

The University of Texas at El Paso
Operation Research II – IE 4390
Spring 2023 – Course Syllabus

Professor: Dr. Ana C. Cram
e-mail: accram@utep.edu

Class meets: Liberal Arts Building, 306, Mondays & Wednesdays 12:00 pm – 1:20 pm

Office hours: E-201L or Microsoft Teams. Tuesdays & Thursdays 11:00 am – 12:00 pm, and by appointment

Course web page:

<https://blackboard.utep.edu/>

Course Description:

An introduction to probabilistic optimization including queuing theory, Monte Carlo techniques of simulation, project scheduling and basic Markov processes. A project is an integral part of this course.

Prerequisites:

To be successful in this class, you need to have a knowledge of basic calculus and probability. Further, BE 3373 or IE 3373 are formal pre-requisite for the class, with a grade of C or better.

Course objectives:

This is the second of a two-course sequence that introduces students to models commonly used in the analysis of complex decision-making problems. Modeling approaches and fundamental solution methodologies will be emphasized. We will learn a variety of ways in which stochastic models in Operations Research can be used and applied to solve practical problems.

We will emphasize that models are based on assumptions that should be sometimes accepted, sometimes rejected but always carefully thought about. We will also learn how to formulate practical problems into mathematical models and describe methods and software to solve them in a reasonable amount of time. We will become familiar about how to analyze the results of a model, interpret them, and concisely present the insights obtained from their analysis.

To be successful in this class, you will need to invest a lot of your time and be ready to carry a lot of work. It is important that you do so as the techniques you will learn here are essential to understand many other classes in the IE curriculum.

Required textbook:

Introduction to Probability Models; *Wayne L. Winston*; fourth edition

Academic Honesty

It is expected that the students will conduct with integrity in all course areas. Do not attempt to engage in dishonest activities such as copying, plagiarism, falsifying information, etc. The

professor will take measures to prevent such instances and will bring a case to the university authorities. Information about University-wide policies could be found in the Dean of Students Web page at <http://studentaffairs.utep.edu/Default.aspx?alias=studentaffairs.utep.edu/dos>

Grading

ITEM	Percentage
Homework Assignments	10%
Quizzes	15%
Exams (3 - 20% each)	60%
Final project	15%

Grading Criteria

The following scale is used for assigning letter grades.

Grade percentage	
A	90 and above
B	80 < 90
C	70 < 80
D	60 < 70
F	< 60

Homework Assignments

Homework assignments will be announced in class and posted on blackboard after their announcement. All assignments are due 1 week after they are announced and should be submitted through blackboard. Assignments submitted via email will NOT be accepted. Late assignments will NOT be accepted unless certified medical proof is given.

Quizzes

Quizzes will be announced randomly in class. If you missed class the day a quiz was given, you will still be able to take it if you advised the instructor about your absence PRIOR to the class and can properly justify it.

Final Project Report

The purpose of the term project is to provide an opportunity to apply and/or further explore a topic area related to the course. For the final project, you will have to measure queuing times from a local business and apply the methods reviewed in class.

- Teams of 4 students
- Submit a final typed report (~20 pages, in word format, 1.5 spacing, Times New Roman 12)

Students with disabilities:

Students with disabilities or who suspect they have a disability may wish to self-identify for purposes of modifications. You can do so by providing documentation to the Office of Disabled Student Services located in the UTEP Union. If you have a condition which may affect your ability to exit safely from the premises in an emergency or which may cause an emergency during class, you are encouraged to discuss this in confidence with the instructor and/or director of the Disabled Student Services. For general information about the American with Disabilities Act (ADA), please call 747-5184.

Late Work Policy:

Late homework or reports will not be accepted, unless certified medical proof is given. If you are unable to attend the class at which the homework is due, it is your responsibility to submit it earlier.

Academic Honesty

During exams and quizzes, you are **not allowed to use any form of wi-fi enabled electronic device**, including cell phones or other electronic communication devices or methods (calculators, wrist watches, earbuds, etc.). No wristwatch or other electronic device may be worn.

During exams and quizzes, you are allowed to use only instructor approved calculators. Check your syllabus for the list of approved calculators.

