COURSE OUTCOMES:

Upon completion of the course, the students will be able to

CO1: Identify the different features of integrated and differentiated services.

CO2: Demonstrate various protocols of wireless networks.

CO3: Analyze the use of next generation networks.

CO4: Design protocols for cellular networks.

CO5: Explore 5G networks and applications.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2	1	3	1	-	2
CO2	1	1	3	1	-	2
CO3	3	1	3	3	-	2
CO4	2	1	3	3	-	3
CO5	2	1	3	3	-	2

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3 0 2 4

UNIT I BASIC STRUCTURES AND ALGORITHM 9

Formulation and Graphical Solutions – Solution of Maximization Model – Solution of Minimization Model – Simplex method – Degeneracy – Unbounded Solution – Infeasible Solution – Alternative Optima.

UNIT II ADVANCED LINEAR PROGRAMMING 9

BIG-M method – Two–Phase method – Special cases in the Simplex method –Transportation and Assignment Problems – Revised Simplex Method – Duality in Linear Programming Problems –Dual Simplex method – Bounded variable technique.

UNIT III MELDABLE HEAP STRUCTURES 9

Sensitivity Analysis or Post Optimality Analysis – Changes in the Right-handside– Objective function – Changes affecting feasibility – Changes affecting optimality.

UNIT IV INTEGER PROGRAMMING 9

Knapsack Problem – Cutting plane algorithm – Branch and bound programming – Mixed integer Programming – travelling salesperson problem.

UNIT V CASE STUDIES AND TOOLS 9

Case Studies – Production Planning– Manpower planning– Solving LP problems using TORA / LINDO / LINGO / LP Solver using R

LIST OF EXPERIMENTS:

1. Solving simplex maximization problems using R programming.
2. Solving simplex minimization problems using R programming.
3. Solving mixed constraints problems – Big M & Two phase method using TORA.
4. Solving transportation problems using R.
5. Solving assignment problems using R.
6. Solving optimization problems using LINGO.
7. Studying Primal-Dual relationships in LP using TORA.

8. Solving LP problems using dual simplex method using TORA.
9. Sensitivity & post optimality analysis using LINGO.

TOTAL: 45+30=75 PERIODS

REFERENCES

1. Hamdy A.Taha, "Operations Research-An Introduction", Prentice Hall, Tenth Edition,2017.
2. J.K.Sharma, "Operations Research Theory and applications", Macmillan,6th Edition,2017.
3. Frederick S. Hiller, Gerald J Liberman, Bodhibrata Nag, PreetamBasu, "Introduction to Operations Research",10th Edition,McGrawHill,,2017.
4. Ronald L.Rardin, "Optimization in Operations Research", 2nd Edition PearsonEducation, Asia,2018.
5. DimitrisAlevras, Manfred W. Padberg, Linear Optimization and Extension: problems and Solutions, 1st Edition, Springa-Verlag Berlin and Heidelberg 2001.

COURSE OUTCOMES:

Upon completion of the course, the students will be able to

CO1:Mathematically formulate and solve minimization/maximization problems.
CO2:Solve transportation and assignment problems.
CO3:Analyse sensitivity, post optimality, changes affecting feasibility and optimality.
CO4:Model and solve integer programming problems like travelling salesman problems.
CO5:Solve linear programming problems using software tools.

CO-PO Mapping

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2	2	2	2	1	1
CO2	2	2	2	2	1	2
CO3	2	2	2	2	1	2
CO4	3	3	3	2	3	3
CO5	2	2	2	3	2	2

CP3161 DATA STRUCTURES AND ALGORITHMS LABORATORY L T P C
0 0 4 2

LIST OF EXPERIMENTS:

1. Linked list implementation of Stack and Queue ADTs
2. Binary Search tree
3. Min/Max Heap
4. AVL tree
5. Red- Black tree
6. Splay Tree
7. Leftist Heap
8. Binomial Heap

TOTAL: 60 PERIODS

COURSE OUTCOMES:

Upon completion of the course, the students will be able to

CO1:Apply suitable data structures in problem solving.
CO2:Select suitable search structures for an application
CO3:Understand priority queue implementations