



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

Accredited by NBA, AICTE, NEW DELHI • Accredited by NAAC with "A" Grade – 3.32/4.00 CGPA

Recognized by UGC Under Sections 2(f) & 12 (B) of UGC Act 1956

Approved by AICTE, New Delhi, Permanent Affiliated to JNTU K, Kakinada

Seethampuram, NARSAPUR-534 280, W.G-Dist., Andhra Pradesh

Department of Science & Humanity

TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods/ Week	Academic Year	Date of Commencement of Semester
20CB5T01	OPERATIONS RESEARCH	V	CSE (BS)	6	2024-25	03.06 .2024

Course Outcomes: After successful completion of this course, students should be able to:

1	Formulate resource management problem and identify appropriate methods to solve them. [K3]
2	Apply transportation model to optimize the industrial resources. [K3]
3	Solve sequencing problems using operation research techniques. [K3]
4	Apply the replacement model to increase the efficiency of the system. [K3]
5	Apply the inventory and queuing model to increase the efficiency of the system. [K4]

Unit	Outcome/Bloom's Level	Topics No.	Topics/ Activity	Text Book/ Reference	Contact Hour	Delivery Method
I	Formulate resource management problem and identify appropriate methods to solve them. [K3] (CO1)	LINEAR PROGRAMMING				
		1.1	Introduction to Operations Research	T ₁ ,T ₂ ,R ₂	1	PPT
		1.2	Linear programming Problem Formulation	T ₁ ,T ₂ ,R ₂	1	PPT
		1.3	Problems based on Linear programming Problem Formulation	T ₁ ,T ₂ ,R ₁	1	PPT,BB
		1.4	Graphical solution	T ₁ ,T ₂ ,R ₁	1	PPT,BB
		1.5	Simplex method introduction and definition	T ₁ ,T ₂ , R ₂	1	PPT,BB
		1.6	Simplex method -Simple problems	T ₁ ,T ₂ , R ₂	1	PPT,BB
				T ₁ ,T ₂ , R ₂	1	PPT,BB
		1.7	Artificial variable Technic – introduction Big M- Method -introduction,	T ₁ ,T ₂ , R ₂	1	PPT,BB
		1.8	Big M- Method- Simple problems	T ₁ ,T ₂ , R ₂	1	PPT,BB
				T ₁ ,T ₂ , R ₂	1	PPT,BB
		1.9	Two Phase method-problems	T ₁ ,T ₂ , R ₂	1	PPT,BB
				T ₁ ,T ₂ , R ₂	1	PPT,BB
		1.10	Duality Principle-conversion	T ₁ ,T ₂	1	PPT,BB



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		1.11	Duality Principle-Problems	T_1, T_2	1	PPT, BB
		Total			14	
II	Apply transportation model to optimize industrial resources. [K3] (CO2)	TRANSPORTATION				
		2.1	Formulation of Transportation Problem.- Definitions-Procedure to find optimal solution	T_2	1	PPT, BB
		2.2	Initial basic feasible solution (IBFS) by North-West corner rule (Procedure & problem)	T_1, T_2, R_2	1	PPT, BB
		2.3	IBFS by Row minimization, Column minimization & Least Cost Method (Procedure & problem)	T_1, T_2, R_2	1	PPT, BB
		2.4	IBFS by Vogel's approximation Method (VAM) (Procedure & problem)	T_1, T_2, R_2	1	PPT, BB
		2.5	MODI method procedure with example	T_1, T_2, R_2	1	PPT, BB
				T_1, T_2, R_2	1	PPT, BB
		2.6	Optimal solution for Balanced Transportation Problem	T_1, T_2, R_2	1 1	PPT, BB
		2.7	Optimal solution for Unbalanced Transportation Problem	T_1, T_2, R_2	1 1	PPT, BB
		2.8	Optimal solution for Minimization Transportation Problem	T_1, T_2, R_2	1 1	PPT, BB
		2.9	Degeneracy in Transportation problems	T_1, T_2, R_1	1 1	PPT, BB
		Total			14	
III	Solve sequencing problems using operation research techniques. [K3] (CO3)	SEQUENCING PROBLEM				
		3.1	Introduction, Optimal solution for processing n jobs through 2 machines.	T_1, T_2, R_2	1	PPT, BB
				T_1, T_2, R_2	1	PPT, BB
		3.2	Optimal solution for processing n jobs through 3 machines.	T_1, T_2, R_2	1	PPT, BB
				T_1, T_2, R_2	1	PPT, BB
		3.3	Processing n jobs through m machines	T_1, T_2, R_1	1	PPT, BB
				T_1, T_2, R_2	1	PPT, BB



