LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)
Accredited by NAAC & NBA (Under Tier - I), ISO 9001:2015 Certified Institution
Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. K. Jhansi Rani
Course Name & Code : Differential Equations&20FE03
L-T-P Structure : 3-2 -0 **Credits:4**
Program/Sem/Sec : I B.Tech/I sem **A.Y.:** 2021 - 22

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this course is to introduce the first order and higher order differential equations, functions of several variables. The students will also learn solving of first order partial differential equations.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Apply first order and first degree differential equations to find orthogonal trajectories.
CO2	Distinguish between the structure and methodology of solving higher order differential equations with constant coefficients.
CO3	Apply various Numerical methods to solve initial value problem.
CO4	Generate the infinite series for continuous functions and investigate the functional dependence.
CO5	Solve partial differential equations using Lagrange's method.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	-	2	-	-	-	-	-	-	-	1			
CO2	3	2	-	2	-	-	-	-	-	-	-	1			
CO3	3	2	-	2	-	-	-	-	-	-	-	1			
CO4	2	1	-	1	-	-	-	-	-	-	-	1			
CO5	3	2	-	2	-	-	-	-	-	-	-	1			
1 - Low				**2 –**Medium						**3 -** High					

TEXTBOOKS:

T1 Dr. B.S. Grewal, "Higher Engineering Mathematics", 42nd Edition, Khanna Publishers, New Delhi, 2012.

T2 Dr. B. V. Ramana, "Higher Engineering Mathematics", 1st Edition, TMH, New Delhi, 2010.

REFERENCE BOOKS:

R1 M. D. Greenberg, "Advanced Engineering Mathematics", 2nd Edition, TMH Publications, New Delhi, 2011.

R2 Erwin Kreyszig, "Advanced Engineering Mathematics", 8th Edition, John Wiley & sons, New Delhi, 2011.

R3 W.E. Boyce and R. C. Diprima, " Elementary Differential Equations" , 7th Edition, John Wiley & sons, New Delhi,2011.

R4 S. S. Sastry, " Introductory Methods of Numerical Analysis" 5th Edition, PHI Learning Private

Limited, New Delhi, 2012.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Ordinary Differential Equations of first order and first degree

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to the course, Course Outcomes	1	13/12/2021		TLM1	
2.	Introduction to UNIT I	1	15/12/2021		TLM1	
3.	Formation of Differential Equations	1	16/12/2021		TLM1	
4.	Exact DE	1	17/12/2021		TLM1	
5.	Non-exact DE Type I	1	18/12/2021		TLM1	
6.	Non-exact DE Type II	1	20/12/2021		TLM1	
7.	Non-exact DE Type III	1	22/12/2021		TLM1	
8.	**TUTORIAL 1**	1	23/12/2021		TLM3	
9.	Non-exact DE Type IV	1	24/12/2021		TLM1	
10.	Orthogonal Trajectories (Cartesian)	1	27/12/2021		TLM1	
11.	Orthogonal Trajectories (polar)	1	29/12/2021		TLM1	
12.	Orthogonal Trajectories (polar)	1	30/12/2021		TLM1	
13.	Problems	1	31/12/2021		TLM1	
14.	**TUTORIAL 2**	1	03/01/2022		TLM3	
No. of classes required to complete UNIT-I: 14				**No. of classes taken:**		

UNIT-II: Linear Differential Equations of Higher Order

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
15.	Introduction to UNIT II	1	05/01/2022		TLM2	
16.	Solving a homogeneous DE	1	06/01/2022		TLM1	
17.	Finding Particular Integral, P.I for $e^{ax+b}\, e^{ax}$	1	07/01/2022		TLM1	
18.	P.I for Cos bx, or sin bx	1	08/01/2022		TLM1	
19.	P.I for Cos bx, or sin bx		10/01/2022			
20.	P.I for polynomial function	1	12/01/2022		TLM1	
21.	P.I for $e^{ax+b}v(x)$	1	10/01/2022		TLM1	
22.	P.I for $e^{ax+b}v(x)$	1	19/01/2022		TLM1	
23.	P.I for $x^k v(x)$	1	20/01/2022		TLM1	
24.	P.I for $x^k v(x)$		21/01/2022		TLM1	
25.	**TUTORIAL 3**	1	22/01/2022		TLM3	
26.	Method of Variation of parameters	1	24/01/2022		TLM1	
27.	Method of Variation of parameters	1	27/01/2022		TLM1	
28.	**TUTORIAL 4**	1	24/01/2022		TLM3	
No. of classes required to complete UNIT-II: 14				**No. of classes taken:**		

UNIT-III: Numerical Solution of Ordinary Differential Equations

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	HOD Sign

		Required	Completion	Completion	Methods	Weekly
29.	Introduction to Unit-III	1	28/01/2022		TLM1	
30.	Solution by Taylor's series	1	29/01/2022		TLM1	
31.	Solution by Taylor's series	1	31/01/2022		TLM1	
32.	Picard's Method	1	02/02/2022		TLM1	
33.	Picard's Method	1	03/02/2022		TLM1	
34.	**TUTORIAL 5**	1	04/02/2022		TLM3	
35.	Euler's Method	1	05/02/2022		TLM1	
36.	REVISION	1	14/02/2022		TLM1	
37.	Modified Euler's Method	1	15/02/2022		TLM 1	
38.	Modified Euler's Method	1	16/02/2022		TLM1	
39.	Runge- Kutta Method	1	17/02/2022		TLM1	
40.	Runge- Kutta Method	1	18/02/2022		TLM1	
41.	Problems	1	19/02/2022		TLM1	
42.	**TUTORIAL 6**	1	21/02/2022		TLM3	
No. of classes required to complete UNIT-III: 14				**No. of classes taken:**		

UNIT-IV: Functions of Several variables

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
43.	Introduction to UNIT IV	1	23/02/2022		TLM1	
44.	Generalized Mean Value Theorem, Taylor's series	1	24/02/2022		TLM1	
45.	Maclaurin's series	1	25/02/2022		TLM1	
46.	Maclaurin's series	1	26/02/2022		TLM1	
47.	Functions of several variables	1	02/03/2022		TLM1	
48.	**TUTORIAL 7**	1	03/03/2022		TLM3	
49.	Jacobians (polar, cylindrical, spherical coordinates)	1	04/03/2022		TLM1	
50.	Jacobians (polar, cylindrical, spherical coordinates)	1	05/03/2022		TLM1	
51.	Functional dependence	1	07/03/2022		TLM1	
52.	Maxima and Minima of functions of two variables	1	09/03/2022		TLM1	
53.	Maxima and Minima of functions of two variables	1	10/03/2022		TLM1	
54.	Maxima and Minima of functions of two variables	1	11/03/2022		TLM1	
55.	**TUTORIAL 8**	1	14/03/2022		TLM3	
No. of classes required to complete UNIT-IV:13				**No. of classes taken:**		

