K L Deemed to be University
Department of CSE -- KLVZA
Course Handout
2020-2021, Odd Sem

Course Title	:MP-1
Course Code	:19CS2104
L-T-P-S Structure	: 2-2-0-0
Pre-requisite	:
Credits	: 4
Course Coordinator	:VAMSIDHAR ENIREDDY
Team of Instructors	:
Teaching Associates	:

Syllabus : Linear programs formulation through examples from engineering / business decision making problems;Linear Programming in Matrix Form. Preliminary theory and the geometry of linear optimization, Solving Linear Programs, Simplex method, Sensitivity Analysis Duality in Linear Programming. Karmarkar's interior point method, Interior point methods. Network Models,Transportation problems. Discrete optimization formulations and algorithms. Integer Programming: Cutting plane and Branch and Bound methods. Solving real world problems with computer software.

Text Books :1. Applied Mathematical Programming by Bradley, Hax, and Magnanti (Addison-Wesley, 1977) 2. Introduction to Linear Optimization by Bertsimas, Dimitris, and John Tsitsiklis. Belmont, MA: Athena Scientific, 1997.

Reference Books :1. Numerical Recipes, The art of Scientific Computing by William H. Press, Saul A. Teukolsky, W.T. Vetterling, Brian P. Flannery, 3rd Edition, Cambridge University Press, 2007, UK. 2. Operations Research: An Introduction by H. A. Taha, Prentice Hall. 3. Operations Research by S. D. Sharma, Kedar Nath Ram Nath & Co. 4. LINEAR PROGRAMMING and Network flows by MOKHTAR S. BAZARAA, John J. Jarvis and HANIF D. SHERALI 5. Introduction to Linear Optimization by Dimitris Bertsimas and John Tsitsiklis

Web Links :1. http://web.mit.edu/15.053/www/AMP.htm 2. https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-251j-introduction-to-mathematical-programming-fall-2009/index.htm 3. https://www.coursera.org/learn/discrete-optimization 4. https://www.coursera.org/learn/solving-algorithms-discrete-optimization 5. https://www.edx.org/course/convex-optimization 6. http://people.brunel.ac.uk/~mastjjb/jeb/or/ip.html 7. https://ocw.mit.edu/courses/mathematics/18-433-combinatorial-optimization-fall-2003/

MOOCS :1. https://www.coursera.org/learn/discrete-optimization 2.https://www.coursera.org/learn/solving-algorithms-discrete-optimization 3. Coursera Mathematics for Data Science

Course Rationale : The course will cover a range of topics in linear Programming Problems, Transportation and Assignment Problems with the objective of providing exposure to formulate the problems and solve business problems. The emphasis is on studying and analyzing fundamental issues in LPP. Apply various computational methods and tools, working in teams to solve the problems in the real-world using mathematical and computational methods.

Course Objectives : Understand the basic theory and methods for linear programming problems. Apply branch and bound and/or cutting plane algorithms to solve integer programming problems. Apply these techniques constructively to make effective business decisions. Use a computer package to solve a mathematical programming problem that arises in practice.

COURSE OUTCOMES (COs):

CO NO	Course Outcome (CO)	PO/PSO	Blooms Taxonomy Level (BTL)
CO1	Solve linear programming problems in engineering and business decision making problems	PSO2,PO1,PO2	3
CO2	Make use of Duality and Sensitivity Analysis in Linear Programming models.	PSO2,PO1,PO2	3
CO3	Solve network models and LINEAR PROGRAMMING PROBLEMS using interior point methods	PSO2,PO1,PO2	3
CO4	Apply Cutting plane and Branch and Bound methods to solve Discrete optimization problems.	PO2,PSO2,PO1	3

COURSE OUTCOME INDICATORS (COIs)::

Outcome No.	Highest BTL	COI-1	COI-2	COI-3
CO1	3	**Btl-1** Define Linear programming and basic terminology.	**Btl-2** Formulation of linear programming problems(LPP) in engineering and business decision making problems	**Btl-3** Solve LPP using graphical and simplex methods.
CO2	3	**Btl-1** Recognize the importance of duality and sensitivity analysis in LPP	**Btl-2** Describe the procedure in Duality and sensitivity analysis for LPP	**Btl-3** Utilize duality in solving LPP and demonstrate sensitivity analysis.
CO3	3	**Btl-1** List the network models and their importance in decision making problems	**Btl-2** Illustrate the procedure for solving network models such as transportation and assignment problems and interior point methods	**Btl-3** Apply interior point methods for solving LPP and solve transportation and assignment problems.
CO4	3	**Btl-1** Identify discrete optimization/integer programming problems	**Btl-2** Illustrate the algorithm for solving integer programming problems using cutting plan and Branch and bound techniques.	**Btl-3** Apply cutting plan and branch and bound methods to solve discrete optimization problems.

