SOLID MECHANICS LAB (GR20A2015)

Academic Year (2021-22)

II B.Tech – I Semester

Dr.T. Srinivas / Mr.K.Veera Babu

Professor / Assistant Professor

Department of Civil Engineering

Gokaraju Rangaraju

Institute of Engineering and Technology

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering
Strength of Materials Laboratory

Course File Check List

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GOKARAJU RANGARAJU

INSTITUTE OF ENGINEERING AND TECHNOLOGY

SOLID MECHANICS LAB

Course Code: GR20A2015   **L/T/P/C:0/0/4/2**

II Year I Semester

Prerequisites: Engineering Mechanics, Mathematics and Physics.

Course Objectives:

1. Understanding the effect of tension in mild steel bars under tensile loading.
2. Skill to examine the resistance of various materials using hardness test and impact test
3. Find the modulus of rigidity in springs using spring test.
4. An idea on the compressive stress of concrete, wood etc.
5. Knowledge of pure bending theory and evaluate the Young's modulus of materials and Maxwell's reciprocal Theorem on beams.

Course Outcomes:

1. Determine the important mechanical properties of materials.
2. Identify the stiffness of an elastic isotropic material.
3. Evaluate the Reciprocal theorem.
4. Measure any substance's resistance to uniform compression.
5. Resistance of various materials against abrasion and impact.

Task- 1: Tension test on metals

Task- 2: Torsion test on metals

Task- 3: Hardness test on metals

Task- 4: Spring test on metals

Task-5: Compression test on wood or concrete or brick or block.

Task-6: Impact test on metals.

Task-7: Deflection test on continuous beam.

Task-8: Deflection test on cantilever beam.

Task-9: Deflection test on simply supported beam.

Task-10: Verification of Maxwell's Reciprocal theorem on beams.

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INSTITUTE OF ENGINEERING AND TECHNOLOGY
Department Of Civil Engineering

SOLID MECHANICS LAB   w.e.f : 07 Oct 2021

Day/Time	08:50-09:40	09:40-10:30	10:30-11:20	11:20-12:00	12:00-12:55	12:55-01:50	01:50-02:45
Monday							
Tuesday	SM LAB(A)						
Wednesday				Lunch Break			
Thursday							
Friday	SM LAB(A)						
Saturday							

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Institute of Engineering and Technology (Autonomous)

Bachupally, Kukatpally, Hyderabad – 500 090. (040) 6686 4440

Program Educational Objectives (PEOs)

PEO1: Graduates of the program will be successful in technical and professional career of varied sectors of Civil Engineering.

PEO2: Graduates of the program will have proficiency to analyze and design real time Civil Engineering projects.

PEO3: Graduates of the program will exhibit management and leadership qualities with good communication skills facilitating to work in a multidisciplinary team.

PEO4: Graduates of the program will continue to engage in life-long learning with ethical and social responsibility.

Program Outcomes (PO's)

Graduates of the Civil Engineering program will be able to

PO1: Apply knowledge of mathematics, science and fundamentals of Civil Engineering.
PO2: Analyse problems and interpret the data.
PO3: Design a system component, or process to meet desired needs in Civil Engineering within realistic constraints
PO4: Identify, formulate, analyse and interpret data to solve Civil Engineering problems.
PO5: Use modern engineering tools such as CAD and GIS for the Civil Engineering practice.
PO6: Understand the impact of engineering solutions in a global, economic and societal context.
PO7: Understand the effect of Civil Engineering solutions on environment and to demonstrate the need for sustainable development.
PO8: Understand the professional and ethical responsibility.
PO9: Work effectively as an individual or in a team and function with multi-disciplinary context.
PO10: Communicate effectively with engineering community and society.
PO11: Demonstrate the management principles in Civil Engineering projects.
PO12: Recognize the need for and an ability to engage in life-long learning.

Program Specific Outcomes (PSO's)

PSO1: Recognize the need for a sustainable environment and design smart infrastructure considering the global challenges.
PSO2: Create and develop innovative designs with new era materials through research and development.

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COURSE OBJECTIVES

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

On completion of this Subject/Course the student shall be able to:

S.No	Objectives
1	Understanding the effect of tension in mild steel bars under tensile loading.
2	Skill to examine the resistance of various materials using hardness test and impact test
3	Find the modulus of rigidity in springs using spring test.
4	An idea on the compressive stress of concrete, wood etc.
5	Knowledge of pure bending theory and evaluate the Young's modulus of materials and Maxwell's reciprocal Theorem on beams

Signature of HOD   Signature of faculty

Date: Date:

Note: Please refer to Bloom's Taxonomy, to know the illustrative verbs that can be used to state the objectives.

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Institute of Engineering and Technology

Bachupally, Kukatpally, Hyderabad – 500 090. (040) 6686 4440

COURSE OUTCOMES

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

On completion of this Subject/Course the student shall be able to:

S.No	Outcomes
1	Determine the important mechanical properties of materials.
2	Identify the stiffness of an elastic isotropic material.
3	Evaluate the Reciprocal theorem.
4	Measure any substance's resistance to uniform compression.
5	Resistance of various materials against abrasion and impact.