UNIT-V: Partial Differential Equations

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
56.	Introduction to UNIT V	1	16/03/2022		TLM1	
57.	Formation of PDE by elimination of arbitrary constants	1	17/03/2022		TLM1	
58.	Formation of PDE by elimination of arbitrary constants	1	19/03/2022		TLM1	
59.	Formation of PDE by elimination of arbitrary functions	1	21/03/2022		TLM1	
60.	Formation of PDE by elimination of arbitrary functions	1	23/03/2022		TLM1	
61.	Formation of PDE	1	24/03/2022		TLM1	
62.	**TUTORIAL 9**	1	25/03/2022		TLM3	

63.	Solving of PDE	1	26/03/2022		TLM1	
64.	Lagrange's Method	1	28/03/2022		TLM1	
65.	Lagrange's Method	1	30/03/2022		TLM1	
66.	Lagrange's Method	1	31/03/2022		TLM1	
67.	**TUTORIAL 10**	1	01/04/2022		TLM1	
No. of classes required to complete UNIT-V: 15				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The engineer and society: 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.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr. K. Jhansi Rani**	**Dr. A. Rami Reddy**	**Dr. A. Rami Reddy**	**Dr. A. Rami Reddy**
Signature				

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DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.K.Jamili Reddy
Course Name & Code **:** Applied Chemistry&20FE-05
L-T-P Structure **:3-0-0** **Credits:03**
Program/Sem/Sec : B.Tech/I-sem/ C.E. **A.Y. :** 2021-22

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concept chemistry and to provide them with the knowledge of industrial problems and finding the solutions. It helps to streng the basic concepts of water, fuel technologies**,** electrochemistry, corrosion and advanced materials used in technologie

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Identify the troubles due to hardness of water and its maintenance in industrial applications.
CO2	Identify issues issues related to conventional fuels, biofuels and photo-voltaic cells in energy production.
CO3	Apply Nernst Equation for calculating electrode cell potentials and compare batteries for different applications
CO4	Apply principles of corrosion for design and effective maintenance of various equipment.
CO5	Analyse the suitability of engineering materials like polymers, lubricants, nano materials and composites in technological applications.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	2		2	1					2
CO2	3	2	2	1		2	2					2
CO3	3	2	2	1		2	1					2
CO4	3	3	2	1		2	1					2
CO5	3	2	2	1		1	1					2
1 = Slight (Low)			**2 = Moderate (Medium)**					**3 = Substantial (High)**				

TEXTBOOKS:

T1 Shashi Chawla, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 3rd Edition, 2003.

T2 Jain, Jain, "A Text book of Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 16th Edition, 2015.

REFERENCE BOOKS:

R1 Shikha Agarwal, "A text book of Engineering Chemistry", Cambridge University Press, New Delhi, 1st Edition, 2015.

R2 S.S. Dara, S.S. Umare, "A Text book of Engineering Chemistry", S. Chand Publications, New Delhi, 12th Edition, 2010.

R3 Y. Bharathi Kumari, Jyotsna Cherukuri, "A Text book of Engineering Chemistry", VGS Publications, Vijayawada, 1st Edition, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: WATER TECHNOLOGY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
68.	Introduction to Applied Chemistry	1	13-12-2021		TLM1	
69.	Sources of water and quality.	1	13-12-2021		TLM1	
70.	Hardness and types of hardness. Units of hardness interrelation	1	16-12-2021		TLM1	
71.	Problems on hardness	1	18-01-2021		TLM1	
72.	Scale and sludges	1	20-12-2021		TLM1	
73.	Causticembrittlement,priming and foaming	1	20-12-2021		TLM1	
74.	Bolier corrosion	1	23-12-2021		TLM1	
75.	W.H.O standards of potable water,Ion exchange process	1	27-12-2021		TLM2	
76.	Reverse osmosis and elecrodialysis	1	27-12-2021		TLM1	
77.	Treatment of industrial waste water	1	30-12-2021		TLM2	
78.	**Assignment**	1	03-01-2022			
79.	**Quiz**	1	03-01-2022			
No. of classes required to complete UNIT-I: 12				No. of classes taken:		

UNIT-II: FUEL TECHNOLOGY

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Characteristics of good fuel, comparative study of solid,liquid and gaseous fuels	1	06-01-2022		TLM1	
2.	GCV,LCV and coal origin, Proximate analysis, significance.	1	08-01-2022		TLM1	
3.	Petroleum-origin, types of crude oil and refining of petroleum	1	10-01-2022		TLM1	
4.	Cracking - moving bed catalytic cracking, Synthetic petrol – Fischer Tropsch's process	1	10-01-2022		TLM2	
5.	Natural gas composition and C.N.G - advantages	1	20-01-2022		TLM2	
6.	Characteristics of bio fuels, sources of bio mass and advantages -Production of biodiesel from rape seed oil.	1	22-01-2022		TLM2	
7.	Photovoltaic cell design working, advantages and disadvantages.	1	24-01-2022		TLM2	
8.	**Assignment & Quiz**	1	24-01-2022			
No. of classes required to complete UNIT-II: 08				No. of classes taken:		

UNIT-III: ELECTROCHEMISTRY&BATTERIES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	27-01-2022		TLM1	
2.	Calomel Electrode	1	29-01-2022		TLM2	
3.	Glass Electrode	1	31-01-2022		TLM2	
4.	Calculation of EMF of Cell	1	31-01-2022		TLM1	
5.	Applications of Nernst Equation	1	03-02-2022		TLM1	
6.	Electrochemical series and Applications	1	05-02-2022		TLM1	
7.	Lead-acid Battery, Lithium ion Battery	1	14-02-2022		TLM2	
8.	Mg-Cu reserve battery, H_2– O_2 Fuel Cell	1	14-02-2022		TLM2	
9.	**Assignment & Quiz**	1	17-02-2022			
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV: SCIRNCE OF CORROSION

