



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 COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. K. SRIDEVI

Course Name & Code : PC-II, 20FE02

L-T-P Structure : 2-0-0

Credits: 02

Program/Sem/Sec : CSE-A -II SEM

A.Y. : 2020-21

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

C01	Produce a coherent paragraph interpreting a figure/graph/chart/table.	L2
C02	Comprehend the given texts thoroughly by guessing the meanings of the words Contextually.	L2
C03	Use language appropriately for describing/comparing/contrasting/giving directions & suggestions.	L1
C04	Write formal/informal dialogues with an understanding of verbal/non-verbal features of communication. Guess meanings of the words from the context.	L2
C05	Write well structured essays; Reports &Résumé.	L3

UNIT-I

Fabric of Change-'H.G. Wells and the Uncertainties of Progress-Peter J. Bowler'; Reading: Studying the use of Graphic elements in texts; Grammar & Vocabulary: Quantifying Expressions; Adjectives and adverbs; Comparing and Contrasting; Degrees of Comparison; Writing: Information Transfer.

UNIT-II

Tools for Life - 'Leaves from the Mental Portfolio of a Eurasian - Sui Sin Far';

Reading: Global Comprehension; Detailed Comprehension; Grammar & Vocabulary: Active & Passive Voice; Idioms & Phrases; Writing: Structured Essays using suitable claims and evidences.

UNIT-III

'Homi Jahangir Bhabha'; Grammar & Vocabulary: Words often confused; Common Errors; Writing: Incident & Investigation Reports.

UNIT-IV

'Jagadish Chandra Bose'; Grammar & Vocabulary: Use of antonyms; Correction of Sentences; Writing: Dialogue Writing.

UNIT-V

'Prafulla Chandra Ray'; Grammar & Vocabulary: Analogy; Sentence Completion; Writing: Writing a Résumé

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		1		1			3	3		2			
CO2		1		1		1			3	3		2			
CO3		1		1		1			3	3		2			
CO4		1		1		1			3	3		2			
CO5		1		1		1			3	3		2			
1 - Low			2 -Medium					3 - High							

TEXTBOOKS:

- T1** Prabhavati. Y & etal , "English All Round –Communication Skills for Undergraduate Learners" ,Orient Black Swan, Hyderabad, 2019
- T2** "The Great Indian Scientists" published by Cengage Learning India Pvt. Ltd., Delhi, 2017

REFERENCE BOOKS:

- R1** Swan, M., "Practical English Usage", Oxford University Press, 2016.
- R2** Kumar, Sand Latha, P, "Communication Skills", Oxford University Press, 2018.
- R3** Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, NewDelhi, 2008.
- R4** Baradwaj Kumkum, "Professional Communication",I. K. International PublishingHousePvt.Lt.,NewDelhi,2008.
- R5** Wood, F. T., "Remedial English Grammar" , Macmillan, 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

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 syllabus	01	10-05-2021		TLM2	
2.	Fabric of Change -‘H.G. Wells and the Uncertainties of Progress– Peter J. Bowler’	01	17-05-2021		TLM2	
3.	Reading: Studying the use of Graphic elements in texts;	01	21-05-2021		TLM2	
4.	Quantifying Expressions; Comparing and Contrasting	01	24-05-2021		TLM2	
5.	Adjectives and adverbs	01	28-05-2021		TLM2	
6.	Degrees of Comparison	01	31-05-2021		TLM2	
7.	Writing: Information Transfer.	01	04-06-2021		TLM2 TLM6	
No. of classes required to complete UNIT-I: 07				No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	Tools for Life - ‘Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far’;	01	07-06-2021		TLM2	
9.	Reading: Global Comprehension & Detailed Comprehension	01	11-06-2021		TLM2	
10.	Active & Passive Voice	01	14-06-2021		TLM2	
11.	Idioms & Phrases	01	18-06-2021		TLM2	
12.	Essay Writing - Structured Essays using suitable claims and evidences	01	21-06-2021		TLM2 TLM6	
No. of classes required to complete UNIT-II: 05				No. of classes taken:		

UNIT-III:

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.	‘Homi Jahangir Bhabha’	02	25-06-2021		TLM2 TLM6	
14.	Words often confused	01	05-07-2021		TLM2	
15.	Common Errors	01	09-07-2021		TLM2	
16.	Report Writing – Types & Formats	01	12-07-2021		TLM2	
17.	Incident and Investigation Reports	01	16-07-2021		TLM2 TLM6	
No. of classes required to complete UNIT-III: 05				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Jagadish Chandra Bose	01	19-07-2021		TLM2 TLM2	
19.	Use of antonyms	01	23-07-2021		TLM2	
20.	Correction of Sentences	01	26-07-2021		TLM2	

21.	Formal and Informal dialogues	01	30-07-2021		TLM2	
22.	Dialogue Writing.	01	02-08-2021		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 05				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
23.	Prafulla Chandra Ray	01	06-08-2021		TLM2	
24.	Analogy	01	09-08-2021		TLM2	
25.	Sentence Completion	01	13-08-2021		TLM2	
26.	Resume - Formats	01	16-08-2021		TLM2	
27.	Writing a Résumé	01	20-08-2021		TLM2 TLM6	
No. of classes required to complete UNIT-V: 05				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 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	K. Sridevi	Dr. B. Samrajya Lakshmi	Dr. B. Samrajya Lakshmi	Dr. A. Ramireddy
Signature				



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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: D. Vijay Kumar