PROGRAM OUTCOMES & PROGRAM SPECIFIC OUTCOMES (POs/PSOs)

Po No.	Program Outcome
PO1	Engineering Knowledge :An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization for the solution of complex engineering problems in engineering
PO2	Problem Analysis :An ability to identify, formulate, research literature, analyze complex engineering problems in mechanical engineering using first principles of mathematics, natural sciences and engineering sciences
PO3	Design/ development of solutions :An ability to design solutions for complex engineering problems and system component or processes that meet the specified needs considering public health & safety

	and cultural, societal & environment
PO4	Conduct investigations of complex problems :An ability to use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to obtain solutions to engineering problems
PO5	Modern tool usage :Ability to create, select and apply appropriate techniques, resources and modern engineering activities, with an understanding of the limitations
PO6	The engineer and society :Ability to apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO7	Environment and sustainability Ability to demonstrate the knowledge of engineering solutions, contemporary issues understanding their impacts on societal and environmental contexts, leading towards sustainable development
PO8	Ethics : An ability to apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice
PO9	Individual and team work :An ability to function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings
PO10	Communication :Ability to communicate effectively oral, written reports and graphical forms on complex engineering activities
PO11	Project management and finance :Ability to demonstrate knowledge and understanding of the engineering and management principles and apply those one's own work, as a member and leader in team, to manage projects and in multi-disciplinary environments
PO12	Lifelong learning An ability to recognize the need for and having the preparation and ability to engage independent and life-long learning in broadest context of technological change
PSO1	An ability to design and develop software projects as well as Analyze and test user requirements.
PSO2	An Ability to gain working Knowledge on emerging software tools and technologies.

Lecture Course DELIVERY Plan:

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
1	CO1	COI-1	Introduction to Mathematical Programming	B.No.-1 [CH 1] [Page No. 1-5]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
2	CO1	COI-1	Mathematical Modeling of Linear Programming Problem	B. No.-1 [CH 1] [Page No. 5-10]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
3	CO1	COI-1	The Geometry of Linear Optimization	B. No.-1 [CH 1] [Page No. 11-15]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam Online,Exam – Report,Home Assignment,SEM-EXAM1

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
4	CO1	COI-1	Special cases that arise the application of the graphical method	B. No.-1 [CH 1] [Page No. 16-20]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
5	CO1	COI-2	Simplex Method	B. No.-1 [CH 2] [Page No. 44-70]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
6	CO1	COI-2	Simplex Method (Problem solving)	B. No.-1 [CH 2] [Page No. 44-70]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
7	CO1	COI-2	Big - M Method	B. No.-1 [CH 2] [Page No. 44-70]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
8	CO1	COI-2	Big - M Method (Problem solving)	B. No.-1 [CH 2] [Page No. 44-70]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
9	CO2	COI-1	Explain Duality and Primal linear Programming Problem	1[CH.4] [P.130]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
10	CO2	COI-1	Formulation of Dual Problem	1[CH.4] [P.134]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
11	CO2	COI-2	Solve LPP using Dual Simplex Method	1[CH.4] [P.147]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
13	CO2	COI-3	Explain Sensitivity Analysis and Solve LPP by changing right-hand side constants of the constraints	1[CH.3] [P.76,84]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
14	CO2	COI-3	Solve LPP by making changes in the objective function coefficients	1[CH.3][P.81-84]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
15	CO2	COI-3	Solve LPP by adding a new constraint and by adding a new variable	1[CH.3][P.86]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
16	CO3	COI-1	Network Models-transportation problems	T Book[3], T Book [4]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM1
17	CO3	COI-2	Transportation Problems-Balanced Case- Initial solution Methods	T Book[3], T Book [4]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2
18	CO3	COI-3	Transportation Problems-Balanced Case- Obtaining Optimal solution by using UV Method	T Book[3], T Book [4]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
19	CO3	COI-3	Transportation Problems-Un Balanced Case-Optimal solution by UV Method	T Book[3], T Book [4]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2
20	CO3	COI-3	Assignment Problems - Balanced and Unbalanced Cases	T Book[3], T Book [4]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2
22	CO3	COI-3	Interior point methods, applications and algorithms	T Book[3], T Book [4]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2
23	CO3	COI-3	Karmarkar's interior point method and algorithm	T Book[3], T Book [4]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2
24	CO4	COI-1	Introduction to Integer programming problems.	B.No.1[CH No. 9] [Page No. 272-276]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation - Project,Exam – Report,Home Assignment,SEM-EXAM2
25	CO4	COI-1	Formulation of Integer programming problems.	B.No.1[CH No. 9] [Page No. 276-280]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2
26	CO4	COI-3	Algorithm to solve I.P.P. by using Gomory (cutting plane) method	B.No.1[CH No. 9] [Page No. 287-289]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2