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Types of dry corrosion-oxidative corrosion, Pilling Bed worth rule	1	19-02-2022		TLM1	
2.	Corrosion by other gases and liquid metal corrosion	1	21-02-2022			
3.	Wet corrosion ,mechanism	1	21-02-2022		TLM1	
4.	Concentration Cell Corrosion	1	24-02-2022		TLM1	
5.	Passivity and Galvanic series Nature of metal that influences rate of corrosion.	1	26-02-2022		TLM1	

6.	Nature of environment,	1	28-02-2022		TLM1	
7.	Cathodic Protection	1	28-02-2022		TLM2	
8.	Electro plating and metal cladding	1	03-03-2022		TLM2	
9.	**Assignment & Quiz**	1	05-03-2022			
No. of classes required to complete UNIT-IV: 09				No. of classes taken:		

UNIT-V: CHEN-MISTRY OF ENGINEERING MATERIALS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Differences between thermoplasts and thermosets, Types of polymerization with examples,	1	07-03-2022		TLM1	
2.	Preparation properties and engineering applications of PVC, Teflon, BUNA-S and Polyurethane.	1	07-03-2022		TLM1	
3.	Preparation properties and engineering applications of BUNA-S and Polyurethane.	1	10-03-2022		TLM1	
4.	Characteristics of a good lubricant and properties of lubricants	1	12-03-2022		TLM2	
5.	Application of lubricants	1	14-03-2022		TLM2	
6.	Nano Materials Introduction, definition, extraordinary changes observed at nano size of materials and reasons	1	14-03-2022		TLM2	
7.	Types of nano-materials, Gas-Phase Synthesis of nanomaterials, Applications.	1	17-03-2022		TLM2	
8.	Composites,advantageous characteristics of Comp Constituents	1	19-03-2022		TLM2	
9.	Fibre reinforced composites (GFRP, CFRP), Reasons for failure of composites.	1	21-03-2022		TLM2	
10.	**Assignment & Quiz**	1	21-03-2022			
No. of classes required to complete UNIT-V: 10				No. of classes taken:		

CONTENTS BEYOND SYLLABUS						
1.	Batteries used in mobile phones of popular companies.	1	24-03-2022		TLM1	
2.	Industrial applications of electroplating	1	26-03-2022		TLM1	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: 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
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.K.Jamili Reddy	Dr.V.Parvathi	Dr.V.Parvathi	Dr.A.Rami Reddy
Signature				

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr Pawel Veliventi
Course Name & Code : Professional Communication-I (20FE01)
L-T-P Structure : 2-0-0 **Credits:** 2
Program/Sem/Sec : CE/I **A.Y.:** 2021-22
PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): To improve English language proficiency of the students on various aspects like vocabulary, grammar, communication skills, listening skills, reading &writing skills

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Produce a coherent paragraph interpreting a figure/graph/chart/table
CO2	Comprehend the given texts thoroughly by guessing the meanings of the words Contextually
CO3	Use language appropriately for describing/comparing/contrasting/giving directions & suggestions
CO4	Write formal/informal dialogues with an understanding of verbal/non-verbal features of communication. Guess meanings of the words from the context
CO5	Write well structured essays, reports & resumé

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		1		3		2			3	3		2			
CO2		1		3		2			3	3		2			
CO3		1		3		2			3	3		2			
CO4		1		3		2			3	3		2			
CO5		1		3		2			3	3		2			
1 - Low **2** –Medium **3** - High															

TEXTBOOKS:

T1 Prabhavati.Y & etal, "English All Round–Communication Skills for Undergraduate Learners", Orient BlackSwan, Hyderabad, 2019

T2 "The Great Indian Scientists", Cengage Learning India Pvt. Ltd., Delhi, 2017

REFERENCE BOOKS:

R1 Swan,M., "Practical English Usage", Oxford University Press, 2016

R2 Kumar,S and Latha, P, "Communication Skills", Oxford University Press, 2018

R3 Rizvi Ashraf M.,"Effective Technical Communication",TataMcGrawHill, NewDelhi, 2008

R4 Baradwaj Kumkum, "Professional Communication" ,I.K.International Publishing House Pvt. Lt.d, NewDelhi, 2008

R5 Wood, F.T., "Remedial English Grammar", Macmillan, 2007

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Exploration

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	A Proposal to Girdle the Earth	2	14-12-21 & 15-12-21		TLM1	
2.	Skimming and Scanning	1	18-12-21		TLM1	
3.	Content & Function Words	1	21-12-21		TLM2	
4.	Verbs, Nouns, Adjectives and Adverbs	1	22-12-21		TLM2	
5.	Countable and Uncountable Nouns	1	28-12-21		TLM3	
6.	Singular and Plural Nouns	1	29-12-21		TLM1	
7.	Wh-Questions, Word Order in Sentences	1	4-1-22		TLM2	
8.	Paragraph Analysis & Writing	1	5-1-22		TLM1	
9.	Punctuation and Capital Letters	1	8-1-22		TLM1	
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II: On Campus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
10.	The District School as it was by One Who Went to it	2	11-1-22 & 12-1-22		TLM1	
11.	Identifying Sequence of Ideas	1	18-1-22		TLM1	
12.	Cohesive Devices: Linkers/Signposts/Transition Signals	1	19-1-22		TLM3	
13.	Synonyms	1	22-1-22		TLM2	
14.	Meanings of Words/Phrases in the Context	1	25-1-22		TLM1	
15.	Memo Drafting	1	29-1-22		TLM2	
No. of classes required to complete UNIT-II: 7				**No. of classes taken:**		

UNIT-III: Working Together

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
16.	The Future of Work	1	1-2-22		TLM1	
17.	Making Basic Inferences	1	2-2-22		TLM1	
18.	Strategies to Use Text Clues for Comprehension	1	5-2-22		TLM2	
19.	Tenses	2	15-2-22 & 16-2-22		TLM2	
20.	Reporting Verbs for Academic Purposes	1	19-2-22		TLM1	
21.	Rephrasing	1	22-2-22		TLM3	
22.	Avoiding Redundancies and Repetitions	1	23-2-22		TLM2	
23.	Summarizing/Abstract Writing	1	26-2-22		TLM1	
No. of classes required to complete UNIT-III: 9				**No. of classes taken:**		

UNIT-IV: APJ Abdul Kalam

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
24.	APJ Abdul Kalam	2	2-3-22 & 5-3-22		TLM1	
25.	Direct & Indirect Speech	2	8-3-22		TLM1	
26.	Articles	2	9-3-22 & 12-3-22		TLM3	
27.	e-mail Drafting	1	15-3-22		TLM1	
No. of classes required to complete UNIT-IV:7				**No. of classes taken:**		