Course Name & Code : LATT 20FE04

L-T-P Structure : 2-1-0

Program/Sem/Sec : CSE/II/A

Credits: 3

A.Y.:2020-21

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

CO1	Investigate the consistency of equations and solve them.
CO2	Determine the Eigen Values, Inverse and Powers of a matrix using Cayley – Hamilton Theorem
CO3	Use the concepts of Laplace Transforms to various forms of functions
CO4	Solve Ordinary Differential Equations by using Laplace Transforms
CO5	Apply Z-Transforms to solve Difference Equations

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.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: System of Linear 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
1.	Introduction Course and CO's	1	10-5-21		TLM2	
2.	Matrices - Rank of a Matrix	1	12-5-21		TLM2	
3.	Echelon Form	1	13-5-21		TLM2	
4.	Normal Form	1	15-5-21		TLM2	
5.	PAQ Form	1	17-5-21		TLM2	
6.	System of Non Homogeneous Equations	2	19-5-21 20-5-21		TLM2	
7.	System of Non Homogeneous Equations	2	22-5-21 24-5-21		TLM2	
8.	Tutorial - 1	1	26-5-21		TLM3	
No. of classes required to complete UNIT-I: 10				No. of classes taken:		

UNIT-II: Eigen Values and Eigen Vectors

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Introduction to Unit -II and Definitions	1	27-5-21		TLM2	
10.	Eigen Value Problems	2	29-5-21 31-6-21		TLM2	
11.	Properties of Eigen Values	2	2-6-21 3-6-21		TLM2	
12.	Cayley - Hamilton Theorem	2	5-6-21 7-6-21		TLM2	
13.	Inverse and Powers of Matrix by using Cayley- Hamilton Theorem	2	9-6-21 10-6-21		TLM2	
14.	Tutorial- 2	1	12-6-21		TLM3	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III: Laplace Transforms

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 Subject, course outcomes	1	14-6-21		TLM2	
16.	Introduction to Laplace Transforms	1	16-6-21		TLM2	
17.	Transforms of Elementary functions	1	17-6-21		TLM2	
18.	Linear Property	1	19-6-21		TLM2	
19.	Shifting Property	1	21-6-21		TLM2	
20.	Change of Scale Property	1	23-6-21		TLM2	
21.	Multiplication by 't'	1	24-6-21		TLM2	
22.	Division by 't'	1	5-7-21		TLM2	
23.	Transforms of derivatives and integrals	1	7-7-21		TLM2	
24.	Unit Step Function and Dirac's Delta Function	1	8-7-21		TLM2	
25.	Tutorial - 3	1	10-7-21		TLM3	
No. of classes required to complete UNIT-III: 11				No. of classes taken:		

UNIT-IV: Inverse Laplace Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Inverse Laplace Transforms	1	12-7-21		TLM2	
27.	Inverse Laplace Transforms - properties	2	14-7-21 15-7-21		TLM2	
28.	Inverse Laplace Transforms – partial fractions	2	17-7-21 19-7-21		TLM2	
29.	Inverse Laplace Transforms – Convolution Theorem	2	21-7-21 22-7-21		TLM2	
30.	Application of Laplace Transforms to solve Ordinary Differential Equations	3	24-7-21 26-7-21 28-7-21		TLM2	
31.	Tutorial – 4	1	29-7-21		TLM3	
No. of classes required to complete UNIT-IV: 11				No. of classes taken:		

UNIT-V: Z - Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Introduction to Z – Transforms	1	31-8-21		TLM2	
33.	Linear Property	1	2-8-21		TLM2	
34.	Damping Rule	1	4-8-21		TLM2	
35.	Shifting Rule	1	5-8-21		TLM2	
36.	Initial and Final Value Theorems	1	7-8-21		TLM2	
37.	Inverse Z – Transforms	1	9-8-21		TLM2	
38.	Inverse Transforms by partial fractions	1	11-8-21		TLM2	
39.	Convolution Theorem	1	12-8-21 14-8-21		TLM2	
40.	Applications to Difference Equations	2	18-8-21 19-8-21		TLM2	
41.	Tutorial – 5	1	21-8-21		TLM3	
No. of classes required to complete UNIT-V: 12				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

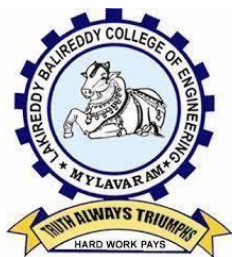
PROGRAMME OUTCOMES (POs):

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 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	
PSO 2	
PSO 3	

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Y.P.C.S. Anil Kumar	Dr. K. Jhansi Rani	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: Dr. V.Parvathi

Course Name & Code : Engineering Chemistry&20FE06

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

Program/Sem/Sec : B.Tech/IIsem/CSE-A

Credits: 03

A.Y. : 2020-21

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions. It helps to strengthen the basic concepts of electrochemistry, corrosion, nanotechnology, polymers, liquid crystals and analytical techniques

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

CO1	Apply Nernst Equation for calculating electrode cell potentials and compare batteries for different applications.
CO2	Apply principles of corrosion for design and effective maintenance of various equipment.
CO3	Analyse the suitability of advanced materials like nano materials in electronics and medici
CO4	Identify the importance of liquid crystals, polymers in advanced technologies.
CO5	Apply the principles of analytical techniques in chemical analysis.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1		2	2					2
CO2	3	2	2	1		2	1					2
CO3	3	2	2	1		1	1					2
CO4	3	2	2	1		1	1					2
CO5	3	2	1	1		1	1					2