Signature of HOD   Signature of faculty

Note: Please refer to Bloom's Taxonomy, to know the illustrative verbs that can be used to state the objectives

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Department of Civil Engineering

STUDENTS ROLL LIST   (2021-22)- Section A

S.No.	Roll No.	Student Name
1	20241A0101	AADHI SRIKAR RAO
2	20241A0102	ABHIRAM SAI YADAV JANGITI
3	20241A0103	BACCHUGUDAM RITHVIK REDDY
4	20241A0104	BANDLA NAVEEN
5	20241A0105	B.PRANAV SAI
6	20241A0106	BHATTU SUPREETH CHAKRAVARTHY
7	20241A0107	BHUPATHIRAJU HIMANTHAVARMA
8	20241A0108	BOINI HEMANTH
9	20241A0109	CHALLA AJAY KUMAR
10	20241A0110	DONABOINA SRI HARI
11	20241A0111	EPPA ARNAV
12	20241A0112	G L N RAGHURAMAN
13	20241A0113	GANDLA HARSHITH KUMAR
14	20241A0114	GUGGILLA SHASHANK
15	20241A0115	GUNDA SRIKANTH
16	20241A0116	JANGILI SRAVAN KUMAR
17	20241A0117	JANJIRALA SRUTHI
18	20241A0118	JARAPULA JAYANTH
19	20241A0119	K NIKHITHA
20	20241A0120	K SANJEEV KUMAR

21	20241A0121	K.KONDAL
22	20241A0122	KAMMAMPATI UDAYKIRAN
23	20241A0123	KARNE SRITHAN
24	20241A0124	KUNCHALA VARUN KUMAR
25	20241A0125	KUNTA NITHIN REDDY
26	20241A0126	M PAVAN KALYAN
27	20241A0127	MERE MAHESH
28	20241A0128	MOHAMMED AHMED
29	20241A0129	MOTHUKURI LAXMAN
30	20241A0130	MOTTADI ADITYA TEJA
31	20241A0131	MULA SUSHMA SRI
32	20241A0132	NAYINI SWETHA
33	20241A0133	PAIDIPALLY BHARATH
34	20241A0134	P.SAI KIRAN REDDY
35	20241A0135	PASNOOR PAVAN PRATHAP REDDY
36	20241A0136	PATHLAVATH SHIVA NAYAK
37	20241A0137	PEDDIBOINA ANUSHA
38	20241A0138	POREDDY ABHINAV REDDY
39	20241A0139	PULLAGURA SANTHOSH
40	20241A0140	RACHALA BHARATH
41	20241A0141	RADHARAPU SHAJI KUMAR
42	20241A0142	RAMAVATH ROJA
43	20241A0143	RATHLAVATH SAIRAM NAYAK
44	20241A0144	RAVI TEJA PASUNUTHI
45	20241A0146	SADDI SHRIANK REDDY
46	20241A0147	SATHVIKA NARLA
47	20241A0148	SOKKULA KOUSHIKREDDY
48	20241A0149	SRIRAM PANDAVULA
49	20241A0150	T.BHARGAVI
50	20241A0151	T.BHUVANESHWARI
51	20241A0152	S.TEJA RETIESH REDDY

52	20241A0153	TEJAVATH KALYANI
53	20241A0154	TELLAPURAM PRUDHVI RAJ
54	20241A0155	THADEM ROHITH
55	20241A0156	THUMMALA RAJASHEKAR
56	20241A0157	UVSGR KAMESWARA SAI KARTHIK
57	20241A0158	SREERAM VATTEM
58	20241A0159	V VIKESH
59	20241A0160	VENNAM SRIKAR
60	21245A0101	GUMADAVELLI ARUN KUMAR
61	21245A0102	KADIRABAD SRIRAM
62	21245A0103	MANIKONDA NIKITHA
63	21245A0104	PARIDULA PRATHYUSHA
64	21245A0105	PATERU MOUNA

Gokaraju Rangaraju Institute of Engineering and Technology

Department of Civil Engineering

GUIDELINES TO STUDY THE COURSE SUBJECT

Academic Year : 2021 -2022

Semester : I

Name of the Program : B.Tech   **Year:** II Year   **Section:** A

Course/Subject : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

Guide line to study the course/subject: Solid Mechanics Lab

The course helps the students to study various methods of calculating the stresses and strains in structural members, such as beams, columns, and shafts. The methods employed to predict the response of a structure under loading and its susceptibility to various failure modes. They also find out the material properties important to construction and consider the advantages and disadvantages of steel and concrete as common building materials to handle compressive and tensile forces. The course helps the students to understand Shear force and bending moments of different beams under different types of loading.

Students should have the following prerequisites

1. Fundamentals of Engineering mathematics
2. Knowledge of Engineering Mechanics
3. Knowledge of Basics of Strength of Materials
4. Knowledge on different materials and its properties
5. Different types of loads

To become expertise in this subject, students need to be perfect with the concepts of stress, strain, shear force and bending moments and also students need to apply theoretical concepts while solving problems.

Where will this subject help?

1. Strength of materials is used in engineering to size your parts according to the loads that it will experience. Essentially we account for the materials strength properties and the forces acting on it to determine the geometry of the materials to meet the design requirements.

2. Basically we cannot perform any function as an engineer without fully understanding the basics of materials science. So it is fundamental to successful design, manufacture, construction and maintenance

3. Strength of material is used in design calculation to see whether part will withstand the load that it could see.

4. Students learn about the variety of materials used by engineers in the design and construction of modern bridges. They also find out about the material properties important to bridge construction and consider the advantages and disadvantages of steel and concrete as common bridge-building materials to handle compressive and tensile forces.

