

**Form (H)**  
**Short course description**

Course title: <b>Introduction to Operations Research</b>	Course number and code: <b>OPER 122</b>
Previous course requirement: Math106	Language of the course: English
Course level: 7 <sup>th</sup>	Effective hours: 3(2+2+0)

**Course description**

In this course the students get the fundamental idea about OR such as the history of Operations Research and its main characteristics. Introduction to system analysis and system study. Investigating and formulating problems of a system. Introduction to graphical linear programming. Sensitivity Analysis. Transportation & Assignment Problems. Introduction to Decision Theory. Introduction to Graph Theory: Networks Flows. Introduction to stochastic models in OR: Queuing Theory.

**Course objectives**

This course aims to familiarize student with the basic concepts of operations research and methods used to solve real-life problems, to study of scientific approaches to decision-making and applying appropriate solution techniques to solve them. Through mathematical modeling, it seeks to design, improve and operate complex systems in the best possible way.

Learning outcomes (understanding, knowledge, and intellectual and scientific skills)

- After studying this course, the student is expected to be able to:
  - know the evolution of operations research and its uses in solving real-world problems.
  - formulate some real-world problems in mathematical models.
  - configure some real world problems as linear programming and to solve them and perform sensitivity analysis.
  - solve linear programming problems with two variables in the graphical way.
  - study some special linear programming models (Transportation and Assignment problems).
  - acquire some knowledge about graph theory :Analysis of some types of networks flows.
  - acquire some knowledge about basic criteria in decision theory.
  - acquire some knowledge about the principles of queuing theory and its applications.

Textbook adopted and supporting references

Title of the book	Author's name	Publisher's name	Date of publication
<b>Introduction to Operations Research</b>	<b>Frederick S. Hillier and Gerald J. Lieberman.</b>	<b>Holden day</b>	<b>Tenth edition</b>
<b>Operations Research: An Introduction</b>	<b>Hamdy A Taha</b>	<b>Pearson</b>	<b>Tenth edition</b>
<b>Operations Research: Applications and algorithm</b>	<b>Wayne L. Winston</b>	<b>PWS-Kent</b>	<b>Fourth edition</b>