

ITEM	DETAILS	
1. Title of subject	OPERATIONAL RESEARCH	
2. Subject code	SEC201	
3. Status of subject	Core	
4. Stage	Year 3	
5. Credit Hour	3	
6. Pre-Requisite	SEC101 Modern Applied Mathematics	
7. Assessment	Coursework 40% Test 1 10% Test 2 10% Assignment 1 10% Assignment 2 10% Final Exam 60%	
8. Semester	Semester 1	
9. Objective of subject	To enable the students to: <ul style="list-style-type: none"> Study the concepts of operational research which are relevant to computer usage. 	
10. Synopsis of subject	Introduction to methodology of scientific and operational research application in segregated resources project research etc. Scientific methods and the application of operations; Research in resources allocation; Project scheduling, queuing and transportation, and assignment problems.	
11. Details of subject	Contents	Hours
Week 1	1. A two-variable model.	2
Week 2	2. Graphical Solution	4
Week 3 & 4	3. Simplex method	6
Week 5 & 6	4. Big-M method	6

	Learning Outcomes: At the end of this lesson, students will be able to: <ul style="list-style-type: none"> Solve two phase problems to reach an optimal solution. 		
Week 7 & 8	TEST 1		6
Week 9 & 10	<ul style="list-style-type: none"> The Transportation Problem <ol style="list-style-type: none"> Introduction, mathematical formulation of the problem Finding Initial basic feasible solution Moving towards optimality 		6
	Learning Outcomes: At the end of this lesson, students will be able to: <ul style="list-style-type: none"> Formulate mathematical problems to derive basic feasible solutions. 		
Week 11	<ul style="list-style-type: none"> The Assignment, routing problems <ol style="list-style-type: none"> Introduction, mathematical formulation of an A.P Assignment algorithm A typical assignment problem, routing problems. 		4
	Learning Outcomes: At the end of this lesson, students will be able to: <ul style="list-style-type: none"> Solve assignment problems using various methods. 		
Week 12 & 13	<ul style="list-style-type: none"> Decision analysis <ol style="list-style-type: none"> Decision under risk Decision trees Decision under uncertainty 		6
	Learning Outcomes: At the end of this lesson, students will be able to: <ul style="list-style-type: none"> Draw decision trees and analyse decisions under risk. 		
Week 14	TEST 2		2
	Total		42
12. Text	Compulsory	Hillier, F. S., & Lieberman, G. L. (2002). <i>Introduction to Operations Research</i> (7 th ed.). McGraw Hill.	
	Reference	Taha, H. A. (2002). <i>Operations Research: An Introduction</i> (7 th ed.). Prentice Hall.	