Gokaraju Rangaraju Institute of Engineering and Technology
(Autonomous)
DEPARTMENT OF CIVIL ENGINEERING

Academic Year : 2021 -2022

Semester : I

Name of the Program : B.Tech   **Year:** II Year   **Section:** A

Course/Subject : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering)

SESSION PLAN

	SESSION PLAN FOR A2 BATCH (Cycle 1)					
S.No.	Date	Brinell's Hardness Test	Rockwell's Hardness Test	Vickers's Hardness Test	Compression Test on Spring	Tension Test	Torsion Test
1	10/08/2021	Batch 1, Batch7	Batch 2, Batch8	Batch 3, Batch9	Batch 4, Batch10	Batch 5, Batch11	Batch 6,
2	15/10/2021	Batch 6	Batch 1, Batch7	Batch 2, Batch8	Batch 3, Batch9	Batch 4, Batch10	Batch 5, Batch11
3	22/10/2021	Batch 5, Batch11	Batch 6,	Batch 1, Batch7	Batch 2, Batch8	Batch 3, Batch9	Batch 4, Batch10
4	29/10/2021	Batch 4, Batch10	Batch 5, Batch11	Batch 6,	Batch 1, Batch7	Batch 2, Batch8	Batch 3, Batch9
5	11/05/2021	Batch 3, Batch9	Batch 4, Batch10	Batch 5, Batch11	Batch 6,	Batch 1, Batch7	Batch 2, Batch8
6	11/12/2021	Batch 2, Batch8	Batch 3, Batch9	Batch 4, Batch10	Batch 5, Batch11	Batch 6,	Batch 1, Batch7
7	19/11/2021	Revision	Revision	Revision	Revision	Revision	Revision

S.No	Date	Compression Test	Impact Test	Deflection Test on Catilever Beam	Deflection Test on Simply Supported Beam	Verification of Maxwell's Reciprocal Theorem	Deflection Test on Continuous Beam	Direct Shear Test
8	26/11/2021	Batch 1, Batch8	Batch 2, Batch9	Batch 3, Batch10	Batch 4, Batch11	Batch 5	Batch 6,	Batch 7
9	12-03-2021	Batch 7	Batch 1, Batch8	Batch 2, Batch9	Batch 3, Batch10	Batch 4, Batch11	Batch 5	Batch 6
10	12-10-2021	Batch 6,	Batch 7	Batch 1, Batch8	Batch 2, Batch9	Batch 3, Batch10	Batch 4, Batch11	Batch 5
11	17/12/2021	Batch 5	Batch 6,	Batch 7	Batch 1, Batch8	Batch 2, Batch9	Batch 3, Batch10	Batch4, Batch11
12	24/12/2021	Batch 4, Batch11	Batch 5	Batch 6,	Batch 7	Batch 1, Batch8	Batch 2, Batch9	Batch3,Batch10
13	31/12/2021	Batch 3, Batch10	Batch 4, Batch11	Batch 5	Batch 6,	Batch 7	Batch 1, Batch8	Batch2, Batch9
14	01-07-2022	Batch 2, Batch9	Batch 3, Batch10	Batch 4, Batch11	Batch 5	Batch 6,	Batch 7	Batch 1, Batch8
15	21/1/2022	Revision	Revision	Revision	Revision	Revision	Revision	Revision
16	28/1/2022	Lab Internal Exam for A2 Batch						

SESSION PLAN FOR A2 BATCH (Cycle 2)

Batch Wise Roll Numbers (A2)

Batch 1: 37,42,47	Batch 5: 36,38,39	Batch 9: 55,56,57
Batch 2: 50,51,53	Batch 6: 40,41,43	Batch 10: 58,59,60
Batch 3: Le3. Le4, Le5	Batch 7: 44,46,48	Batch 11: Le1, Le2
Batch 4: 33,34,35	Batch 8: 49,52,54	

SESSION PLAN FOR A1 BATCH (Cycle 1)						
S.No.	Date	Brinell's Hardness Test	Rockwell's Hardness Test	Vickers's Hardness Test	Compression Test on Spring	Tension Test	Torsion Test
1	10-12-2021	Batch 1, Batch7	Batch 2, Batch8	Batch 3, Batch9	Batch 4, Batch10	Batch 5, Batch11	Batch 6, Batch12
2	19/10/2021	Batch 6, Batch12	Batch 1, Batch7	Batch 2, Batch8	Batch 3, Batch9	Batch 4, Batch10	Batch 5, Batch11
3	26/10/2021	Batch 5, Batch11	Batch 6, Batch12	Batch 1, Batch7	Batch 2, Batch8	Batch 3, Batch9	Batch 4, Batch10
4	11-02-2021	Batch 4, Batch10	Batch 5, Batch11	Batch 6, Batch12	Batch 1, Batch7	Batch 2, Batch8	Batch 3, Batch9
5	11-09-2021	Batch 3, Batch9	Batch 4, Batch10	Batch 5, Batch11	Batch 6, Batch12	Batch 1, Batch7	Batch 2, Batch8
6	16/11/2021	Batch 2, Batch8	Batch 3, Batch9	Batch 4, Batch10	Batch 5, Batch11	Batch 6, Batch12	Batch 1, Batch7
7	23/11/2021	Revision	Revision	Revision	Revision	Revision	Revision