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				T ₁ ,T ₂ , R ₁	1	PPT,BB
		3.4	processing 2 jobs through m machines (Graph)	T ₁ ,T ₂ , R ₁	1	PPT,BB
				T ₁ ,T ₂ , R ₂	1	PPT,BB
				T ₁ ,T ₂ , R ₁	1	PPT,BB
Total					10	
IV	Apply the replacement model to increase the efficiency of the system. [K3] (CO4)	REPLACEMENT				
		4.1	Introduction, Definitions	T ₁ ,T ₂ , R ₁	1	PPT
		4.2	Replacement of items that deteriorate with time when money value is not counted	T ₁ ,T ₂ , R ₁	1	PPT,BB
				T ₁ ,T ₂ , R ₁	1	PPT,BB
				T ₁ ,T ₂ , R ₁	1	PPT,BB
		4.3	Replacement of items that deteriorate with time when money value is counted.	T ₁ ,T ₂ , R ₁	1	PPT,BB
				T ₁ ,T ₂ , R ₁	1	PPT,BB
				T ₁ ,T ₂ , R ₁	1	PPT,BB
		4.4	Group Replacement	T ₁ ,T ₂ , R ₁	1	PPT,BB
				T ₁ ,T ₂ , R ₁	1	PPT,BB
				T ₁ ,T ₂ , R ₁	1	PPT,BB
Total					10	
V	Apply the inventory and queuing model to increase the efficiency of the system. [K4] (CO5)	WAITINGLINES & INVENTORY				
		5.1	Introduction – Definitions	T ₂ ,R ₂	1	PPT,BB
		5.2	Single channel – poisson arrivals. Exponential Service times with infinite population model.(problems)	T ₂ ,R ₂	1	PPT,BB
				T ₂ ,R ₂	1	PPT,BB
				T ₂ ,R ₂	1	PPT,BB
		5.3	Introduction, Definitions, Concepts of EOQ	T ₂ ,R ₂	1	PPT,BB
		5.4	EOQ with uniform demand & without shortage	T ₂ , R ₂	1	PPT,BB
				T ₂ , R ₂	1	PPT,BB
		5.5	EBQ with uniform demand & without shortage	T ₂ ,R ₂	1	PPT,BB
				T ₂ ,R ₂	1	PPT,BB
		5.6	EOQ with one price break	T ₂ ,R ₂	1	PPT,BB
		5.7	EOQ with multi price breaks	T ₂ ,R ₂	1	PPT,BB
				T ₁ ,T ₂ , R ₂	1	PPT,BB
Total					12	
Cumulative Proposed Periods					60	
Text Books:						
S. No.	Authors, Book Title, Edition, Publisher, Year of Publication					
1	S.D.Sharma , “Operations Research”,Kedar Nath Ramnath &co,Meerut-2013					
2	P.K.Gupta,D.S.Hira, “Operations Research”, S.Chand-2003.					
Reference Books:						
S. No	Authors, Book Title, Edition, Publisher, Year of Publication					
1	A.M.Natararajan.P.Subramani.A.Tamilarasi. “Operations Research”, Pearson-2005.					



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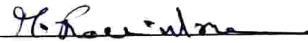
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2	R.Panneerselvem, "Operations Research", Second Edition, PHI-2007.		
		Name	Signature with Date
i.	Faculty	Mr. M. Ravindra babu	
ii.	Course Coordinator	Mr. M. Ravindra babu	
iii.	Module Coordinator	Mr. M. Ravindra babu	
iv.	HOD of S&H	Dr. S. Swaminadham	


Principal