UNIT-V: C.V.Raman

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
28.	C.V.Raman	2	16-3-22 & 19-3-22		TLM1	
29.	Subject-Verb Agreement	1	22-3-22		TLM2	
30.	Prepositions	3	23-3-22 & 26-3-22		TLM2	
31.	Formal Letter Writing	3	29-3-22 & 30-3-22		TLM3	
No. of classes required to complete UNIT-V: 6				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: 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
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering
PSO 2	Possesses ability to plan, examine and analyse the various laboratory tests required for the professional demands
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr Pawel Veliventi**	**Dr B Samrajya Lakshmi**	**Dr B Samrajya Lakshmi**	**Dr A Ramireddy**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. J. Venkateswara Rao
Course Name & Code : Building Materials and Construction & 20CE02
L-T-P Structure : 3-0-0 **Credits:** 3
Program/Sem/Sec : B.Tech., CE., I-Sem., **A.Y.:** 2021-22

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs):

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the preparation process and the composition of construction materials such as Stones, bricks and timber.
CO2	Describe the sources, constituents and storage of lime and cement for their appropriate usage as building materials based on their specific attributes.
CO3	Identify the different components in a building and their specific purpose in the building.
CO4	Classify the various types of mortars, masonry components and finishings used in the buildings.
CO5	Identify the uses, good and faulty characteristics of different building materials

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3											2			1
CO2	2											1			1
CO3	3											2			1
CO4	3											1			1
CO5	3											2			1
1 - Low			**2** –Medium							**3** - High					

TEXTBOOKS:

T1 Rangwala "Engineering Materials (Material science)" Charotar Publishing House Pvt. ltd., Edition-2012

T2 B.C. Punmia, Ashok Kumar Jain and Arun Kumar Jain-"Building Construction"- Laxmi Publications (P) Ltd.

REFERENCE BOOKS:

R1 S.K. Duggal "Building Materials"- - New age International Publisher, Fourth edition-2012

R2 R.K. Rajput "Engineering Materials (Including construction materials)"-, S.Chand Publications.

R3 P.C Varghese "Building Construction" Prentice-Hall of India Private Ltd.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: STONES AND BRICKS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Interaction with Students	1	13-12-2021		TLM1	
2.	Introduction To Rocks and Classification	1	14-12-2021		TLM1	
3.	Characteristics of Good building stones	1	15-12-2021		TLM1	
4.	Common Building stones and their compositions and Properties	1	17-12-2021		TLM1	
5.	Common Building stones Properties and uses	1	20-12-2021		TLM1	
6.	Dressing of stones	1	21-12-2021		TLM1	
7.	Bricks Introduction and composition of brick earth	1	22-12-2021		TLM1	
8.	Stages in brick Manufacturing and Burning in Kilns	1	24-12-2021		TLM1,2	
9.	Burning in Clamp and Kilns	1	27-12-2021		TLM1	
10.	Classification and good qualities of bricks	1	28-12-2021		TLM1	
11.	Fly ash and Hollow bricks manufacturing	1	29-12-2021		TLM1,2	
12.	Fly ash and Hollow bricks and uses	1	31-12-2021		TLM1	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: LIME AND CEMENT

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
13.	Introduction-lime stone	1	03-01-2022		TLM1	
14.	Review on Stones(Unit-I)	1	04-01-2022		TLM1	
15.	Review on Bricks(Unit-I)	1	05-01-2022		TLM1	
16.	Review on Bricks(Unit-I)	1	07-01-2022		TLM1	
17.	Limestone cycle-sources of lime	1	10-01-2022		TLM1,2	
18.	Constituent of lime & Manufacturing	1	11-01-2022		TLM1,2	
19.	Properties of lime-uses	1	12-01-2022		TLM1	
20.	Precaution in handling of lime-storage of lime	1	18-01-2022		TLM1	
21.	Introduction to cement and Comparison between cement and lime	1	19-01-2022		TLM1	
22.	Constituents of cement-functions of ingredients of cement	1	21-01-2022		TLM1	
23.	Outline of manufacture of Portland cement	1	24-01-2022		TLM1,2	
24.	Classification-properties of cements	1	25-01-2022		TLM1	
25.	Classification-properties of cements	1	28-01-2022		TLM1	
26.	Outline of manufacture of Portland cement	1	31-01-2022		TLM1	
27.	Field test and storage of cement	1	01-02-2022		TLM1	
No. of classes required to complete UNIT-II: 15				**No. of classes taken:**		

UNIT-III: MORTAR AND MASNORY

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	HOD Sign

		Required	Completion	Completion	Methods	Weekly
28.	Introduction to Mortar-Requirements	1	02-02-2022		TLM1	
29.	Good qualities of Mortars and types	1	04-02-2022		TLM1	
30.	Mid I Exams	1	07-02-2022			
31.	Mid I Exams	1	08-02-2022			
32.	Mid I Exams	1	09-02-2022			
33.	Mid I Exams	1	11-02-2022			
34.	Assignment II Discussion	1	14-02-2022			
35.	MID I exam return of scripts & discussion	1	15-02-2022		TLM1	
36.	Types of Mortar	1	16-02-2022		TLM1	
37.	Preparation of mortar-Uses-Precautions	1	18-02-2022		TLM1	
38.	Review on Mortar	1	21-02-2022		TLM1,2	
39.	Introduction to Masonry-Types	1	22-02-2022		TLM1	
40.	Terminology in stone masonry	1	23-02-2022		TLM1	
41.	Types of stone masonry and joints	1	25-02-2022		TLM1,2	
42.	Terminology in Brick masonry & tools for brick laying	1	28-02-2022		TLM1	
43.	Different bonds in bricks-	1	02-03-2022		TLM1,2	
44.	Different bonds in bricks & Defects in bonds	1	04-03-2022		TLM1,2	
45.	Importance of Cavity and Partition walls.	1	07-03-2022		TLM1	
No. of classes required to complete UNIT-III: 11				**No. of classes taken:**		

UNIT-IV: BUILDING COMPONENTS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Components of a building – Substructure and superstructure	1	08-03-2022		TLM1,2	
47.	Foundation-functions of foundations different types of foundations	1	09-03-2022		TLM1,2	
48.	Basic details of Lintels, Arches,	1	11-03-2022		TLM1	
49.	Stair cases	1	14-03-2022		TLM1,2	
50.	Types of floors	1	15-03-2022		TLM1	
51.	Types of roofs	1	16-03-2022		TLM1,2	
No. of classes required to complete UNIT-IV: 6				**No. of classes taken:**		