S.No	Date	Compression Test	Impact Test	Deflection Test on Catilever Beam	Deflection Test on Simply Supported Beam	Verification of Maxwell's Reciprocal Theorem	Deflection Test on Continuous Beam	Direct Shear Test
					SESSION PLAN FOR A1 BATCH (Cycle 2)			
8	30/11/2021	Batch 1, Batch8	Batch 2, Batch9	Batch 3, Batch10	Batch 4, Batch11	Batch 5, Batch12	Batch 6,	Batch 7
9	12-07-2021	Batch 7	Batch 1, Batch8	Batch 2, Batch9	Batch 3, Batch10	Batch 4, Batch11	Batch 5, Batch12	Batch 6,
10	14/12/2021	Batch 6,	Batch 7	Batch 1, Batch8	Batch 2, Batch9	Batch 3, Batch10	Batch 4, Batch11	Batch 5, Batch12
11	21/12/2021	Batch 5, Batch12	Batch 6,	Batch 7	Batch 1, Batch8	Batch 2, Batch9	Batch 3, Batch10	Batch 4, Batch11
12	28/12/2021	Batch 4, Batch11	Batch 5, Batch12	Batch 6,	Batch 7	Batch 1, Batch8	Batch 2, Batch9	Batch 3, Batch10
13	01-04-2022	Batch 3, Batch10	Batch 4, Batch11	Batch 5, Batch12	Batch 6,	Batch 7	Batch 1, Batch8	Batch 2, Batch9
14	01-11-2022	Batch 2, Batch9	Batch 3, Batch10	Batch 4, Batch11	Batch 5, Batch12	Batch 6,	Batch 7	Batch 1, Batch8
15	18/1/2022	Revision	Revision	Revision	Revision	Revision	Revision	Revision
16	28/1/2022	Lab Internal Exam for A1 Batch						

Batch Wise Roll Numbers (A1)

Batch 1: 17,19	Batch 5: 7,8,9	Batch 9: 21,22,23
Batch 2: 31,32	Batch 6: 10,11,12	Batch 10: 24,25,26
Batch 3: 1,2,3	Batch 7: 13,14,15	Batch 11: 27,28
Batch 4: 4,5,6	Batch 8: 16,18,20	Batch 12: 29,30

Gokaraju Rangaraju

Institute of Engineering and Technology Department of Civil Engineering

COURSE SCHEDULE

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A(A1 Batch)

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation**: Professor /Assistant Professor   **Dept.:** Civil Engineering

The Schedule for the whole Course / Subject is:

S. No.	Description	Duration (Date)		Total No. of Periods
		From	To	
1.	Introduction and Demonstration	12.10.2021	12.10.2021	03
2.	Exercise-I Brinnel's, Vicker's and Rockwell's hardness tests	10.12.2021	23.11.2021	09
3.	Exercise-II Deflection tests on Cantilever beam, Simply supported beam and tension test on mild steel	10.12.2021	23.11.2021	09
4.	Revision of Exercise-I/II Experiments	23.11.2021	23.11.2021	03
5.	Exercise-III Spring test, verification of Maxwell's Reciprocal Theorem ,Torsion test and impact test	30.11.2021	01.11.2022	09
6.	Exercise-IV Deflection tests on Continuous Beam Compression test on cube and Shear Test Demo	30.11.2021	01.11.2022	09
7.	Revision of Exercise-III/IV Experiments	08.01.2022	25.01.2022	06

1. Total No. of Instructional periods available for the course: **48** Hours / Periods

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering

COURSE SCHEDULE

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A(A2 Batch)

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

The Schedule for the whole Course / Subject is:

S. No.	Description	Duration (Date)		Total No. of Periods
		From	**To**	
1.	Introduction and Demonstration	08.10.2021	08.10.2021	03
2.	Exercise-I:Brinnel's, Vicker's and Rockwell's hardness tests	08.10.2021	12.11.2021	09
3.	Exercise-II:Deflection tests on Cantilever beam, Simply supported beam and tension test on mild steel	08.10.2021	12.11.2021	09
4.	Revision of Exercise-I/II Experiments	19.11.2021	19.11.2021	03
5.	Exercise-III:Spring test, verification of Maxwell's Reciprocal Theorem ,Torsion test and impact test	26.11.2021	07.01.2022	09
6.	Exercise-IV:Deflection tests on Continuous Beam Compression test on cube and Shear Test Demo	26.11.2021	07.01.2022	12
7.	Revision of Exercise-III/IV Experiments	21.01.2022	21.01.2022	03

Total No. of Instructional periods available for the course: **96** Hours / Periods

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering
SCHEDULE OF INSTRUCTIONS
COURSE PLAN

Academic Year : 2021 -2022
Semester : I
Name of the Program : B.Tech   **Year:** II Year   **Section:** A (A1)
Course/Subject : Solid Mechanics Lab   **Course Code** : GR20A2015
Name of the Faculty : Dr. T. Srinivas/ Mr. K. Veera Babu
Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

The Course plan for the whole Course / Subject is:

Exercise No.	Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	Blooms Taxonomy	References (SM Lab Manual) Page Nos.:
1	1	12/10/21	3	Brinnel's Hardness Test	Cob :2 CO: 1,5,6	K3	1 to 5
	2	19/10/21	3	Vicker's Hardness Test	Cob :2 CO: 1,5,6	K3	11 to 14
	3	26/10/21	3	Rockwell's Hardness Test	Cob :2 CO: 1,5,6	K3	6 to 10
2	4	02/11/21	3	Tension Test	Cob:1 CO:1,4,6	K4	23 to 29
	5	02/11/21	3	Deflection Test on Cantilever Beam	Cob :7 CO:1,6	K4	52 to 55
	6	09/11/21	3	Deflection Test on Simply Supported Beam	Cob :7 CO:1,6	K4	59 to 64
3	7	16/11/21	3	Verification of Maxwell's Reciprocal Theorem	Cob :6,7 CO:1,3,6	K4	71 to 76
	8	23/11/21	3	Spring Test	Cob:3,5,6,7 CO:1,3,6	K3	15 to 22
	9	30/11/21	3	Torsion Test	Cob :3,6,7 CO:1,4	K4	33 to 37
	10	14/12/21	3	Impact Test	Cob :7 CO:5,6	K3	45 to 51
4	11	21/12/21	3	Compression Test	Cob :4 CO:1,5	K4	41 to 44
	12	28/12/21	3	Deflection Test on Continuous Beam	Cob :7 CO:1,6	K4	79 to 82
	13	04/01/22	3	Direct Shear Test	Cob :7 CO:1,6	K4	85-86

