep the talking to a minimum during lectures and presentations. Also make an active effort to either turn cell phones off or turn them to vibrate mode prior to the start of class. Appointments with instructor should be made in advance. In order to receive 10 points as extra credit for reading this syllabus, please type in bienvenido to the course's discussion board before September 11th.

Course Outline (Tentative)

Week	From	Lecture	Title	Comments
1	8/29/19	1	Course Overview	Fall classes begin on August 26th,
		2	Introduction to Healthcare Systems Engineering	Late Registration Period
2	9/5/19	3	Decision Making in Healthcare Facilities	Labor Day Holiday
3	9/12/19	4	Facility Location	Sept 11th - Last day to register for classes
4	9/19/19	5	Facility Layout	
5	9/26/19	6	Resource Allocation	
6	10/3/19	7	Staffing	
7	10/10/19		Project Proposal	
8	10/17/19	8	Scheduling	
9	10/24/19		Mid-term Examination	INFORMS Conference
10	10/31/19	9	Productivity	HFES Annual Conference Seattle
11	11/7/19	10	Project Management	
12	11/14/19		Mid-project Presentation	
13	11/21/19	11	Supply Chain and Inventory Management	
14	11/28/19	12	Queuing Models and Capacity Planning	Thanksgiving Holiday
15	12/2/19		Final Project Presentation	Dec 5 - Last day of Fall 2019 classes
16	TBD		Final Examination	Fall 2019 Final Exams

PS: I reserve the right to change the course outline based on the course progress.