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: ELECTRO CHEMISTRY & 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 to Course and COs	1	10-05-2021		TLM1	
2.	Introduction to Unit-I	1	11-05-2021		TLM1	
3.	Applications of Electro chemical Series,	1	12-05-2021		TLM1	
4.	Calculation of EMF of Cell,	1	15-05-2021		TLM1	
5.	Practice exercises on applications of Electro chemical series,	1	17-05-2021		TLM1	
6.	Glass Electrode	1	18-05-2021		TLM1	
7.	Calomel Electrode, Nernst equation derivation	1	19-05-2021		TLM1	
8.	Applications of Nernst Equation	1	22-05-2021		TLM1	
9.	Lead-acid Battery	1	24-05-2021		TLM1	
10.	Lithium-ion Battery	1	25-05-2021		TLM1	
11.	H ₂ – O ₂ Fuel cell, Mg-Cureserve battery.	1	26-05-2021		TLM1	
12.	Revision of unit 1	1	29-05-2021		TLM1	
13.	Assignment		31-05-2021		TLM1	
No. of classes required to complete UNIT-I: 13				No. of classes taken:		

UNIT-II: SCIENCE 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.	Definition, Examples, dry corrosion	1	01-06-2021		TLM1	
2.	corrosion by other gases and liquid metal corrosion dry corrosion, pilling bed worth rule.	1	02-06-2021		TLM1	
3.	Conditions to occur wet corrosion. Mechanism-oxygen absorption, hydrogen evolution, types of wet corrosion	1	05-06-2021		TLM1	
4.	Galvanic Corrosion, passivity and Galvanic series.	1	07-06-2021		TLM1	
5.	Concentration Cell Corrosion	1	08-06-2021		TLM1	
6.	Factors influencing corrosion Nature of metal, Nature of environment	1	09-06-2021		TLM1	
7.	Cathodic Protection	1	12-06-2021		TLM1	
8.	Electroplating, metal cladding.	1	14-06-2021		TLM1	
9.	Assignment	1	15-06-2021			
No. of classes required to complete UNIT-II: 09				No. of classes taken:		

UNIT-III: CHEMISTRY 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.	Introduction, types of nano-materials,	1	16-06-2021		TLM1	
2.	Gas-Phase Synthesis of nanomaterials, Applications.	1	19-06-2021			
3.	Materials in Electronic devices	1	21-06-2021		TLM1	
4.	Contd.. Materials in Electronic devices	1	22-06-2021		TLM1	
5.	Discussion on MID-I marks evaluation	1	23-06-2021			
6.	Characteristics of Molecular motors and machines	1	26-06-2021		TLM1	
7.	Rotaxanes and Catenanes as artificial molecular machines	1	05-07-2021		TLM1	

8.	Contd..rotaxanes and Catenanes as artificial molecular machines	1	06-07-2021		TLM1	
9.	Automated light powered molecular motor	1	07-07-2021		TLM1	
10.	Assignment	1	10-07-2021		TLM1	
No. of classes required to complete UNIT-III: 10				No. of classes taken:		

UNIT-IV: LIQUID CRYSTALS & POLYMERS

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.	Classification of liquid crystals	1	12-07-2021		TLM1	
2.	Applications of liquid crystals.	1	13-07-2021		TLM1	
3.	Introduction and types of polymrersisations,	1	14-07-2021		TLM1	
4.	Plastics	1	17-07-2021		TLM1	
5.	Rubbers	1	19-07-2021		TLM1	
6.	Conducting polymers.	1	20-07-2021		TLM1	
7.	Bio-degradable polymers	1	21-07-2021		TLM1	
8.	Revision	1	24-07-2021			
9.	Assignment	1	26-07-2021		TLM1	
No. of classes required to complete UNIT-IV: 9				No. of classes taken:		

UNIT-V: ANALYTICAL TECHNIQUES

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 analysis	1	27-07-2021		TLM1	
2.	Principle of conductometric titrations, strong acid vs strong base titration	1	28-07-2021		TLM1	
3.	Strong acid vs weak base titrations.	1	31-07-2021		TLM1	
4.	Strong base vs weak acid, weak acid vs weak base titrations.	1	02-08-2021		TLM1	
5.	Principle of potentiometry Acid-base titration.	1	03-08-2021		TLM1	
6.	Determination of iron using thiocynate a reagent	1	04-08-2021		TLM1	

7.	Colorimetry, Principle determination of iron using thiocyanate a reagent	1	07-08-2021		TLM1	
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8.	Revision	1	09-08-2021			
9.	Assignment	1	10-08-2021			
10.	Old question papers discussion	1	11-08-2021			
No. of classes required to complete UNIT-V: 10				No. of classes taken:		

TOPICS BEYOND THE SYLLABUS

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.	Batteries and modern technology	1	14-08-2021		TLM1	
2.	Applications of electroplating with reference to PCBs	1	16-08-2021		TLM1	
3.	Applications of nano-materials in diverse fields	1	17-08-2021		TLM1	
4.	Applications of polymers in modern technology and medicine	1	18-08-2021		TLM1	
5.	Significance of spectroscopy in determination of structure of compounds	1	21-08-2021		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	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. V.Parvathi	Dr. V.Parvathi	Dr. V.Parvathi	Dr. A.Rami Reddy
Signature				



AKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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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 FRESHMAN ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. V.Parvathi

Course Name & Code : Engineering Chemistry Lab&20FE53

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

Program/Sem/Sec : B.Tech/Isem/CSE-A

Credits: 1.5

A.Y. : 2020-21

Pre requisites: Nil

Course Educational Objective: This course enables the students to analyse water sample for alkalinity. perform and distinguish different types of volumetric titrations. get hands-on experience with preparation of polymers. use analytical techniques like conductometry, potentiometry and colorimetry.