Signature of HOD   Signature of faculty

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
         2. ADDITIONAL TOPICSCOVERED, IF ANY, MAY ALSO BE SPECIFIED IN BOLD
         3. MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering
SCHEDULE OF INSTRUCTIONS
COURSE PLAN

Academic Year   : 2021 -2022
Semester   : I
Name of the Program   : B.Tech   **Year:** II Year   **Section:** A (A2)
Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015
Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu
Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

The Course plan for the whole Course / Subject is:

Exercise No.	Lesson No.	Date	No. of Periods	Topics / Sub-Topics	Objectives & Outcomes Nos.	Blooms Taxonomy	References (SM Lab Manual) Page Nos.:
1	1	8/10/21	3	Brinnel's Hardness Test	Cob :2 CO: 1,5,6	K3	1 to 5
	2	15/10/21	3	Vicker's Hardness Test	Cob :2 CO: 1,5,6	K3	11 to 14
	3	22/10/21	3	Rockwell's Hardness Test	Cob :2 CO: 1,5,6	K3	6 to 10
2	4	29/10/21	3	Tension Test	Cob:1 CO:1,4,6	K4	23 to 29
	5	05/11/21	3	Deflection Test on Cantilever Beam	Cob :7 CO:1,6	K4	52 to 55
	6	12/11/21	3	Deflection Test on Simply Supported Beam	Cob :7 CO:1,6	K4	59 to 64
3	7	19/11/21	3	Verification of Maxwell's Reciprocal Theorem	Cob :6,7 CO:1,3,6	K4	71 to 76
	8	26/11/21	3	Spring Test	Cob:3,5,6,7 CO:1,3,6	K3	15 to 22
	9	10/12/21	3	Torsion Test	Cob :3,6,7 CO:1,4	K4	33 to 37
	10	17/12/21	3	Impact Test	Cob :7 CO:5,6	K3	45 to 51
4	11	24/12/21	3	Compression Test	Cob :4 CO:1,5	K4	41 to 44
	12	31/12/21	3	Deflection Test on Continuous Beam	Cob :7 CO:1,6	K4	79 to 82
	13	07/01/22	3	Direct Shear Test	Cob :7 CO:1,6	K4	85-86

Signature of HOD   Signature of faculty

Note: 1. ENSURE THAT ALL TOPICS SPECIFIED IN THE COURSE ARE MENTIONED.
           2. ADDITIONAL TOPICSCOVERED, IF ANY, MAY ALSO BE SPECIFIED IN BOLD
           3. MENTION THE CORRESPONDING COURSE OBJECTIVE AND OUT COME NUMBERS AGAINST EACH TOPIC.

Gokaraju Rangaraju Institute of Engineering and Technology

Department of Civil Engineering

LESSON PLAN

Academic Year	: 2021 -2022
Semester	: I

Name of the Program : B.Tech   **Year:** II Year   **Section:** A

Course/Subject : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

Lesson No: 1   **Duration of Lesson:** 3 hr

Lesson Title: Brinnel's Hardness Test

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find the brinell's hardness number of the given metals using brinell's hardness testing machine.

TEACHING AIDS : White Board, Marker, Lab Manual.

TEACHING POINTS :

- Hardness of a material is defined as resistance to permanent indentation under static or dynamic loads
- The Brinell scale characterizes the indentation hardness of materials through the scale of penetration of an indenter, loaded on a material test-piece

Assignment / Questions: 1. Why there a change in the force require for different materials?

Signature of faculty

Gokaraju Rangaraju Institute of Engineering and Technology

Department of Civil Engineering

LESSON PLAN

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

Lesson No: 2   **Duration of Lesson:** 3 hr

Lesson Title: Vicker's Hardness Test

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find the hardness of the given material using Vicker's hardness testing machine

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   **:**

- The hardness number is determined by the load over the surface area of the indentation and not the area normal to the force, and is therefore not pressure.

Assignment / Questions:
1. what are the advantages of Vicker's hardness than other hardness tests?

Signature of faculty

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering
LESSON PLAN

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

Lesson No: 3   **Duration of Lesson:** 3 hr

Lesson Title: Rockwell's Hardness Test

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Determine Rockwell hardness number for a given specimen using Rockwell's hardness testing machine.

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   :

- Rockwell's hardness test is based on the net increase in depth of impression as a load is applied

Assignment / Questions:

1. What is Rockwell's hardness scale?

Signature of faculty

LESSON PLAN

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

De**signation:** Professor /Assistant Professor   **Dept.:** Civil

Engineering**Lesson No:** 4   **Duration of Lesson:** 3 hr

Lesson Title:

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find the rigidity modulus of a material of a given spring by conducting compression test under axial load.

TEACHING AIDS   : White Board, Marker, Lab Manual.

TEACHING POINTS   :

- When an axial compression load is applied on spring, every section of the spring wire is subjected to twisting moment.

Assignment / Questions: 1. what is spring constant?
2. Differentiate between springs.