UNIT-V: TIMBER AND FNISHINGS IN BUIDINGS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
52.	Classification of timber	1	21-03-2022		TLM1,2	
53.	Seasoning of timber	1	22-3-2022		TLM1,2	
54.	important types of timber and their uses	1	23-03-2022		TLM1,2	
55.	Ply wood and its uses	1	25-03-2022		TLM1,2	
56.	Constituents of paints and types	1	28-03-2022		TLM1,2	
57.	Functions of paints-types of paints	1	29-03-2022		TLM1,2	
58.	Methods of damp proofing – material used for D.P.C	1	30-03-2022		TLM1,2	
No. of classes required to complete UNIT-V: 7				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)

TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R17 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: 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
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering
PSO 2	Possesses ability to plan, examine and analyze the various laboratory tests required for the professional demands
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Dr. J.Venkateswara Rao	Dr. J.Venkateswara Rao	Mr.B.Rama Krishna	Dr. V.Rama Krishna
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. K.Sai Babu/ Mr. S.Srinivasa Reddy

Course Name & Code **:** Engineering Workshop

L-T-P Structure **: 0-0-3**

Credits 2

Program/Sem/Sec : B.Tech, I-Sem, CE

A.Y. **:** 2021-22

PREREQUISITE: Knowledge in dimensions and units, Usage of geometrical instruments and analytical ability

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this course is to get familiarized with various trades used in Engineering Workshop and learn the safety pre-cautions to be followed in the workshops, while working with the different tools

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Design and model different prototypes in the carpentry trade such as Cross lap joint, Dove tail joint.
CO2	Fabricate and model various basic prototypes in the trade of fitting such as Straight fit, V- fit.
CO3	Produce various basic prototypes in the trade of Tin smithy such as rectangular tray, and open Cylinder.
CO4	Perform various basic House Wiring techniques.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3		2	3	3	3			3			2		3	2
CO2	3		2	3	3	3			3			2		3	2
CO3	3		2	3	3	3			3			2		3	2
CO4	3		2	3	3	3			3			2		3	2
1 - Low			**2 –**Medium								**3 -** High				

TEXTBOOKS:

T1 Workshop Technology by B.S Raghu Vamsi
T2 Workshop Technology By Hezra Chowadary

REFERENCE BOOKS:

R1 Lab Manual

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S. No.	Experiment to be conducted	No. of No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Demonstration	3	17-12-2021		TLM8	
2.	Experiment-1	3	24-12-2021		TLM8	
3.	Experiment-2	3	31-12-2021		TLM8	
4.	Experiment-3	3	07-01-2022		TLM8	
5.	Experiment-4	3	21-01-2022		TLM8	
6.	Experiment-5	3	28-01-2022		TLM8	
7.	Experiment-6	3	04-02-2022		TLM8	
8.	MID -I (07-02-2022 To 12-02-2022)					
9.	Experiment-7	3	18-02-2022		TLM8	
10.	Experiment-8	3	25-02-2022		TLM8	
11.	Demonstration of TIN	3	04-03-2022		TLM8	
12.	Demonstration of Black SMITHY	3	11-03-2022		TLM8	
13.	Repetition	3	25-03-2022		TLM8	
14.	Lab Internal	3	01-04-2022			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions-1	13-12-2021	05-02-2022	8W
I Mid Examinations	07-02-2022	12-02-2022	1W
II Phase of Instructions	14-02-2022	02-04-2022	7W
II Mid Examinations	04-04-2022	09-04-2022	1W
Preparation and Practicals	11-04-2022	16-04-2022	1W
Semester End Examinations	18-04-2022	30-04-2022	2 W

PART-C

EVALUATION PROCESS:

Evaluation Task	Cos	Marks
Day to Day Evaluation: A	1,2,3,4	A=5
Internal Lab Exams: B	1,2,3,4	B=5
Record: C	1,2,3,4	C=5
Cumulative Internal Examination : CIE=A+B+C	**1,2,3,4**	**CIE=15**
Semester End Examinations: SEE	**1,2,3,4**	**SEE=35**
Total Marks: CIE+SEE	**1,2,3,4**	**50**

Details of Batches:

Batch No.	Reg. No. of Students	Number of Students
B11	21CIV01 - 21CIV23	12
B12	21CIV24-21CIV39	12
B21	21CIV41-21CIV58	12
B22	21CIV59-21CIV70	10

Batch No:	Exp. 01	Exp. 02	Exp. 03	Exp. 04	Exp. 05	Exp. 06	Exp. 07	Exp. 08	Exp. 09	Exp. 10
B11	C1	C2	F1	F2	P1	P2	E1	E2	D1	D2
B12	F1	F2	P1	P2	E1	E2	C1	C2	D1	D2
B21	P1	P2	E1	E2	C1	C2	F1	F2	D1	D2
B22	E1	E2	C1	C2	F1	F2	P1	P2	D1	D2

LIST OF EXPERIMENTS:

Exp.No.	Name of the Experiment	Related CO
1.	Carpentry -1 (C1)-Corner Bridle Joint	CO1
2.	Carpentry -2 (C2)-Dovetail Joint	CO1
3.	Fitting-1 (F1)-T-Joint	CO2
4.	Fitting-2 (F2)-V-Joint	CO2
5.	Plumbing-1 (P1)-Pipe Threading practice	CO3
6.	Plumbing-2 (P2)-Pipe Layout	CO3
7.	House Wiring-1 (E1) – Series and Parallel connection	CO4
8.	House Wiring-2 (E2) – Fluorescent Lamp and Calling bell Circuit	CO4
9.	Black Smithy (D1)	CO3
10.	Tin Smithy (D2)	CO3

NOTIFICATION OF CYCLE

Cycle	Exp.No.	Name of the Experiment	Related CO
Cycle-1	1.	Carpentry -1 (C1)-Corner Bridle Joint	CO1
	2.	Carpentry -2 (C2)-Dovetail Joint	CO1
	3.	Fitting-1 (F1)-T-Joint	CO2
	4.	Fitting-2 (F2)-V-Joint	CO2
	5.	Plumbing-1 (P1)-Pipe Threading practice	CO3
	6.	Plumbing-2 (P2)-Pipe Layout	CO3
	7.	House Wiring-1 (E1) – Series and Parallel connection	CO4
	8.	House Wiring-2 (E2) – Fluorescent Lamp and Calling bell Circuit	CO4
Cycle-2	9.	Black Smithy (D1)	CO3
	10.	Tin Smithy (D2)	CO3

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: 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.
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To apply the principles of thermal sciences to design and develop various thermal systems.
PSO 2	To apply the principles of manufacturing technology, scientific management towards improvement of quality and optimization of engineering systems in the design, analysis and manufacturability of products.
PSO 3	To apply the basic principles of mechanical engineering design for evaluation of performance of various systems relating to transmission of motion and power, conservation of energy and other process equipment.