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

CO1: Assess alkalinity of water based on the procedure 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

Part-B 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
1.	Introduction to Engineering chemistry lab	3	14-05-2021		TLM1	CO4	
2.	Determination of amount of HCl using standard Na ₂ CO ₃ solution	3	21-05-2021		TLM4	CO2,CO4	
3.	Determination of alkalinity of water sample.	3	28-05-2021		TLM4	CO1,CO4	
4.	Estimation of Mg+2/Zn+2/Ca+2 in given solution by using standard EDTA solution.	3	04-06-2021		TLM4	CO2, CO4	
5.	Preparation of nylon fibres.	3	11-06-2021		TLM4	CO3	
6.	Preparation of Bakelite	3	18-06-2021		TLM4	CO3	
7.	Estimation of Mohr's salt by using potassium permanganate.	3	25-06-2021		TLM4	CO2,CO4	
8.	Estimation of ferrous ion by using potassium dichromate.	3	09-07-2021		TLM4	CO2,CO4	
9.	Determination of pH of the given sample solution using pH meter	3	16-07-2021		TLM4	CO4	
10.	Estimation of amount of HCl conductometrically using standard NaOH solution.	3	23-07-2021		TLM4	CO2,CO4	
11.	. Estimation of amount of HCl conductometrically using NH ₄ OH solution.	3	30-07-2021		TLM4	CO2,CO4	
12.	Estimation of amount of HCl potentiometrically using NaOH solution.	3	06-08-2021		TLM4	CO2, CO4	

13.	Additional experiment	3	13-08-2021		TLM4	CO2, CO4	
14.	Internal lab exam		20-08-2021				
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 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.
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.V.Parvathi	Dr.V.Parvathi	Dr.V.Parvathi	Dr.A.Rami Reddy
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : T N V S PRAVEEN

Course Name & Code : Python Programming (20CS05)

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

Credits : 3

Program/Sem/Sec : B.Tech., CSE., II-Sem., A

A.Y : 2020-21

PRE-REQUISITE: C Programming

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to provide basic knowledge of python. python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language for Problem solving and programming capability.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Identify basic building blocks of python to solve mathematical problems. (Understand L2)
CO 2	Apply the in-built data structures like list, tuple, set and dictionary for solving problems. (Apply - L3)
CO 3	Use exception-handling mechanism to catch run-time errors (Apply - L3)
CO 4	Demonstrate compelling concepts about string manipulation, regular expressions, and file handling. (Understand - L2)
CO 5	Demonstrate object-oriented programming principles of python. (Understand - L2)

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	-	-
CO2	-	3	2	-	1	-	-	-	-	-	-	-	3	-	-
CO3	-	3	2	-	2	-	-	-	-	-	-	-	3	-	-
CO4	-	3	2	-	2	-	-	-	-	-	-	-	3	-	-
CO5	-	3	2	-	2	-	-	-	-	-	-	-	3	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

TEXT BOOKS:

T1 Reema Thareja, "Python Programming Using Problem Solving Approach", Oxford Publications

T2 Python for Everybody: Exploring Data In Python 3 by Dr. Charles Russell Severance, Sue Blumenberg

REFERENCE BOOKS:

- R1** Gowrishankar S and Veena A, "Introduction to Python Programming", CRC Press, Taylor, and Francis Group – A CHAPMAN & HALLBOOK
- R2** R. Nageswara Rao, "Core python programming", Dreamtech, 2017.
- R3** Y. Daniel Liang, "Revel for Introduction to Python Programming and Data Structures", Pearson Publications.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section C

UNIT-I : Introduction to Python , Operators & Control Structures

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
28.	Introduction to Programming, History of Python	1	11.05.2021		TLM2/ TLM4	CO1	T1 / T2	
29.	Usage of Python Interpreter, Python Shell.	1	12.05.2021		TLM2/ TLM4	CO1	T1 / T2	
30.	Indentation, Python Built-in types , Variables	1	13.05.2021		TLM2/ TLM4	CO1	T1 / T2	
31.	Input-Output Statements	1	14.05.2021		TLM2/ TLM4	CO1	T1 / T2	
32.	Identifiers, keywords, Literals, Simple programs	1	18.05.2021		TLM2/ TLM4	CO1	T1 / T2	
33.	Arithmetic , Relational, Logical Operators, Assignment Operators	1	19.05.2021		TLM2/ TLM4	CO1	T1 / T2	
34.	Bitwise Operators, Python Membership Operator, Python Identity Operator	1	20.05.2021		TLM2/ TLM4	CO1	T1 / T2	
35.	Operator Precedence , Programming Examples	1	21.05.2021		TLM2/ TLM4	CO1	T1 / T2	
36.	Conditonal Statements – if, if-else, Nested If-else	1	25.05.2021		TLM2/ TLM4	CO1	T1 / T2	
37.	Jumping Statements – continue, break, pass , Python Loops – While loop	1	26.05.2021		TLM2/ TLM4	CO1	T1 / T2	
38.	Python Loops – for loop , Nested Loops with Programs	1	27.05.2021		TLM2/ TLM4	CO1	T1 / T2	
39.	Mathematical functions & constants, Random Number functions	1	28.05.2021		TLM2/ TLM4	CO1	T1 / T2	
40.	Tutorial - 1	1	01.06.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-I		13			No. of classes taken:			