Sess.No.	CO	COI	Topic	Book No[CH No][Page No]	Teaching-Learning Methods	EvaluationComponents
27	CO4	COI-3	Problems on Gomory cutting plane method	B.No.1[CH No. 9] [Page No. 301-305]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2
28	CO4	COI-3	Algorithm to solve I.P.P. by using branch and bound method	B.No.1[CH No. 9] [Page No. 289-292]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2
29	CO4	COI-3	Problems on branch and bound method	B.No.1[CH No. 9] [Page No. 292-297]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2
30	CO4	COI-3	Introduction zero-one Programming problems	B.No.1[CH No. 9] [Page No. 297-301]	Chalk,PPT,Talk	ALM,ATTN,Continuous Evaluation -Project,End Semester Exam,Exam – Report,Home Assignment,SEM-EXAM2

Lecture Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 Introduction to Mathematical Programming

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Explain Introduction to Mathematical Programming	2	PPT	--- NOT APPLICABLE ---
5	Questions on Mathematical programming	1	PPT	Quiz/Test Questions
20	Real life examples on Mathematical linear programming problem	3	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 2

Session Outcome: 2 Mathematical Modeling of Linear Programming Problem

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Mathematical Modeling of Linear Programming Problem	2	Chalk	--- NOT APPLICABLE ---
5	Questions on linear programming problem	1	Talk	Quiz/Test Questions
20	Problems on Mathematical Modeling of Linear Programming Problem	3	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 3

Session Outcome: 1 The Geometry of Linear Optimization

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	The Geometry of Linear Optimization	2	Chalk	--- NOT APPLICABLE ---
5	Questions on the Geometry of Linear Optimization	1	Talk	Quiz/Test Questions
20	Problems on Graphical method	3	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Special cases that arise the application of the graphical method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	2	Talk	--- NOT APPLICABLE ---
20	Special cases that arise the application of the graphical method	2	Chalk	--- NOT APPLICABLE ---
5	Questions on Graphical method	1	Talk	Quiz/Test Questions
20	Problems on unbounded and infeasible region	2	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 1 Simplex Method (Problem solving)

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Explain simplex method for minimization problem	2	Chalk	--- NOT APPLICABLE ---
5	Questions on Simplex method	1	Talk	Quiz/Test Questions
20	Problems simplex method for minimization problem	3	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 7

Session Outcome: 1 Big - M Method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Explain of Big - M Method	2	Chalk	--- NOT APPLICABLE ---
5	Questions on Big - M Method	1	Talk	Quiz/Test Questions
20	Problems Discussion	2	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 8

Session Outcome: 1 Big - M Method (Problem solving)

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Explain of Big - M Method problems	2	Chalk	--- NOT APPLICABLE ---
5	Questions on Big - M Method	1	Talk	Quiz/Test Questions
20	Problems on Big - M Method	3	Chalk	Case Study

SESSION NUMBER : 9

Session Outcome: 1 Explain Duality and Primal linear Programming Problem

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Explain Duality and Primal linear Programming Problem	2	Chalk	--- NOT APPLICABLE ---
5	Questions on Duality	1	Chalk	Quiz/Test Questions
20	Problems Discussion	2	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 10

Session Outcome: 1 Formulation of Dual Problem

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Formulation of Dual Problem	2	Chalk	--- NOT APPLICABLE ---
5	Questions on primal dual problem	1	Talk	Quiz/Test Questions
20	Problems on Duality and Primal LPP to students	3	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 11

Session Outcome: 1 Solve LPP using Dual Simplex Method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Solve LPP using Dual Simplex Method	3	Chalk	--- NOT APPLICABLE ---
5	Questions on Dual Simplex Method	1	Talk	Quiz/Test Questions
20	Problems on LPP using Dual Simplex Method	3	Chalk	--- NOT