Title	**Course Instructor**	**Course Coordinator**	**Head of the Department**
Name of the Faculty	Mr. K.Sai Babu/ Mr. S.Srinivasa Reddy	Mr. Seelam Srinivasa Reddy	Dr. Seelam Pichi Reddy
Signature			

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COURSE HANDOUT

PART-A

Name of Course Instructor: C.RAJAMALLU

Course Name & Code	**:** SURVEYING & 20CE01	**Regulation**: R20
L-T-P Structure	**:03-0-0**	**Credits:** 03
Program/Sem/Sec	: B.Tech/I-Sem/	**A.Y.:** 2021-22

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs): The course aims to teach the basic principles of surveying and various methods for measuring linear and angular measurements. The coverage of the course enables the students to differentiate the available surveying equipments suitable for a specific purpose.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	Understand the basic principles involved in linear and angular measurements, functioning of total station, levelling measurements and characteristic properties of simple curves.
CO2	Develop the longitudinal, lateral and contour profiles of a given area using fundamental principles of levelling
CO3	Calculate the area and volume of required boundaries.
CO4	Determine the distance and elevations of an object using tacheometer and EDM principles.

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	1										2		
CO2	2	1	2											2	
CO3	3	2												2	
CO4	2	1	1												
1 - Low						**2 –**Medium						**3 -** High			

TEXTBOOKS:

T1 R. Agor "A Text Book of Surveying and Leveling", Khanna Publishers, New Delhi, 1998.

T2 Punmia B.C., "Surveying Vol I and II", Laxmi Publications 9th, 10th Edition, 1987.

REFERENCE BOOKS:

R1 R. Subramanya "Surveying and Leveling"- Oxford Publication

R2 Arora K R, "Surveying Vol 1, 2 & 3", Standard Book House, Delhi, 2004

R3 N.N Basak, "Surveying and Leveling", Tata McGraw Hill Publishing Company Ltd., New Delhi, 1994

R4 Kanetkar T.P and S.V. Kulkarni, "Surveying and Leveling- Part I and II", Vidyarthi Prakasan, Pune, 1997.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: INTRODUCTION- LINEAR AND ANGULAR MEASUREMENTS

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Course and COs	1	13-12-2021	13-12-2021		
2.	Introduction to Unit-I	1	14-12-2021	14-12-2021		
3.	Classification of surveys	1	16-12-2021	16-12-2021		
4.	Errors and corrections – problems	1	17-12-2021	17-12-2021		
5.	TUTORIAL-1	1	20-12-2021	20-12-2021		
6.	Compass- Survey-Introduction	1	21-12-2021	21-12-2021		
7.	Types- bearings-problems	1	23-12-2021	23-12-2021		
8.	Local attraction-problems-	1	24-12-2021	24-12-2021		
9.	Plane table-over view	1	27-12-2021	27-12-2021		
10.	Plane table-over view	1	28-12-2021	28-12-2021		
No. of classes required to complete UNIT-I:10				**No. of classes taken:10**		

UNIT-II: LEVELLING &CONTOURING

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Concept and Terminology	1	30-12-2021	30-12-2021		
2.	Temporary and Permanent Adjustments	1	31-12-2021	31-12-2021		
3.	Height of instrument method	1	03-01-2022	03-01-2022		
4.	Rise and Fall method	1	04-01-2022	04-01-2022		
5.	Problems	1	06-01-2022	06-01-2022		
6.	Area Consisting of Regular Boundaries.	1	07-01-2022	07-01-2022		
7.	TUTORIAL-1	1	10-01-2022	10-01-2022		
8.	Characteristics and applications of contours	1	11-01-2022	11-01-2022		
9.	Plotting contours by grid method	1	18-01-2022	18-01-2022		
10.	Plotting contours by grid method	1	20-01-2022	20-01-2022		
No. of classes required to complete UNIT-II:10				**No. of classes taken:10**		

UNIT-III: COMPUTATION OF AREAS and VOLUMES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction-Area from Field	1	21-01-2022 24-01-2022	21-01-2022 24-01-2022		
2.	Computation of Areas along irregular boundaries	1	25-01-2022	25-01-2022		
3.	Area Consisting of RegularBoundaries.	1	27-01-2022	27-01-2022		
4.	Problems	1	28-01-2022	28-01-2022		
5.	TUTORIAL-1	1	31-01-2022	31-01-2022		
6.	Embankments and Cutting for aLevel Section and Two Level Sections Without TransverseSlopes	1	01-02-2022	01-02-2022		
7.	Determination of the Capacity of Reservoir	1	03-02-2022	03-02-2022		
8.	Volume of Barrow Pits.	1	04-02-2022	04-02-2022		
9.	Problems	1	14-02-2022			
10.	Problems	1	17-02-2022			
11.	TUTORIAL-1I	1	18-02-2022			
No. of classes required to complete UNIT-III:12					**No. of classes taken:**	