UNIT-II: Python Lists , Tuples , Sets , Dictionaries

S.No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	Learning Outcome	Text Book	HOD Sign
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		Required	Completion	Completion	Methods	COs	followed	Weekly
14.	Python List - concept , Creating and Accessing Elements	1	02.06.2021		TLM2 / TLM4	CO2	T1 / T2	
15.	Updating Lists & Deleting Lists , Basic List operations	1	03.06.2021		TLM2 / TLM4	CO2	T1 / T2	
16.	Reverse, Indexing , Slicing , Matrices	1	04.06.2021		TLM2 / TLM4	CO2	T1 / T2	
17.	Built-in List Functions	1	08.06.2021		TLM2 / TLM4	CO2	T1 / T2	
18.	Python Tuples – Introduction , Creating and Deleting	1	09.06.2021		TLM2 / TLM4	CO2	T1 / T2	
19.	Accessing Values in a Tuple , Updating tuples , Delete tuple elements	1	10.06.2021		TLM2 / TLM4	CO2	T1 / T2	
20.	Basic tuple operations , Indexing , Slicing and Matrices, Built-in tuple functions	1	11.06.2021		TLM2 / TLM4	CO2	T1 / T2	
21.	Sets-concepts, operations	1	15.06.2021		TLM2 / TLM4	CO2	T1 / T2	
22.	Dictionaries – Introduction , Accessing , Working	1	16.06.2021		TLM2 / TLM4	CO2	T1 / T2	
23.	Dictionary Properties & Functions	1	17.06.2021		TLM2 / TLM4	CO2	C	
24.	Tutorial – II / Quiz - II	1	18.06.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-II		11			No. of classes taken:			

UNIT-III: Python Functions, Modular Design & Exception Handling

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Defining and calling a function - Examples	1	22.06.2021		TLM2 / TLM4	CO3	T1 / T2	
26.	Types of functions, Function arguments , Anonymous functions	1	23.06.2021		TLM2 / TLM4	CO3	T1 / T2	
27.	Global and Local variables, Recursion with programs	1	24.06.2021		TLM2 / TLM4	CO3	T1 / T2	
28.	Introduction to Modules – Creating , Import statement , from	1	25.06.2021		TLM2 / TLM4	CO3	T1 / T2	
29.	Date and Time Module	1	06.07.2021		TLM2 / TLM4	CO3	T1 / T2	
30.	Programs on Modules	1	07.07.2021		TLM2 / TLM4	CO3	T1 / T2	

31.	Exception Handling – Exceptions, Except clause , try Finally clause		08.07.2021		TLM2 / TLM4	CO3	T1 / T2	
32.	User Defined Exceptions	1	09.07.2021		TLM2 / TLM4	CO3	T1 / T2	
33.	Tutorial – III / Quiz - III	1	13.07.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-III		09			No. of classes taken:			

UNIT-IV: Python Strings , Regular Expression Operations & Files

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
34.	Python Strings - concept , Slicing, Escape Characters , String Special Operations	1	14.07.2021		TLM2 / TLM4	CO4	T1 / T2	
35.	String formatting operator , Triple quotes , raw string, Unicode strings	1	15.07.2021		TLM2 / TLM4	CO4	T1 / T2	
36.	Built-in string methods	1	16.07.2021		TLM2 / TLM4	CO4	T1 / T2	
37.	Programs on Strings	1	20.07.2021		TLM2 / TLM4		T1 / T2	
38.	Regular Expressions – Using Special Characters, Regular Expression Methods	1	21.07.2021		TLM2 / TLM4	CO4	T1 / T2	
39.	Named Groups in Python RegEx, Glob Module	1	27.07.2021		TLM2 / TLM4	CO4	T1 / T2	
40.	Programs on Regular Expressions	1	30.07.2021		TLM2 / TLM4	CO4	T1 / T2	
41.	Files – Creating files, Operation on files	1	03.08.2021		TLM2 / TLM4	CO4	T1 / T2	
42.	Tutorial – IV / Quiz - IV	1	04.08.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-IV		09			No. of classes taken:			

UNIT-V: Object Oriented Programming OOP in Python

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
43.	OOPs Concepts –	1	06.08.2021		TLM2 /	CO5	T1 / T2	

	Introduction , Classes				TLM4			
44.	Programming Examples	1	10.08.2021		TLM2 / TLM4	C05	T1 / T2	
45.	Self-Variable, Methods , Constructor Method	1	11.08.2021		TLM2 / TLM4	C05	T1 / T2	
46.	Inheritance	1	13.08.2021		TLM2 / TLM4	C05	T1 / T2	
47.	Example Programs	1	17.08.2021		TLM2 / TLM4	C05	T1 / T2	
48.	Overriding Methods , Data Hiding	1	18.08.2021		TLM2 / TLM4	C05	T1 / T2	
49.	Tutorial – V / Quiz - V	1	19.08.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-V		09			No. of classes taken:			

Content Beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Libraries	1	21.08.2021		TLM2/ TLM5		T2/R3	
2.	Overview of NumPy Library							

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 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I , Unit-II , Unit-III)	A1=5
Assignment-II (Unit-III , Unit-IV , Unit-V)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
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	Programming Paradigms: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 2	Data Engineering: To inculcate an ability to analyze, design and implement database applications.
PSO 3	Software Engineering: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.