				APPLICABLE ---

SESSION NUMBER : 13

Session Outcome: 2 Explain Sensitivity Analysis and Solve LPP by changing right-hand side constants of the constraints

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Explain Sensitivity Analysis	2	Chalk	--- NOT APPLICABLE ---
5	Questions on Sensitivity Analysis	1	Talk	Quiz/Test Questions
20	Problems on LPP changing right-hand side constants of the constraints	3	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 14

Session Outcome: 2 Solve LPP by making changes in the objective function coefficients

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Explain changes in the objective function coefficients	2	Chalk	--- NOT APPLICABLE ---
5	Questions	1	Talk	Quiz/Test Questions
20	Problems on LPP changes in the objective function coefficients	3	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 15

Session Outcome: 2 Solve LPP by adding a new constraint and by adding a new variable

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Explain adding a new constraint and by adding a new variable	3	Chalk	--- NOT APPLICABLE ---

5	Questions	1	Talk	Quiz/Test Questions
20	Problems on LPP adding a new constraint and by adding a new variable coefficients	3	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 16

Session Outcome: 3 Understand Network Models in engineering science.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Network Models- transportation problems	2	Talk	Group Discussion
5	Breakout room	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Group Discussion

SESSION NUMBER : 17

Session Outcome: 3 Solve initial basic feasible solution of Transportation Problem

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Transportation Problems- Balanced Case- Initial solution Methods	2	Chalk	Group Discussion
5	Breakout	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Group Discussion

SESSION NUMBER : 18

Session Outcome: 3 Find optimal solution of the balanced Transportation Problem

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Transportation Problems- Balanced Case- Obtaining Optimal solution by using UV Method	3	Chalk	Group Discussion

5	Breakout time	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Chalk	Group Discussion

SESSION NUMBER : 19

Session Outcome: 3 Find optimal solution of the balanced Transportation Problem

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Transportation Problems- Un Balanced Case- Optimal solution by UV Method	2	Chalk	Group Discussion
5	Breakout time	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Chalk	Group Discussion

SESSION NUMBER : 20

Session Outcome: 3 Solve assignment problems

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Assignment Problems - Balanced and Unbalanced Cases	2	Talk	Group Discussion
5	Breakout time	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Group Discussion

SESSION NUMBER : 22

Session Outcome: 3 Describe the algorithm for interior point methods

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Interior point methods algorithm and illustration	2	Talk	Group Discussion

5	Breakout time	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Group Discussion

SESSION NUMBER : 23

Session Outcome: 3 Describe Karmarkar's interior point method algorithm.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Karmarkar's interior point method - algorithm & illustration	2	Talk	Group Discussion
5	Breakout time	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Group Discussion

SESSION NUMBER : 24

Session Outcome: 3 Introduction to Integer programming problems.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Introduction to Integer programming problems.	1	Talk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	Quiz/Test Questions
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 25

Session Outcome: 4 Formulation of Integer programming problems.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Formulation of Integer programming problems.	2	Talk	--- NOT APPLICABLE

5	CREATING A BREAKOUT ROOM	1	Talk	Quiz/Test Questions
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 26

Session Outcome: 4 Algorithm to solve I.P.P. by using Gomory (cutting plane) method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Algorithm to solve I.P.P. by using Gomory(cutting plane) method	2	Talk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Quiz/Test Questions

SESSION NUMBER : 27

Session Outcome: 4 Problems on Gomory cutting plane method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Problems on Gomory cutting plane method	3	Talk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Quiz/Test Questions

SESSION NUMBER : 28

Session Outcome: 4 Algorithm to solve I.P.P. by using branch and bound method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---

20	Algorithm to solve I.P.P. by using branch and bound method	2	Talk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Quiz/Test Questions

SESSION NUMBER : 29

Session Outcome: 4 Problems on branch and bound method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Problems on branch and bound method	3	Talk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Quiz/Test Questions

SESSION NUMBER : 30

Session Outcome: 4 Introduction zero-one Programming problems

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Introduction zero-one Programming problems	2	Talk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Problems as Assignment/Quiz (ALM) Doubts can be asked in Public Chat	2	Talk	Quiz/Test Questions

Tutorial Course DELIVERY Plan:

List of Experiments supposed to finish in Open Lab Sessions:

Lab session no	List of Experiments	CO-Mapping
1	Demonstrate the Graphical method in Linear Programming.	CO1
2	Demonstrate the Simplex method in Linear Programming.	CO1
3	Two Phase Simplex method	CO2
4	Duality in Linear Programming.	CO2
5	Transportation problem using NW method (Stepping stones).	CO3
6	Demonstrate the Initial Basic Solution in Transportation problem using NW method in Linear Programming (U-V method).	CO3
7	Transportation problem using Row Minimum method	CO3
8	Demonstrate the Initial Basic Solution in Transportation problem using Column Minimum method in Linear Programming.	CO3
9	Demonstrate the Transportation problem using Modi method (Initial solution can be of any method) in Linear Programming.	CO3
10	Demonstrate the Assignment problem using Hungarian method.	CO3
11	Demonstrate the Interior point method in Linear Programming.	CO4
12	Demonstrate the Discrete Optimization using Cutting Plane method.	CO4
13	Demonstrate the Discrete Optimization using Branch and Bound method.	CO4

Tutorial Session wise Teaching – Learning Plan

SESSION NUMBER : 1

Session Outcome: 1 Graphical Method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Graphical Method	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	PPT	--- NOT APPLICABLE ---
20	Formulating and solving graphical problem	2	PPT	--- NOT

				APPLICABLE ---
40	Solving the graphical problem using Python language	3	PPT	--- NOT APPLICABLE ---
10	Problems Discussion	1	PPT	--- NOT APPLICABLE ---

SESSION NUMBER : 2

Session Outcome: 1 Simplex method in Linear Programming.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Simplex Method	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving simplex problem	3	PPT	--- NOT APPLICABLE ---
40	Solving the simplex problem using Python language	3	PPT	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 3

Session Outcome: 1 Two Phase Simplex method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Two Phase Simplex method	2	Chalk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	PPT	--- NOT APPLICABLE ---
20	Formulating and solving Two Phase Simplex problem	3	PPT	--- NOT APPLICABLE ---

40	Solving the Two Phase simplex problem using Python language	3	PPT	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 4

Session Outcome: 1 Duality in Linear Programming.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Duality in Linear Programming.	1	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving Duality in Linear Programming problem	3	PPT	--- NOT APPLICABLE ---
40	Solving the Duality in Linear Programming using Python language	3	PPT	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 5

Session Outcome: 2 Transportation problem using NW method (Stepping stones).

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Transportation problem using NW method	2	Chalk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving Transportation problem using NW method	3	Talk	--- NOT APPLICABLE ---
40	Solving the Transportation problem using NW method using Python language	3	Talk	--- NOT APPLICABLE

10	Problems Discussion	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 6

Session Outcome: 2 Transportation problem using NW method (U-V Method).

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Transportation problem using NW method	2	Chalk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving Transportation problem using NW method	3	Chalk	--- NOT APPLICABLE ---
40	Solving the Transportation problem using NW method using Python language	3	Talk	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	Group Discussion

SESSION NUMBER : 7

Session Outcome: 2 Transportation problem using Row Minimum method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Transportation problem using row minimum method	2	Chalk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving Transportation problem using row minimum method	3	Talk	--- NOT APPLICABLE ---
40	Solving the Transportation problem using row minimum method using Python language	3	Talk	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	Group Discussion

SESSION NUMBER : 8

Session Outcome: 2 Transportation problem using Column Minimum method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Transportation problem using column minimum method	2	Talk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving Transportation problem using column minimum method	3	PPT	--- NOT APPLICABLE ---
40	Solving the Transportation problem using column minimum method using Python language	3	PPT	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 9

Session Outcome: 3 Transportation problem using Modi method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Transportation problem using Modi method	2	PPT	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Chalk	--- NOT APPLICABLE ---
20	Formulating and solving Transportation problem using Modi method	3	Talk	--- NOT APPLICABLE ---
40	Solving the Transportation problem using Modi methodusing Python language	3	PPT	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 10

Session Outcome: 2 Assignment problem using Hungarian method

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Assignment problem using Hungarian method	2	Chalk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving Assignment problem using Hungarian method	3	Chalk	--- NOT APPLICABLE ---
40	Solving the Assignment problem using Hungarian method using Python language	3	Talk	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 11

Session Outcome: 3 Interior point method in Linear Programming

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Interior point method in Linear Programming.	2	Chalk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving Interior point method in Linear Programming.	3	PPT	--- NOT APPLICABLE ---
40	Solving the Interior point method in Linear Programming using Python language	3	PPT	--- NOT APPLICABLE ---
10	Problems Discussion	1	Chalk	--- NOT APPLICABLE ---

