H-Form ISE 240

Course Information:	
Code and Title:	ISE 240 Operations Research (1)
Prerequisites:	MATH 242T
Co requisite (if any)	-
Credit Hours: 3	Lecture Hrs. (45), Tutorial Hrs. (10), Lab (5), **Total Credits** (60)
College/ Department:	College of Engineering/Industrial and Systems Engineering

Course Description:
Introduction to mathematical programming and optimization. Characteristics of linear programs. Modelling of various industrial programs as linear programs. Graphical solutions. Introduction to the theory of simplex methods. Goal programming method. Transportation and assignment problems and solution techniques. Network analysis: shortest path, minimum spanning tree, maximum flow problem and minimum cost flow.

Course Objectives:
This course provides the basic knowledge and skills to design suitable optimization tools for real-life engineering problems in various fields. In the top of that, operation research enables the students to use linear programming/network models' formulations. Also, they can use optimization software and spreadsheet-based interface.

Course Learning Outcomes		PLO
Knowledge Understanding		
1.1	Recognize the basic concepts in modelling and linear programming.	K2
1.2	Outline the operation research methodologies of contemporary issues, focusing on key research activities.	K4
Skills		
2.1	Formulate real life problems using linear programming models (as goal programming, transportation problems, network...)	S1
2.2	Solve linear programming problems using graphical solution, simplex method, goal programming, transportation, and network.	S1
2.3	Use an optimization software and spreadsheet-based interface to formulate and solve a real-life engineering and industrial applications problem.	S2
Values		
3.1	Participate effectively in a team to formulate a real-life (case study) problem model and suggest the solution by applying lessons of operation research course	V1

Textbook:			
Title:	Operations Research: An introduction,		
Author(s):	H. A. Taha,		
Publisher:	Person,	**Year and Edition:**	10th edition, 2017
Other Useful Resources:	Introduction to Operations Research, 10th Edition, Hiller and Lieberman, McGraw Hill, 2015.		