Signature of faculty

LESSON PLAN

Academic Year	: 2021 -2022
Semester	: I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil Engineering

Lesson No: 5   **Duration of Lesson:** 3 hr

Lesson Title: Compression Test on a Cube.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find the compressive strength of wood parallel and perpendicular to grains or concrete cube.

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   **:**

- Compression testing machine is a machine designed to test the specimen in compression.

Assignment / Questions:
1. Why compressive strength of concrete or wood is important?

Signature of faculty

Gokaraju Rangaraju Institute of Engineering and Technology

Department of Civil Engineering

LESSON PLAN

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil

Lesson No: 6   **Duration of Lesson:** 3 hr

Lesson Title: Tension Test

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find the modulus of elasticity of material of the given specimen by conducting tension test.
2. Find yield stress, ultimate stress, breaking stress, percentage elongation and percentage reduction in c/s area.

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   **:**

- Universal Testing Machine (UTM) is a machine designed to test the specimen in tension, compression, flexure and shear.

Assignment / Questions:
1. Explain about stress-strain diagram for mild steeland cast iron.
2. Differentiate between tensile stress, compressive stress, shear stress and bending stress.

Signature of faculty

LESSON PLAN

Academic Year	: 2021 -2022		
Semester	: I		
Name of the Program	: B.Tech	**Year:** II Year	**Section:** A
Course/Subject	: Solid Mechanics Lab	**Course Code** : GR20A2015	
Name of the Faculty	: Dr. T. Srinivas/ Mr. K. Veera Babu		

Designation: Professor /Assistant Professor   **Dept.:** Civil

Lesson No: 7   **Duration of Lesson:** 3 hr

Lesson Title: Torsion Test

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find the rigidity modulus of given material by conducting torsion test using torsion testing machine.

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   **:**

- Torsion Testing Machine is designed for conducting torsion and twist on various metal wires, tubes, sheet materials. Torque measurement is by torque transducer system.
- Torque can be applied to specimen by geared motor through gear box. Autographic recorder gives the relation between torque and angle of twist.
- The accuracy of torque indication is ± 1% of the true torque.

Assignment / Questions:
1. Explain rigidity modulus of a material.

                                     Signature of faculty

Academic Year	: 2021 -2022			
Semester	: I			
Name of the Program	: B.Tech	**Year:** II Year	**Section:** A	
Course/Subject	: Solid Mechanics Lab	**Course Code** : GR20A2015		
Name of the Faculty	: Dr. T. Srinivas/ Mr. K. Veera Babu			

Designation: Professor /Assistant Professor   **Dept.:** Civil

Lesson No: 8   **Duration of Lesson:** <u>3 hr</u>

Lesson Title: Impact Test

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find impact energy of the given specimen.

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   **:**

- In impact test a specially prepared notched specimen is fractured by a single blow from a heavy hammer and energy required being a measure of resistance of impact.

Assignment / Questions:

1. What is impact value?

Signature of faculty

Gokaraju Rangaraju Institute of Engineering and Technology Department of Civil Engineering

LESSON PLAN

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil

Lesson No: 9   **Duration of Lesson:** 3 hr

Lesson Title: Verification of Maxwell's Reciprocal Theorem.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find young's modulus of the material of the given beam by conducting bending test on simply supported beam using Maxwell's law of reciprocal deflections.

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   **:**

Maxwell law of Reciprocal Deflection states that deflection at point 'i' due to force 'P' acting at a point 'j' is numerically equal to deflection at point 'j' due to force 'P' acting at point 'i'.

Assignment / Questions:
1. Explain Maxwell Reciprocal Theorem?

Signature of faculty

Gokaraju Rangaraju Institute of Engineering and Technology

Department of Civil Engineering

LESSON PLAN

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil

Lesson No: 10   **Duration of Lesson:** 3 hr

Lesson Title: Deflection test on cantilever beam.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find young's modulus of the given structural material (mild steel) by measuring deflection of cantilever beams.

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   **:**

- Deflection is the degree to which a structural element is displaced under a load. It may refer to an angle or a distance.
- The deflection distance of a member under a load is directly related to the slope of the deflected shape of the member under that load

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Assignment / Questions:
1. Draw BMD and SFD of Cantilever Beam of span 'L' and a point load 'P' at centre of span?

Signature of faculty

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering
LESSON PLAN

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil

Lesson No: 11   **Duration of Lesson:** 3 hr

Lesson Title: Deflection test on simply supported beam.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find young's modulus of the given material (mild steel or wood) by measuring deflection of simply supported beams.

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   **:**

- For a simply supported beam with concentrated load 'W' at mid span i.e., 'L/2' and young's modulus 'E', the formula for deflection are

   Quarter-span deflection: $(11/768) \times (WL^3/EI)$

   Half-span deflection: $(1/48) \times (WL^3/EI)$

Assignment / Questions:
   1. What is Deflection?

Signature of faculty

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

De**signation:** Professor /Assistant Professor   **Dept.:** Civil

Lesson No: 12   **Duration of Lesson:** 3 hr

Lesson Title: Deflection test on continuous beam.

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

1. Find the young's modulus of the given structural material (mild steel or wood) by measuring deflection of continuous beam.

TEACHING AIDS   **:** White Board, Marker, Lab Manual.

TEACHING POINTS   **:**

- For the following loading case as a two span continuous beam of uniform flexural rigidity 'EI'. It is loaded at half of each span from end supports and deflection at $1/4^{th}$ of span from right end support is
  Deflection: $(43/6144)$ x (WL^3/EI)

Assignment / Questions:
1. Draw the graphs of deflection vs load for
   a) Simply supported beam
   b) Cantilever beam
   c) Continuous beam

Signature of faculty

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering
LESSON PLAN

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil

Lesson No: 13   **Duration of Lesson:** 3 hr

Lesson Title: Direct Shear Test

INSTRUCTIONAL/LESSON OBJECTIVES:

On completion of this lesson the student shall be able to:

   Find the ultimate shear strength of the given structural material

TEACHING AIDS   : White Board, Marker, Lab Manual.