SESSION NUMBER : 12

Session Outcome: 3 Discrete Optimization using Cutting Plane method.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Discrete Optimization using Cutting Plane method.	2	Chalk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving Discrete Optimization using Cutting Plane method.	3	PPT	--- NOT APPLICABLE ---
40	Solving the Discrete Optimization using Cutting Plane methodusing Python language	3	Talk	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	--- NOT APPLICABLE ---

SESSION NUMBER : 13

Session Outcome: 2 Discrete Optimization using Branch and Bound method.

Time(min)	Topic	BTL	Teaching-Learning Methods	Active Learning Methods
5	Attendance/Recap ;Poll/Pop Question	1	Talk	--- NOT APPLICABLE ---
20	Discrete Optimization using Branch and Bound method.	2	Chalk	--- NOT APPLICABLE ---
5	CREATING A BREAKOUT ROOM	1	Talk	--- NOT APPLICABLE ---
20	Formulating and solving Discrete Optimization using Branch and Bound method	3	Talk	--- NOT APPLICABLE ---
40	Solving the Discrete Optimization using Branch and Bound method using Python language	3	Chalk	--- NOT APPLICABLE ---
10	Problems Discussion	1	Talk	--- NOT APPLICABLE ---

Practical Course DELIVERY Plan: NO Delivery Plan Exists

Practical Session wise Teaching – Learning Plan

No Session Plans Exists

Skilling Course DELIVERY Plan: NO Delivery Plan Exists

Skilling Session wise Teaching – Learning Plan

No Session Plans Exists

WEEKLY HOMEWORK ASSIGNMENTS/ PROBLEM SETS/OPEN ENDEDED PROBLEM-SOLVING EXERCISES etc:

Week	Assignment Type	Assignment No	Topic	Details	co
13	Weekly Homework Assignments	4	Integer programming problems,Gomory cutting plane method, branch and bound method, zero-one Programming	Apply Cutting plane and Branch and Bound methods to solve Discrete optimization problems.	CO4
3	Weekly Homework Assignments	1	Solving Linear problems and Simplex method	Solve linear programing problems in engineering and business decision making problems. Solving Simplex Method using Big-M Method	CO1
7	Weekly Homework Assignments	2	Dual Problem and Dual Simplex Method	Make use of Duality and Sensitivity Analysis in Linear Programming models.	CO2
10	Weekly Homework Assignments	3	Transportation Problems and Assignment Problems	Solve network models and LPP using interior point methods.	CO3

COURSE TIME TABLE:

	Hour	1	2	3	4	5	6	7	8	9
Day	Component									
Mon	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--
Tue	Theory	--	--	--	--	--	--	--	--	--
	Tutorial	--	--	--	--	--	--	--	--	--
	Lab	--	--	--	--	--	--	--	--	--
	Skilling	--	--	--	--	--	--	--	--	--
Wed	Theory	-	-	--	--	--	--	-	-	-