Course Instructor
T n v s Praveen

Course Coordinator
K Sundeep Saradhi

Module Coordinator
Dr.M.Srinivasa Rao

HOD
Dr.D.Veeraiah



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : T N V S PRAVEEN

Course Name & Code : Python Programming Lab (20CS54)

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

Credits : 1.5

Program/Sem/Sec : B.Tech., CSE., II-Sem., A

A.Y : 2020-21

PRE-REQUISITE : C Programming

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The Objective of Python course is to lead the students from the basics of writing and running Python scripts in problem solving and to design and implement the modules and understands the working of classes and objects in python.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Apply building blocks of Python in solving computational problems. (Apply - L3)
CO 2	Implement in-built data structures available in Python to solve computational problems. (Apply - L3)
CO 3	Implement modular programming, string manipulations and Object-oriented programming in python. (Apply - L3)
CO 4	Improve individual / teamwork skills, communication & report writing skills with ethical values

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	-	-	-	-	-	-	-	3	-	-
CO2	-	3	2	3	2	-	-	-	-	-	-	-	3	-	-
CO3	-	3	2	3	2	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

PART-B

Introduction: Language basics and example problems (Two weeks)

- Implement Python Script for checking the given year is leap year or not.
- Implement Python Script for finding biggest number among 3 numbers.
- Implement Python Script for displaying reversal of a number.
- Implement Python Script to check given number is Armstrong or not.
- Implement Python Script to print sum of N natural numbers.
- Implement Python Script to check given number is palindrome or not.
- Implement Python script to print factorial of a number.
- Implement Python Script to print all prime numbers within the given range.
- Implement Python Script to calculate the series: $S=1+x+x^2+x^3+\dots+x^n$
- Implement Python Script to print the following pattern:

```
      *
     * *
    * * *
```

Modue 1: Exercise Programs on Lists.

- Write a Python script to display elements of list in reverse order.
- Write a Python script to find the minimum and maximum elements without using built-in operations in the lists.
- Write a Python script to remove duplicates from a list.
- Write a Python script to append a list to the second list.
- Write a Python script to count the number of strings in a list where the string length is 2 or more.

Module 2: Exercise Programs on Tuples.

- Write a Python script to create a tuple with different data types.
- Write a Python script to find the repeated items of a tuple.
- Write a Python script to replace last value of tuples in a list.

Sample list: [(10, 20, 40), (40, 50, 60), (70, 80, 90)]

Expected Output: [(10, 20, 100), (40, 50, 100), (70, 80, 100)]

- Write a Python script to sort a tuple by its float element.

Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')]

Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]

Module 3: Exercise Programs on Sets.

- Write a Python script to add member(s) in a set.
- Write a Python script to perform Union, Intersection, difference and symmetric difference of given two sets.
- Write Python script to test whether every element in S is in T and every element in T is in S.

Module 4: Exercise Programs on Dictionaries

- a) Write a Python script to sort (ascending and descending) a dictionary by value.
- b) Write a Python script to check whether a given key already exists or not in a dictionary.
- c) Write a Python script to concatenate following dictionaries to create a new one.
Sample Dictionary : dic1={1:10, 2:20} dic2={3:30, 4:40} dic3={5:50,6:60}
Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}
- d) Write a Python script to print a dictionary where the keys are numbers between 1 and 15 (both included) and the values are square of keys.
- e) Write a Python program to map two lists into a dictionary.

Module 5: Exercise Programs on functions and recursion.

- a) Define a function max_of_three() that takes three numbers as arguments and returns the largest of them.
- b) Write a program which makes use of function to display all such numbers which are divisible by 7 but are not a multiple of 5, between given range X and Y.
- c) Define functions to find mean, median, mode for the given numbers in a list.
- d) Define a function which generates Fibonacci series up to n numbers.
- e) Implement a python script for factorial of number by using recursion.
- f) Implement a python script to find GCD of given two numbers using recursion.

Module 6: Exercise programs on Date and Time Modules.

- a) Write a Python script to get the current time in Python.
- b) Write a Python script to get current time in milliseconds in Python
- c) Write a Python script to print next 5 days starting from today.

Module 7. Exercise programs on Exception Handling.

- a) Write a Python script to handle simple errors by using exception handling mechanism.
- b) Write a Python script to handle multiple errors with one except statement.

Module 8: Exercise programs on Strings

- a) Implement Python Script to perform various operations on string using string libraries.
- b) Implement Python Script to check given string is palindrome or not.
- c) Implement python script to accept line of text and find the number of characters, number of vowels and number of blank spaces in it.
- d) Implement python script that takes a list of words and returns the length of the longest one.

Module 9: Exercise programs on Regular Expressions

- a) Write a Python script to check that a string contains only a certain set of characters (in this case a-z, A-Z and 0-9).
- b) Write a Python script to check whether password is valid or not.

Conditions for a valid password are:

Should have at least one number.

Should have at least one uppercase and one lowercase character.

Should have at least one special symbol.

Should be between 6 to 20 characters long.

Module 10: Exercise programs on Object Oriented Programming

- a) Write a Python script to create and access class variables and methods.
- b) Write a Python script to implement method overloading.
- c) Write a Python script to implement single inheritance.
- d) Write a Python script to implement method overriding.