UNIT-IV: : THEODOLITE and TACHEOMETRIC SURVEYING

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Theodolite, description, Applications	1	21-02-2022			
2.	Measurement of Horizontal Angles & Measurement of Vertical Angles	3	22-02-2022 24-02-2022 25-02-2022			
3.	Problems	1	28-02-2022			
4.	Problems	1	03-02-2022			
5.	Tutorial-I	1	04-02-2022			
6.	Stadia and Tangential Methods of Tachometry	1	07-02-2022			
7.	Distance and Elevation Formulae for Staff Vertical Position.	1	08-02-2022			
8.	Problems	1	10-03-2022			
9.	Tutorial-II	1	11-03-2022			
No. of classes required to complete UNIT-IV:11				**No. of classes taken:**		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction- types of curves	1	14-03-2022			
2.	Elements of a simple circular curve	1	15-03-2022			
3.	Degree of curve relationship between radius and degree of curve	1	17-03-2022			
4.	Problems	1	21-03-2022			
5.	Problems	1	22-03-2022			
6.	Tutorial-I	1	24-03-2022			
7.	Calculation of various elements of curve	1	25-03-2022			
8.	Total station-introduction	1	28-03-2022			
9.	Importance of total station-uses	1	29-03-2022			
10.	Global positioning system.	1	31-03-2022			
11.	Tutorial-II	1	31-03-2022			
No. of classes required to complete UNIT-V:11				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I, II & UNIT-III (Half of the Syllabus))	A1=5
I-Descriptive Examination (Units-I, II & UNIT-III (Half of the Syllabus))	M1=15
I-Quiz Examination (Units-I, II & UNIT-III (Half of the Syllabus))	Q1=10
Assignment-II (Unit-III (Remaining Half of the Syllabus), IV & V)	A2=5
II- Descriptive Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	M2=15
II-Quiz Examination (UNIT-III (Remaining Half of the Syllabus), IV & V)	Q2=10
Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: 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
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering
PSO 2	Possesses ability to plan, examine and analyze the various laboratory tests required for the professional demands
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**C.Rajamallu**			**Dr.V.Rama Krishna**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.K.Jamili Reddy
Course Name & Code **:** Applied Chemistry Lab&20FE52
L-T-P Structure **:0-0-3** **Credits:1.5**
Program/Sem/Sec : B.Tech/I-sem/C.E. **A.Y. :** 2021-22

Pre requisites: Nil

Course Educational Objective: This course enables the students to analyze water samples and perform different types of volumetric titrations. It provides them with an overview of preparation of polymers and properties of fuels.

Course Outcomes: After completion of the course, the students will be able to,

CO1: Assess quality of water based on the procedures given
CO2: Distinguish different types of titrations in volumetric analysis after performing the experiments listed in the syllabus
CO3: Acquire practical knowledge related to preparation of polymers
CO4: Exhibit skills in performing experiments based on theoretical fundamentals.

POs / COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		1		2	2					
CO2	2	1										
CO3	2		1									
CO4	3	2	1									
1 = Slight (Low) 2 = Moderate (Medium) 3 = Substantial (High)												

Note: Enter Correlation Levels **1** or **2** or **3.** If there is no correlation, **put '-'**
1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

Bos Approved Lab Manual

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
80.	Introduction to Applied chemistry lab	3	16-12-2021		TLM1	CO4	
81.	Determination of amount of HCl using standard Na_2CO_3 solution	3	23-12-2021		TLM4	CO2,CO4	
82.	Preparation of Bakelite	3	30-12-2021		TLM4	CO3,CO4	
83.	Determination of pH of the given sample solution/soil using pH meter.	3	06-01-2022		TLM4	CO2,CO4	
84.	Preparation of nylon fibres.	3	20-01-2022		TLM4	CO3,CO4	
85.	Determination of alkalinity of water sample**.**	3	27-01-2022		TLM4	CO1,CO4	
86.	Determination of total Hardness of water using EDTA method.	3	03-02-2022		TLM4	CO1,CO4	
87.	Determination of permanent hardness of using EDTA method.	3	17-02-2022		TLM4	CO1,CO4	
88.	Estimation of Mohr's salt using potassium permanganate.	3	24-02-2022		TLM4	CO2,CO4	
89.	Estimation of Mohr's salt using potassium dichromate	3	03-03-2022		TLM4	CO2,CO4	
90.	Determination of Copper(II) using standard hypo solution	3	10-03-2022		TLM4	CO2,CO4	
91.	Additional lab	3	17-03-2022		TLM4	CO1,CO2, CO3,CO4	
92.	Internal lab exam	3	24-03-2022				
Total							

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

Part - C

EVALUATION PROCESS:

According to Academic Regulations of R20 Distribution and Weightage of Marks For Laboratory Courses is as follows.

(a) Continuous Internal Evaluation (CIE):

- ✓ The continuous internal evaluation for laboratory course is based on the following parameters:

Parameter		Marks
Day – to – Day Work	Observation	05 Marks
	Record	05 Marks
Internal Test		05 Marks
Total		**15 Marks**

PROGRAMME OUTCOMES (POs):

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society**: 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.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and

design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineeringand management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.K.Jamili Reddy	Dr.V.Parvathi	Dr.V.Parvathi	Dr.A.Rami Reddy
Signature				

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DEPARTMENT OF CIVIL ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: C.Rajamallu

Course Name & Code	**: 20CE51 - SURVEYING LAB**	**Regulation**: R20
L-T-P Structure	**: 0-0-2**	**Credits:** 1
Program/Sem/Sec	: B.Tech-Civil-I-Sem	**A.Y.:** 2021-22

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs): The course teaches the basic principles of surveying, various methods of linear and angular measuring instruments through hands-on practice sessions and enables the students to use surveying equipments.

COURSE OUTCOMES (COs): At the end of the course, student will be able to

CO1	: Compute linear and angular measurements in the field using chain and compass
CO2	Plot a given area using plane table in the field.
CO3	determine the elevations of different points on the ground using principles of leveling

COURSE ARTICULATION MATRIX (Correlation between COs, POs & PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		1			2						1		1		
CO2			1											1	
CO3	2				1			1							
1 - Low					**2 –**Medium						**3 -** High				

TEXTBOOKS:

T1 R. Agor "A Text Book of Surveying and Leveling", Khanna Publishers, New Delhi, 1998.