		-	-					-	-	-
	Tutorial	- -	- -	--	--	--	--	- -	- -	- -
	Lab	- -	- -	--	--	--	--	- -	- -	- -
	Skilling	- -	- -	--	--	--	--	- -	- -	- -
Thu	Theory	- -	- -	--	--	--	--	- -	- -	- -
	Tutorial	- -	- -	--	--	--	--	- -	- -	- -
	Lab	- -	- -	--	--	--	--	- -	- -	- -
	Skilling	- -	- -	--	--	--	--	- -	- -	- -
Fri	Theory	- - -	- - -	V-S13,V-S14,V-S15,V-S16,V-S17,V-S18,V-S19,V-S20,V-S21,V-S22,V-S23,V-S24,V-S25	V-S13,V-S14,V-S15,V-S16,V-S17,V-S18,V-S19,V-S20,V-S21,V-S22,V-S23,V-S24,V-S25	--	--	- - -	- - -	- - -
	Tutorial	- - -	- - -	--	--	V-S13,V-S13,V-S14,V-S14,V-S15,V-S15,V-S16,V-S16,V-S17,V-S17,V-S18,V-S18,V-S19,V-S19,V-S20,V-S20,V-S21,V-S21,V-S22,V-S22,V-S23,V-S23,V-S24,V-S24,V-S25,V-S25	V-S13,V-S13,V-S14,V-S14,V-S15,V-S15,V-S16,V-S16,V-S17,V-S17,V-S18,V-S18,V-S19,V-S19,V-S20,V-S20,V-S21,V-S21,V-S22,V-S22,V-S23,V-S23,V-S24,V-S24,V-S25,V-S25	- - -	- - -	- - -
	Lab	- - -	- - -	--	--	--	--	- - -	- - -	- - -
	Skilling	- - -	- - -	--	--	--	--	- - -	- - -	- - -
Sat	Theory	- - -	- - -	V-S1,V-S2,V-S3,V-S4,V-S5,V-S6,V-S7,V-S8,V-S9,V-S10,V-S11,V-S12	V-S1,V-S2,V-S3,V-S4,V-S5,V-S6,V-S7,V-S8,V-S9,V-S10,V-S11,V-S12	--	--	- - -	- - -	- - -
	Tutorial	- - -	- - -	--	--	V-S1,V-S1,V-S2,V-S2,V-S3,V-S3,V-S4,V-S4,V-S5,V-S5,V-S6,V-S6,V-S7,V-S7,V-S8,V-S8,V-S9,V-S9,V-S10,V-	V-S1,V-S1,V-S2,V-S2,V-S3,V-S3,V-S4,V-S4,V-S5,V-S5,V-S6,V-S6,V-S7,V-S7,V-S8,V-S8,V-S9,V-S9,V-S10,V-	- - -	- - -	- - -

						S10,V-S11,V-S11,V-S12,V-S12	S10,V-S11,V-S11,V-S12,V-S12				
	Lab	---	---	--	--	--	--	---	---	---	
	Skilling	---	---	--	--	--	--	---	---	---	
Sun	Theory	--	--	--	--	--	--	--	--	--	
	Tutorial	--	--	--	--	--	--	--	--	--	
	Lab	--	--	--	--	--	--	--	--	--	
	Skilling	--	--	--	--	--	--	--	--	--	

REMEDIAL CLASSES:

Supplement course handout, which may perhaps include special lectures and discussions that would be planned, and schedule notified according

SELF-LEARNING:

Assignments to promote self-learning, survey of contents from multiple sources.

S.no	Topics	CO	ALM	References/MOOCS

DELIVERY DETAILS OF CONTENT BEYOND SYLLABUS:

Content beyond syllabus covered (if any) should be delivered to all students that would be planned, and schedule notified accordingly.

S.no	Advanced Topics, Additional Reading, Research papers and any	CO	ALM	References/MOOCS

EVALUATION PLAN:

Evaluation Type	Evaluation Component	Weightage/Marks		Assessment Dates	Duration (Hours)	CO1	CO2	CO3	CO4
End Semester Summative Evaluation Total= 40 %	**Exam – Report**	Weightage	16		180	4	4	4	4
		Max Marks	100			25	25	25	25
	End Semester Exam	Weightage	24		180	6	6	6	6
		Max Marks	100			25	25	25	25
In Semester Formative Evaluation Total= 40 %	**Continuous Evaluation -Project**	Weightage	20		100	5	5	5	5
		Max Marks	100			25	25	25	25
	ALM	Weightage	10		50	2.5	2.5	2.5	2.5
		Max Marks	100			25	25	25	25

	Tutorial	Weightage	8		100	2	2	2	2
		Max Marks	40			10	10	10	10
	Home Assignment and Textbook	Weightage	2		100	0.5	0.5	0.5	0.5
		Max Marks	40			10	10	10	10
In Semester Summative Evaluation Total= 20 %	**Semester in Exam-I**	Weightage	10		120	5	5		
		Max Marks	50			25	25		
	Semester in Exam-II	Weightage	10		120			5	5
		Max Marks	50					25	25

ATTENDANCE POLICY:

Every student is expected to be responsible for regularity of his/her attendance in class rooms and laboratories, to appear in scheduled tests and examinations and fulfill all other tasks assigned to him/her in every course
In every course, student has to maintain a minimum of 85% attendance to be eligible for appearing in Semester end examination of the course, for cases of medical issues and other unavoidable circumstances the students will be condoned if their attendance is between 75% to 85% in every course, subjected to submission of medical certificates, medical case file and other needful documental proof to the concerned departments

DETENTION POLICY :

In any course, a student has to maintain a minimum of 85% attendance and In-Semester Examinations to be eligible for appearing to the Semester End Examination, failing to fulfill these conditions will deem such student to have been detained in that course.