TEACHING POINTS   :

Shear stress q = W/2A
W= load at which specimen fails
A= cross sectional area of rod

Assignment / Questions:

   1. Explain shear stress & ultimate shear strength

Signature of faculty

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering
COURSE COMPLETION STATUS

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil

Actual Date of Completion & Remarks, if any

Units	Remarks	No. of Objectives Achieved	No. of Outcomes Achieved
Exercise - I	Covered on time	1,2,5	1,2,5
Exercise – II	Covered on time	1,3,4,5	1,3,4,5
Exercise – III	Covered on time	1,3,4,5	1,3,4,5
Exercise - IV	Covered on time	1,2,5	1,2,5

Signature of HOD   Signature of faculty

Date: Date:

Note: After the completion of each unit mention the number of Objectives & Outcomes Achieved.

EVALUATION STRATEGY

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

Designation: Professor /Assistant Professor   **Dept.:** Civil

Designation:

1. TARGET:
 a) Percentage for pass: 100%
 b) Percentage of class: 95%

First class with distinction	35
First class	20
Pass class	08
Total strength	64

2. **COURSE PLAN & CONTENT DELIVERY**
   - 96 practice classes held for detailed demonstration of experiments and for analyzing real time experiments in the lab.

3. **METHOD OF EVALUATION**

    3.1 ☐ Continuous Assessment Examinations (CAE-I, CAE-II)

    3.2 ☐ Assignments/Seminars

    3.3 ☐ Mini Projects

    3.4 ☐ Quiz

    3.5 ☐ Semester/End Examination

    3.6 ☐ Others

4. List out any new topic(s) or any innovation you would like to introduce in teaching the subjects in this Semester.

Signature of HOD   Signature of faculty

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering

RUBRICS OF THE COURSE

Academic Year   : 2021 -2022

Semester   : I

Name of the Program   : B.Tech   **Year:** II Year   **Section:** A

Course/Subject   : Solid Mechanics Lab   **Course Code** : GR20A2015

Name of the Faculty   : Dr. T. Srinivas/ Mr. K. Veera Babu

De**signation:** Professor /Assistant Professor   **Dept.:** Civil

Dept.: Civil Engineering   **Designation:** Professor/Assistant Professor

Objective: To learn, conduct and assess the practical aspects of various experiment on materials like steel, copper, brass alloys & etc.

Student Outcome: learn experimental procedures and implement the theoretical knowledge to assess the result of the particular experiments, again experience to test the different material to prepare or to use for construction purpose or parts of machinery.

		Beginning	Developing	Reflecting Develop-ment	Accomplished	Exemplary	Score
Name	**Performance criteria "Level of knowledge on"**	**1**	**2**	**3**	**4**	**5**	
X	**Fundamental laboratory experiments, collect and data**						
	Hardness of various metals like Steel , Al, bronze and copper						
	Deflection of different types of beams						
	Pure bending						
	Energy absorption of various materials			**Average score**			

GR20A2015/ Solid Mechanics Lab	Course Outcomes				
Course Objectives	1	2	3	4	5
1	X				
2		X			
3			X		
4				X	
5					X

Assessments

1. Assignment 2. Internal Examination 3. External Examination

4. Practical Projects 5. Viva

GR20A2015/ Solid Mechanics Lab	Course Outcomes				
Assessments	1	2	3	4	5
1					
2	X	X	X	X	X
3	X	X	X	X	X
4	X	X	X	X	X
5	X	X	X	X	X

GR20A2015/ Solid Mechanics Lab	Course Objectives				
Assessments	1	2	3	4	5
1					
2	X	X	X	X	X
3	X	X	X	X	X
4	X	X	X	X	X
5	X	X	X	X	X

Gokaraju Rangaraju Institute of Engineering and Technology
Department of Civil Engineering

CO-PO Mapping:

COs/POs	a	b	C	d	e	f	g	h	i	J	k	l	PSO's 1	PSO's 1
1. Determine the important mechanical properties of materials.	H	M		M	M	M		M	M			H		
2. Identify the stiffness of an elastic isotropic material.	H		M	M	H	H	M			M	M			M
3. Evaluate the Reciprocal theorem.	H	H	H	M	H	M	M		M	M	M	H		M
4. Measure any substance's resistance to uniform compression.	H	H	H	M	H	M		M	M		M	M		
5. Resistance of various materials against abrasion and impact.	M	M	M	M			M	M			M	M		M

Title row: **GR20A2015– SOLID MECHANICS LAB**

Program Educational Objectives (PEOs) - Courses Outcomes Relationship Matrix

P E Objectives / Course Outcomes	1	2	3	4
1	X	X		
2	X	X		
3	X	X		
4	X	X	X	X
5	X	X	X	X

Solid Mechanics Laboratory (GR20A2015)
Internal Exam and External Questions

1. Evaluate the resistance of a material to indentation by Brinell's Hardness Test   (CO5)

2. Evaluate the resistance of a material to indentation by Rockwell's Hardness Test   (CO5)

3. Determine the resistance of a material to indentation by Vickers's Hardness Test   (CO5)

4. Find the rigidity modulus (G/C/N) of a material by compression test on spring using machine 1 (CO2

5. Find young's modulus (E) of the given structural material (steel) by Verification of Maxwell'sReciprocal Theorem on Simply Supported Beam.   (CO3)

