OAKLAND
UNIVERSITY™

Course Syllabus

ISE 3330/MOR 3330/ISE 5002
School of Engineering and Computer Science
Winter Semester, 2018

Course: Engineering Operations Research

Credit Hours: 3.0 credit hours
Class Time: 5:30-7:17 pm M/W
Class Location: Dodge Hall 201

Instructor: Dr. Nasim Nezamoddini

Email: nezamoddini@oakland.edu
Phone: 248-370-2215
Office hours: 3:00-5:00 pm (Tuesdays) and by appointment
Office: EC 506

Textbook:

Operations Research: Applications and Algorithms, Fourth Edition, by W. L. Winston and J. B. Goldberg, 2004 (ISBN: 978-0534380588).

Course Description:

Introduction to operations research models used in decision making and system performance evaluation. Topics include linear programming including simplex method and duality theory, integer linear programming, assignment and transportation problems, network flows and dynamic programming.

Course Objectives:

On successful completion of this course a student should be able to:
1) To formulate a real-world problem as a mathematical programming model
2) To explain the theory of the simplex method for linear programming
3) To explain the relationship between a linear program and its dual

4) To perform a sensitivity analysis to calculate the magnitude and direction of change of a model's optimal solution to a change in the data
5) To use linear programming to solve the transportation and assignment problems
6) To solve network optimization problems such as shortest path, minimum spanning tree, and maximum flow
7) To explain the basic methods for solving integer programming problems
8) To formulate and solve dynamic programming problems
9) To use spreadsheets and LINGO to implement and solve mathematical programming problems

Academic Honesty:

Students are obligated to abide by Oakland University's policy on academic honesty. The examples of plagiarism and other required information are available as "Academic Conduct Policy" and "Academic Conduct Regulations" posted on the Oakland University Undergraduate Catalog (http://catalog.oakland.edu/content.php?catoid=14&navoid=700) and the university website (https://oakland.edu/deanofstudents/conduct-regulations/). Cheating on exams, plagiarizing the work of others, and cheating on assignments will be seriously addressed by instructor and department chair.

Evaluation Guideline:

Grading Policy				Grading Scale		
Class Participation	40	10%	A	3.6 – 4.0	361 - 400
Quizzes/Assignments	100	25%	B	3.0 – 3.5	301 - 360
Midterm Exam	100	25%	C	2.0 – 2.9	201 - 300
Final Exam	160	40%	D	1.0 – 1.9	101 - 200
			F	No credit	≤ 100

Class Participation:

Class participation points are points for being a good member of the classroom community. This includes- coming to class on time before the lecture begins, leaving after the instructor release the class, no talking during lecture time, and most importantly participating in class discussions. Students who demonstrate exceptional levels of engagement throughout the semester can earn up to an additional 5% onto the final grade. Please note that texting, checking e-mail or using the computer or internet for personal or non-class related purposes during class time are serious offenses and will not be tolerated.

Quizzes:

Quizzes will not be announced and usually will cover the material thought in the same day. If students miss a quiz and have an acceptable excuse, the score of the next quiz that they take will be used to replace the previous quiz that they have missed. You must provide legitimate documentation for the excuse of your absence.

Assignments:
Homework assignments will be assigned from time to time. Students are required to show all their work (computer and/or manual). Computer printouts and/or manual homework problems must be originals when turned in as your homework. Assignments are due at the beginning of lecture and are considered late after then. All assignment reports should be written based on the instructions provided. Please provide a cover page for all your assignments. Email submission will not be accepted unless instructed otherwise. It is expected that solutions in support of homework assignments will require additional computer applications, such as general purpose programming languages, optimization packages (e.g., LINDO, Excel, MatLab, GAMS, and/or CPLEX), or spreadsheets - these will be your choice. There will be an optional assignment at the end of the semester that can be used to replace one of the previous assignments.

Assignments Schedule

Assignment	Post Date	Due Date	Topics
HW 1	17 Jan	24 Jan	LP / Software
HW 2	14 Feb	26 Feb	Simplex / Duality / Sensitivity
HW 3	19 March	26 March	Transportation / Assignment / Networks
HW 4	4 April	11 April	Dynamic Programming / Integer Programming
HW 5	9 April	16 April	All Topics (Optional)

Exams:
The midterm and final exams will be open notes. Please bring good writing implements and a reliable calculator to all exams. There will be no make-up exams. Any "exceptional circumstance" will be considered on an individual basis and only with printed, notarized, and/or verified documentation (e.g., a doctors note). Accommodations will be made for students with special requirements. Students who have special testing requirement, as determined by the Office of Disability Support Services are required to submit documentation to the instructor within the two first weeks of classes.

Exam Schedule

Midterm Exam	Feb 26, 5:30 – 7:15 pm
Final Exam	April 25, 7:00 -10:00 pm

Regrading Policy:
To request a review of a score on any assignment, a written request (not an email) must be submitted. This request should list specific items that are to be reviewed, with a memo attached to the assignment. Note: A request for review will result in a complete regrade of the assignment or exam, not only those items listed in the request. Requests for the review of recorded scores will only be accepted for 14 calendar days after the date that scores are posted.

Tentative Course Outline:

Week #	Date		Topics
	Monday	Wednesday	
Week 1		3-Jan	Introduction
Week 2	8-Jan	10-Jan	Linear Programming
Week 3		17-Jan	Linear Programming
Week 4	22-Jan	24- Jan	Software / Simplex Method
Week 5	29- Jan	31- Jan	Simplex Method
Week 6	5-Feb	7- Feb	Duality Theory
Week 7	12- Feb	14- Feb	Sensitivity Analysis
Week 8	19- Feb	21- Feb	No Classes
Week 9	26- Feb	28- Feb	Midterm Exam / Transportation Problems
Week 10	5-March	7- March	Assignment Problems
Week 11	12- March	14- March	Network Models
Week 12	19- March	21- March	Network Models
Week 13	26- March	28- March	Integer Programming
Week 14	2-April	4- April	Integer Programming / Dynamic Programming
Week 15	9-April	11- April	Dynamic Programming
Week 16	16-April		TBA