PLAGIARISM POLICY :

Supplement course handout, which may perhaps include special lectures and discussions

COURSE TEAM MEMBERS, CHAMBER CONSULTATION HOURS AND CHAMBER VENUE DETAILS:

Supplement course handout, which may perhaps include special lectures and discussions

Name of Faculty	Delivery Component of Faculty	Sections of Faculty	Chamber Consultation Day (s)	Chamber Consultation Timings for each day	Chamber Consultation Room No:	Signature of Course faculty:
SREEDEVI MARRIBOYINA	L	5-MA,25-MA	-	-	-	-
SREEDEVI MARRIBOYINA	T	5-A,25-A	-	-	-	-
SRINIVASA RAO SABBINENI	L	15-MA,2-MA	-	-	-	-
SRINIVASA RAO SABBINENI	T	2-A,15-A	-	-	-	-
sekhar babu	T	21-B	-	-	-	-
RAMA NARASINGARAO MANDA	L	3-MA,16-MA	-	-	-	-
RAMA	T	3-A,16-	-	-	-	-

NARASINGARAO MANDA		A				
Kallipalli Raju	L	11-MA,24-MA	-	-	-	-
Kallipalli Raju	T	11-A,24-A	-	-	-	-
Manna Sheela Rani Chetty	L	4-MA,17-MA	-	-	-	-
Manna Sheela Rani Chetty	T	4-A,17-A	-	-	-	-
NAGESWARA RAO THOTA	T	14-B	-	-	-	-
RAJARAJESWARI POTHURAJU	T	13-B	-	-	-	-
ANJALI MATHUR	T	9-B,22-B	-	-	-	-
PRAVEENA MANDAPATI	L	13-MA	-	-	-	-
PRAVEENA MANDAPATI	T	8-B,13-A	-	-	-	-
Raju Anitha	T	17-B,4-B	-	-	-	-
SWARNA KUCHIBHOTLA	T	5-B,25-B	-	-	-	-
RAJESH PASUPULETI	L	12-MA,18-MA	-	-	-	-
RAJESH PASUPULETI	T	18-A,12-A	-	-	-	-
MOHAMMED MOULANA	T	1-B,23-B	-	-	-	-
MOHAMMED ISMAIL	L	20-MA,7-MA	-	-	-	-
MOHAMMED ISMAIL	T	7-A,20-A	-	-	-	-
Chayan Paul	L	21-MA,8-MA	-	-	-	-
Chayan Paul	T	8-A,21-A	-	-	-	-
SHASHI MEHROTRA	T	18-B,12-B	-	-	-	-
BHANU PRAKASH KOLLA	L	22-MA,9-MA	-	-	-	-
BHANU PRAKASH KOLLA	T	22-A,9-A	-	-	-	-

VAMSIDHAR ENIREDDY	L	23-MA,1-MA	-	-	-	-
VAMSIDHAR ENIREDDY	T	23-A,1-A	-	-	-	-
S VIJAY PRASAD	L	10-MA	-	-	-	-
S VIJAY PRASAD	T	10-A	-	-	-	-
TATAVARTHY SRI	T	11-B,24-B	-	-	-	-
Ch Ramana Murthy	L	14-MA	-	-	-	-
Ch Ramana Murthy	T	14-A,10-B	-	-	-	-
Choudhary Prakash	T	7-B,20-B	-	-	-	-
vithya Ganesan	T	3-B,16-B	-	-	-	-
Ram Prasad Reddy Sadi	T	2-B,15-B	-	-	-	-
PRANEETH CHERAKU	T	6-B,19-B	-	-	-	-
Lakshmi Lalitha Vuyyuru	L	19-MA,6-MA	-	-	-	-
Lakshmi Lalitha Vuyyuru	T	6-A,19-A	-	-	-	-

GENERAL INSTRUCTIONS

Students should come prepared for classes and carry the text book(s) or material(s) as prescribed by the Course Faculty to the class.

NOTICES

Most of the notices are available on the LMS platform.

All notices will be communicated through the institution email.

All notices concerning the course will be displayed on the respective Notice Boards.

Signature of COURSE COORDINATOR

(VAMSIDHAR ENIREDDY)

Signature of Department Prof. Incharge Academics & Vetting Team Member

Department Of CSE

HEAD OF DEPARTMENT:

Approval from: DEAN-ACADEMICS
(Sign with Office Seal) [object HTMLDivElement]