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

S.No.	Programs to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
41.	Installation and Working on Interpreter	3	20.05.2021		TLM4	CO1,CO4	
42.	Language Basics and Example Programs	3	27.05.2021		TLM4	CO1,CO4	
43.	Language Basics and Example Programs	3	03.06.2021		TLM4	CO1,CO4	
44.	Module-1 Programs on Lists	3	10.06.2021		TLM4	CO2,CO4	
45.	Module-2 Programs on Tuples	3	17.06.2021		TLM4	CO2,CO4	
46.	Module-3 & 4 Programs on Sets Programs on Dictionaries	3	24.06.2021		TLM4	CO2,CO4	
47.	Module-5 Programs on Functions & Recursions	3	08.07.2021		TLM4	CO3,CO4	
48.	Module-6 Programs on Modules	3	15.07.2021		TLM4	CO3,CO4	
49.	Module-7 Programs on Exception Handling	3	22.07.2021		TLM4	CO3,CO4	
50.	Module-8 Programs on Strings	3	29.07.2021		TLM4	CO3,CO4	
51.	Module-9 Programs on Regular Expressions	3	05.08.2021		TLM4	CO3,CO4	
52.	Module-10 Programs on OOP	3	12.08.2021		TLM4	CO3,CO4	
53.	Internal Lab Exam	3	19.08.2021				

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

PROGRAMME OUTCOMES (POs):

P01	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
P02	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.
P03	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.
P04	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.
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P09	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
P010	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.
P011	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.
P012	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	Programming Paradigms: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 2	Data Engineering: To inculcate an ability to analyze, design and implement database applications.
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Course Instructor
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

Name of the Course Instructor : Dr. P. Bhagath

Course Name & Code : Data Structures– 20CS03
L-T-P STRUCTURE : 3-0-0
Program/ Sem/ Sec : B.Tech., II-SEM, CSE- A
Academic Year : 2021-22
Course credits : 3
Pre-Requisite : C Programming Language

Course Educational Objectives (CEOs):

The objective of the course is to provide preliminary knowledge on algorithms that handle operations of different data structures. It also involves building procedures and programs for searching and sorting methods.

COURSE OUTCOMES (CO)

At the end of the course, the student will be able to:

- CO1** Compare normal data type with abstract data type (ADT), explore the sections of ADT. Analyse example programs with data structures using analysing tools.
- CO2** Develop & Analyse the algorithms for stack and queue operations leading to applications.
- CO3** Analyse, implement and compare searching and sorting Techniques.
- CO4** Design & Analyse algorithms for operations on Binary Search Trees & AVL Trees data structures.
- CO5** Evaluate Graph traversal and minimum cost spanning tree algorithms and compare hashing methods on hash table data structure.

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

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	2	2										2	3	2
CO2	2	2	3										2	2	2
CO3	2	2	2										2	2	2
CO4	2	2	2										2	2	2
CO5	2	2	2										2	2	2

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight(Low), 2 - Moderate(Medium), 3 - Substantial (High).

Text Books

- T1** Mark Allen Weiss, Data Structures and Algorithm Analysis in C, Pearson Education, 2nd edition.
- T2** ReemaThareja, Data Structures using c, Oxford Publications.

Reference Books

- R1** Langson, Augenstein & Tenenbaum, "Data Structures using C and C++", 2nd Ed, PHI. 2. RobertL.Kruse, Leung and Tando
- R2** Data Structures and Program Design in C', 2ndedition, PHI

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT-I : Algorithm Analysis

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.	Mathematical Background, Model, Analysis and Run Time Calculations	2	12.05.2021/ 15.05.2021		TLM2	
2	Abstract Data Types, List using arrays and pointers	2	17.05.2021/ 18.05.2021		TLM2	
3	Singly Linked	3	19.05.2021/ 22.05.2021/ 24.05.2021		TLM2	
4	Doubly Linked	2	25.05.2021/ 26.05.2021/ 29.05.2021		TLM2	
5	Circular Linked Lists	1	31.05.2021		TLM2	
6	Polynomial ADT	1	01.06.2021		TLM2/TLM3	
No. of Classes Required to complete UNIT I: 12				No. of classes taken:		

UNIT-II: Stacks, Queues and Applications

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	The Stack: Definition, operations, implementation using arrays	1	02.06.2021		TLM2	
2	Linked list and Stack	1	05.06.2021		TLM2/TLM3	
3	Infix to postfix expression conversion	1	08.06.2021		TLM2	
4	Evaluation of Postfix expressions	1	09.06.2021		TLM2	
5	Balancing the symbols	1	12.06.2021		TLM2/TLM3	
6	Queue: definition, operations, implementation using arrays	1	14.06.2021		TLM2/TLM5	
7	Linked List & it's Applications	1	15.06.2021		TLM4	
8	Circular queue: Definition its operations, Implementation	1	16.06.2021		TLM4	
9	DE queue: Definition & It's	1	19.06.2021		TLM2/TLM5	

	types, Implementation					
No. of Classes Required to complete UNIT II: 9				No. of classes taken:		

UNIT-III: Searching and Sorting

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	Linear Search, Binary Search	1	21.06.2021		TLM2	
2.	Fibonacci Search	1	22.06.2021		TLM2	
3.	Bubble Sort, Insertion Sort	1	23.06.2021		TLM2	
4.	Merge Sort	2	26.06.2021/ 28.06.2021		TLM2	
5.	Quick Sort	2	29.06.2021/ 30.06.2021		TLM2	
6.	Heap Sort	2	03.07.2021/ 05.07.2021		TLM2	
No. of Classes Required to complete UNIT III: 6				No. of classes taken:		