6. Determine the Young's Modulus (E) of given material by Tension Test   (CO2)

7. Find the torsional strength (G/C/N) of a material by Torsion Test using machine 1   (CO1)

8. Find the torsional strength (G/C/N) of a material by Torsion Test using machine 2   (CO1)

9. Determine the strength of cube (100*100*100mm) under compression by CompressionTest   (CO4)

10. Determine the energy absorption characteristics of materials under Izod Impact Test
                                                                                            (CO5)

11. Determine the energy absorption characteristics of materials under Charpy Impact Test
                                                                                            (CO5)

12. Find young's modulus (E) of the given structural material (wood) by Verification of Maxwell'sReciprocal Theorem on Simply Supported Beam.   (CO3)

13. Evaluate the young's modulus (E) of the wood by Deflection Test on Simply SupportedBeam   (CO2)

14. Evaluate the young's modulus (E) of the mild steel by Deflection Test on Simply SupportedBeam   (CO2)

15. Determine the young's modulus (E) of the given structural material by Deflection Test on Continuous Beam   (CO2)

16. Determine the ultimate shear strength (τ) of the given structural material by Direct ShearTest   (CO1)

Gokaraju Rangaraju Institute of Engineering and Technology

(Autonomous)

Bachupally, Kukatpally, Hyderabad

DEPARTMENT OF CIVIL ENGINEERING

Solid Mechanics Lab (GR20A2015) –Internal Marks

S. No	Roll. No	Name of the Student	Marks (30M)
1	20241A0101	AADHI SRIKAR RAO	29
2	20241A0102	ABHIRAM SAI YADAV	15
3	20241A0103	BACCHUGUDAM RITHVIK	17
4	20241A0104	BANDLA NAVEEN	29
5	20241A0105	B.PRANAV SAI	21
6	20241A0106	BHATTU SUPREETH CHAKRAVARTHY	25
7	20241A0107	BHUPATHIRAJU	21
8	20241A0108	BOINI HEMANTH	16
9	20241A0109	CHALLA AJAY KUMAR	21
10	20241A0110	DONABOINA SRI HARI	21
11	20241A0111	EPPA ARNAV	17
12	20241A0112	G L N RAGHURAMAN	28
13	20241A0113	GANDLA HARSHITH KUMAR	25
14	20241A0114	GUGGILLA SHASHANK	17
15	20241A0115	GUNDA SRIKANTH	28
16	20241A0116	JANGILI SRAVAN KUMAR	28
17	20241A0117	JANJIRALA SRUTHI	28
18	20241A0118	JARAPULA JAYANTH	28
19	20241A0119	K NIKHITHA	28
20	20241A0120	K SANJEEV KUMAR	8
21	20241A0121	K.KONDAL	28
22	20241A0122	KAMMAMPATI UDAYKIRAN	28
23	20241A0123	KARNE SRITHAN	28
24	20241A0124	KUNCHALA VARUN KUMAR	28
25	20241A0125	KUNTA NITHIN REDDY	28
26	20241A0126	M PAVAN KALYAN	17
27	20241A0127	MERE MAHESH	28
28	20241A0128	MOHAMMED AHMED	25
29	20241A0129	MOTHUKURI LAXMAN	28
30	20241A0130	MOTTADI ADITYA TEJA	15

S. No	Roll. No	Name of the Student	Marks (70M)
31	20241A0131	MULA SUSHMA SRI	28
32	20241A0132	NAYINI SWETHA	29
33	20241A0133	PAIDIPALLY BHARATH	28
34	20241A0134	P.SAI KIRAN REDDY	28
35	20241A0135	PASNOOR PAVAN PRATHAP	15
36	20241A0136	PATHLAVATH SHIVA NAYAK	28
37	20241A0137	PEDDIBOINA ANUSHA	21
38	20241A0138	POREDDY ABHINAV REDDY	28
39	20241A0139	PULLAGURA SANTHOSH	29
40	20241A0140	RACHALA BHARATH	29
41	20241A0141	RADHARAPU SHAJI KUMAR	29
42	20241A0142	RAMAVATH ROJA	29
43	20241A0143	RATHLAVATH SAIRAM NAYAK	29
44	20241A0144	RAVI TEJA PASUNUTHI	28
45	20241A0146	SADDI SHRIANK REDDY	29
46	20241A0147	SATHVIKA NARLA	28
47	20241A0148	SOKKULA KOUSHIKREDDY	28
48	20241A0149	SRIRAM PANDAVULA	15
49	20241A0150	T.BHARGAVI	28
50	20241A0151	T.BHUVANESHWARI	21
51	20241A0152	S.TEJA RETIESH REDDY	28
52	20241A0153	TEJAVATH KALYANI	29
53	20241A0154	TELLAPURAM PRUDHVI RAJ	29
54	20241A0155	THADEM ROHITH	29
55	20241A0156	THUMMALA RAJASHEKAR	29
56	20241A0157	UVSGR KAMESWARA SAI	29
57	20241A0158	SREERAM VATTEM	28
58	20241A0159	V VIKESH	29
59	20241A0160	VENNAM SRIKAR	28
60	21245A0101	GUMADAVELLI ARUN KUMAR	28
61	21245A0102	KADIRABAD SRIRAM	15
62	21245A0103	MANIKONDA NIKITHA	28
63	21245A0104	PARIDULA PRATHYUSHA	21
64	21245A0105	PATERU MOUNA	28