

IM 423 – Operation Research

CREDIT HOURS

3 Hours

CONTACT HOURS (Hours/week)

Lecture: 2;

TEXT BOOK

F. Hillier and J. Lieberman, "Introduction to Operations Research", McGraw Hill, latest edition.

COURSE DESCRIPTION

The course provides the basic concepts and fundamentals of management science, problems addressed by operations research, and problem formulations in linear programs. It includes the graphical solution of linear programs, simplex method, transportation model, assignment model, network planning, and critical path and PERT methods.

PREREQUISITE:

None

RELATION OF COURSE TO PROGRAM

Required

COURSE INSTRUCTION OUTCOMES

The student will be able to:

- Understand the different stages or phases for engineering materials processing.
- learn the basic concepts of metal forming and casting, understanding the concepts of metal machining and welding techniques and associated applications.
- learn different measuring techniques and how they can be used for quality control purposes.

TOPICS COVERED

- Introduction to linear programming – Development of linear programming models – The graphical and simplex method – Transportation and assignment methods – Network models and analysis (minimal spanning tree, shortest route, and maximal flow) – Critical path method – Probabilistic approach, project evaluation and review technique (PERT) – Project crashing.

CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:

Professional component Content

Math and Basic Sciences	Engineering Topics	General Education	Other
✓	✓		

RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:

Student Outcomes		Course aspects
A	An ability to apply knowledge of mathematics, science, and engineering	a ₁ a ₂
B	An ability to design and conduct experiments, analyze and interpret data.	
C	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health, and safety, manufacturability, and sustainability	c ₁ c ₂ c ₃
D	An ability to function on multi-disciplinary teams.	
E	An ability to identify, formulate, and solve engineering problems	e ₁ e ₂ e ₃
F	An understanding of professional and ethical responsibility	
G	An ability to communicate effectively	
H	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social content	h ₁ h ₂ h ₃ h ₄
I	A recognition of the need for, and an ability to engage in life-long learning.	
J	A knowledge of contemporary issues within and outside the electrical engineering profession.	
k	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	k