No electronic version of the book, loose paper print-outs of the book or extra sheets of paper of any kind are allowed unless explicitly mentioned in writing by the instructor. As a part of the zero-tolerance policy, if you have a cellphone or other electronic device capable of communication on your person; or if any proctor sees or hears any electronic device during the exam or if you share your work with someone else, you will be reported to the proper authorities, and you may receive a zero on the exam and an F in the class. Other actions including suspension may also be perused.

If you have a disability that requires the use of an electronic device during exams, you must have a letter of accommodation from the Center for Accommodations and Support Services (CASS). This accommodation must be coordinated in advance with the instructor.

During exams, you will not be allowed to leave the examination room until you complete the exam. This includes restroom breaks. Students with disabilities must have a letter of accommodation and coordinate this in advance with the instructor.

Instructors and/or proctors may record and/or use their personal cell phones to document activity during the exam. Recording devices may also be located at various locations in the room and may be out of sight of the students. These recordings will be managed according to the UTEP approved regulations for such media.

If you are suspected of scholastic dishonesty, you may not be directly confronted about your conduct by the instructor or proctor. You will, however, be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) and your exam will not be admissible. Your grade in

the class may not be available until OSCCR makes a final ruling, this may adversely impact your ability to enroll in other classes or graduation.

If you arrive more than 15 minutes late to an exam, you will not be allowed to enter the examination room.

There will be no makeup exams administered. If you have a university approved excuse, your instructor will have a process for determining how to handle the missing grade outlined in the syllabus. However, no makeup exams will be given.

If you miss more than one exam, the instructor may choose to administratively drop you from the class. This may adversely impact a visa and financial aid.

No food or drinks will be allowed in the examination room.

Departmental policy allows for the use of assigned seats. All students must present their UTEP issued ID prior to and during every exam and may be required to sign in. Not having a UTEP issued ID when asked will result in forfeiture of the exam.

Scholastic dishonesty on homework, lab assignments and all other class assignments will be held to the same standards and requirements of academic honesty as quizzes and exams.

Harassment Policy

The department has a zero-tolerance policy for harassment. Engagement in any behavior considered harassment will be reported to the proper authorities. In addition to generally understood forms of harassment, the department also treats the following behavior as harassment:

- Repeated emails and/or calls regarding subjects that have already been addressed. Once a decision has been made or a question answered, a student who continues to ask the same question will be given a warning by the recipient of the email/call. If the student continues, the behavior will be reported. Questions that seek understanding of course material are not harassment; but repeated questions about a grade or an administrative decision are.
- Grades are NOT negotiable, ever. If you believe a grading mistake has been made, you must follow the process described in the UTEP catalog. Any request for a grade elevation that is NOT based on a mistake is considered harassment and will be reported immediately.
- Remaining in an office after the occupant requests you leave is considered harassment and potentially threatening. You will be reported immediately without warning and depending on the severity, may be reported to law enforcement.
- Similar behavior towards department staff, and student advisors will also be treated as harassment, including persistent phone calls, emails, and badgering. Department staff and student advisors are there to help students and should be treated with due respect.

Cell phone policy- Cell phones are to be off or mute during class. You should not take phone calls during class, except for emergencies.

Tentative Schedule & Topics:

Week	Dates	Topic
1	Jan 18	Syllabus & Introduction
2	Jan 23 & Jan 25	Discrete Distributions & Continuous
3	Jan 30 & Feb 1	Bayes & Markov chains I
4	Feb 6 & Feb 8	Markov chains II & Markov chains III
5	Feb 13 & Feb 15	Markov chains IV & Markov chains V
6	Feb 20 & Feb 22	EXAM I
7	Feb 27 & Mar 1	Markov chains VI & Markov chains VII
8	Mar 6 & Mar 8	Queuing theory I & Queuing theory II
9	Mar 13 & Mar 15	SPRING BREAK
10	Mar 20 & Mar 22	Queuing theory III & Queuing theory IV
11	Mar 27 & Mar 29	Queuing theory V & Queuing theory VI
12	Apr 3 & Apr 5	EXAM II
13	Apr 10 & Apr 12	Queuing theory VII & Queuing theory VIII
14	Apr 17 & Apr 19	Decision making II & Decision making III
15	Apr 24 & Apr 26	Decision making IV
16	May 1 & May 3	EXAM III
17	May 8 & May 10	Finals Week