T2 Punmia B.C., "Surveying Vol I and II", Laxmi Publications 9th, 10th Edition, 1987.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Chaining of a line using chain/Tape and recording of details along the chain line.	2	14-12-2021 15-12-2021	14-12-2021 15-12-2021		
2.	Measurement of a given area using Cross staff survey.	2	21-12-2021 22-12-2021	21-12-2021 22-12-2021		
3.	Determination of Obstacle length.	2	28-12-2021 29-12-2021	28-12-2021 29-12-2021		
4.	To perform compass traversing and calculate the errors in balancing the traverse.	2	04-01-2022 05-01-2022	04-01-2022 05-01-2022		
5.	To measure the distance between two inaccessible points.	2	11-01-2022 12-01-2022	11-01-2022 12-01-2022		
6.	Radiation method of plane table survey.	2	18-01-2022 19-01-2022	18-01-2022 19-01-2022		
7.	Intersection method of plane table survey	2	25-01-2022 01-02-2022	25-01-2022 01-02-2022		
8.	Determination of elevations of given points using Rise and fall Method & HI method.	2	02-02-2022 16-02-2022			
9.	Determination of elevation difference between two points using Reciprocal levelling method.	2	22-02-2022 23-02-2022			
10.	Determination of elevations and plotting of longitudinal Sectioning and Cross Section of a given area.	2	02-03-2022 08-03-2022			
11.	Plotting the contours of a given area using method of blocks.	2	09-03-2022 15-03-2022			
No. of classes required to complete:22				**No. of classes taken:**		

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project

PART-C

EVALUATION PROCESS (R20 Regulation):

Evaluation Task	Expt. no's	Marks
Day to Day work = **A**	1,2,3,4,5,6,7,8…	A=05
Record = **B**	1,2,3,4,5,6,7,8	B=05
Internal Test = **C**	1,2,3,4,5,6,7,8	C = 05
Cumulative Internal Examination : A + B + C = 15	1,2,3,4,5,6,7,8	**15**
Semester End Examinations = D	1,2,3,4,5,6,7,8	**D = 35**
Total Marks: A + B + C + D = 50	1,2,3,4,5,6,7,8	**50**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: 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
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PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	Possesses necessary skill set to analyze and design various systems using analytical and software tools related to civil engineering
PSO 2	Possesses ability to plan, examine and analyze the various laboratory tests required for the professional demands
PSO 3	Possesses basic technical skills to pursue higher studies and professional practice in civil engineering domain.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**C.Rajamallu**			**Dr.V.Rama Krishna**
Signature				

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L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

CIVIL ENGINEERING DRAFTING TECHNIQUES LAB

LIST OF EXPERIMENTS

COURSE: I SEMESTER **A.Y: 2021-22**

S.I.No	Name of the Experiment
	Introduction to Engineering Graphics
	Basic Principles of Engineering Drafting
1 (a)	Basic tools of Drawing
(b)	Instruments used in conventional Drawing
2	Geometrical construction of Bisection of line, draw perpendicular of line, draw parallel lines, divide a line, divide a circle, bisect an angle, trisecting an angle, finding centre of an arc.
3	Constructing equilateral triangles, polygons inscribed in circle, draw tangents, length of arc, circle and lines in contact.
	Curves used in engineering practice
4 (a)	Ellipse
(b)	parabola
	Projections
5	First and Third angle Projections
6	Front view, Top view, Side view of some simple Objectives
7	Front view, Top view, Side view of some simple Objectives
8	Archicad Fundamentals
	Archicad Fundamentals
9	Introduction to ArchiCAD
10	Basic tools (Line, Circle, Poly line, Dimensional tools, text, Fill etc
11	Design Tools
12	Drawing some simple objects
	Repetition

Lab-In charge

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CIVIL ENGINEERING DRAFTING TECHNIQUES LAB

COURSE: I SEMESTER **A.Y: 2021-22**

Schedule: BATCH-A (Monday)

S.I.No	Name of the Experiment	Tentative Date of Completion	Actual Date of Completion
	Introduction to Engineering Graphics	14-12-2021	
	Basic Principles of Engineering Drafting		
1 (a)	Basic tools of Drawing	21-12-2021	
(b)	Instruments used in conventional Drawing	28-12-2021	
2	Geometrical construction of Bisection of line, draw perpendicular of line, draw parallel lines, divide a line, divide a circle, bisect an angle, trisecting an angle, finding centre of an arc.	04-01-2022	
3	Constructing equilateral triangles, polygons inscribed in circle, draw tangents, length of arc, circle and lines in contact.	11-01-2022	
	Curves used in engineering practice		
4 (a)	Ellipse	18-01-2022	
(b)	parabola	25-01-2022	
	Projections		
5	First and Third angle Projections		
6	Front view, Top view, Side view of some simple Objectives	01-02-2022	
7	Front view, Top view, Side view of some simple Objectives	15-02-2022	
8	Archicad Fundamentals	22-02-2022	
	Archicad Fundamentals		
9	Introduction to ArchiCAD	08-03-2022	
10	Basic tools (Line, Circle, Poly line, Dimensional tools, text, Fill etc	15-03-2022	
11	Design Tools	22-03-2022	
12	Drawing some simple objects	22-03-2022	
	Repetition	29-03-2022	

Lab-In charge

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CIVIL ENGINEERING DRAFTING TECHNIQUES LAB

COURSE :I SEMESTER **A.Y: 2021-22**

Schedule: BATCH-B (Thursday)

S.I.No	Name of the Experiment	Tentative Date of Completion	Actual Date of Completion
	Introduction to Engineering Graphics	15-12-2022	
	Basic Principles of Engineering Drafting		
1 (a)	Basic tools of Drawing	22-12-2022	
(b)	Instruments used in conventional Drawing	29-12-2022	
2	Geometrical construction of Bisection of line, draw perpendicular of line, draw parallel lines, divide a line, divide a circle, bisect an angle, trisecting an angle, finding centre of an arc.	05-01-2022	
3	Constructing equilateral triangles, polygons inscribed in circle, draw tangents, length of arc, circle and lines in contact.	12-01-2022	
	Curves used in engineering practice		
4 (a)	Ellipse	19-01-2022	
(b)	parabola	02-02-2022	
	Projections		
5	First and Third angle Projections	09-02-2022	
6	Front view, Top view, Side view of some simple Objectives	16-02-2022	
7	Front view, Top view, Side view of some simple Objectives	16-02-2022	
8	Archicad Fundamentals	23-02-2022	
	Archicad Fundamentals		
9	Introduction to ArchiCAD	02-03-2022	
10	Basic tools (Line, Circle, Poly line, Dimensional tools, text, Fill etc	09-03-2022	
11	Design Tools	16-03-2022	
12	Drawing some simple objects	23-03-2022	
	Repetition	30-03-2022	

Lab-In charge

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CIVIL ENGINEERING DRAFTING TECHINIQUES LAB

COURSE: I SEMESTER **A.Y: 2021-22**

LAB TIMETABLE

Day	FN	AN
Monday		
Tuesday	**I Semester Batch- B**	
Wednesday	**I Semester Batch- A**	
Thursday		
Friday		
Saturday		

Batch – A:21761A0101 to 20761A0123

Batch – B:21761A0124 to 20761A0145

Lab-In charge

PART-D

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**M.Satyanarayana**			**Dr.V.Rama Krishna**
Signature				