UNIT-IV: Trees

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	Terminology, Definition, Types, and Representation	1	07.07.2021		TLM2	
2	Traversals	2	06.07.2021/ 07.07.2021		TLM2	
3	Expression Trees	1	10.07.2021		TLM2	
4	Binary Search Tree	2	12.07.2021/ 13.07.2021		TLM2/TLM5	
5	AVL Tree and rotations	2	14.07.2021/ 17.07.2021		TLM2	
No. of Classes Required to complete UNIT IV: 8				No. of classes taken:		

UNIT-V: Graphs and Hashing

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
7	Representation of graphs and Traversals	2	19.07.2021		TLM2	
8	Minimum Cost Spanning Tree algorithms	2	20.07.2021/ 21.07.2021		TLM2	

9	Fundamentals of Hashing	1	24.07.2021		TLM2	
1	Hashing Techniques	1	26.07.2021		TLM2/TLM3	
No. of Classes Required to complete UNIT V: 6				No. of classes taken:		

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

EVALUATION PROCESS:

Evaluation Task	Marks
Assignment –1	A1=5
Assignment –2	A2=5
Quiz-1	B1=10
I-Mid Examination	C1=20
Assignment –3	A3=5
Assignment –4	A4=5
Assignment --5	A5=5
Quiz-2	B2=10
II-Mid Examination	C2=20
Evaluation of Assignment Marks: $A=(A1+A2+A3+A4+A5)/5$	A=5
Evaluation of Quiz Marks: $B=75\% \text{ of Max}(B1,B2)+25\% \text{ of Min}(B1,B2)$	B=10
Evaluation of Mid Marks: $C=75\% \text{ of Max}(C1,C2)+25\% \text{ of Min}(C1,C2)$	C=20
Attendance	D=5
Cumulative Internal Examination : A+B+C+D	A+B+C+D=40
Semester End Examinations	E=60
Total Marks: A+B+C+D+E	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.
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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.
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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	Programming Paradigms: To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	Data Engineering: To inculcate an ability to analyze, design and implement data driven applications into the students.
PSO 3	Software Engineering: Develop an ability to implement various processes/ methodologies/ practices employed in design, validation, testing and maintenance of software products.



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

Part-A

PROGRAM	: B.Tech., II-Sem., CSE - A
ACADEMIC YEAR	: 2020-21
COURSE NAME & CODE	: Data Structures Lab- 17CI63
L-T-P STRUCTURE	: 0-0-2
COURSE CREDITS	: 1
COURSE INSTRUCTOR	: Dr.P. Bhagath

COURSE COORDINATOR : Dr.P. Bhagath

PRE-REQUISITES: C Language

COURSE EDUCATIONAL OBJECTIVES (CEOs): To make students familiar with writing algorithms to implement operations involved in different data structures like linked list & different types of trees and implement various searching and sorting techniques.

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

CO1: Implement & test the performance of data structures like linked list, stacks & queues.

CO2: Implement & test the performance of searching & sorting techniques.

CO3: Implement & test the performance of trees and graph traversal techniques.

CO4: Improve individual / team work skills, communication & report writing skills with ethical values.

COURSE ARTICULATION MATRIX(Correlation of Cos & POs, PSOs):

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO 7	PO 8	PO9	PO 10	PO 11	PO 12	PS 01	PS 02	PS 03
CO1	3	3		2						1			3	1	
CO2	3	3		2						1			3	1	
CO3	3	3		2						1			3	1	
CO4								2	2	2					

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
Practice session on Arrays, structures and pointers Practice session on Dynamic Memory allocation.	2	14-05-21		TLM4/TL M5	CO1	
Write a C program to implement	6	21-05-21, 28-05-21 04-06-21		TLM4/TL M5	CO1	

<p>various operations on List using arrays.</p> <p>Write a C program to implement various operations on Single linked List using pointers.</p>						
<p>Write an interactive C program to create a linear linked list of customer names and their telephone numbers. The program should be menu-driven and include features for adding a new customer, deleting an existing customer and for displaying the list of all customers.</p>	4	11-06-21, 18-06-21,		TLM4/TL M5	CO1	
<p>Write a C program to create a circular linked list so that the input order of data items is maintained. Add the following functions to carry out the following operations on circular single linked lists.</p> <p>a) Count the number of nodes. b) insert a node c) delete a node</p>	4	25-06-21, 02-07-21,		TLM4/TL M5	CO1	

Write a C program that will remove a specified node from a given doubly linked list and insert it at the end of the list on an existing list. Also write a function to display the contents of the list.	4	09-07-21, 16-07-21,		TLM4/TL M5	C01	
Write a C program to implement a stack using array & linked list in which Push, Pop and display can be performed.						
Write a program to convert infix expression to post fix expressions using array implementation of stack	4	23-07-21, 30-07-21		TLM4/TL M5	C01	
Write a program for evaluating post fix expressions using array implementation of stack						
Write a C program to implement a queue using arrays and linked list in which insertions, deletions and display can be performed.	2	06-08-21		TLM4/TL M5	C01	
Write a C program to implement	2	13-08-21		TLM4/TL M5	C02	

insertion sort, Selection sort, Merge Sort						
Sort a sequence of n integers using Quick sort technique and then search for a key in the sorted array using Binary search, linear search techniques. Write a C program to Heap sort.	2	20-08-21		TLM4/TL M5	C02	
. Write a C program to construct a binary tree and do inorder, preorder and post order traversals, printing the sequence of nodes visited in each case. Write a C program to implement BST operations- insert, search and delete.	2	27-08-21		TLM4/TL M5	C03	
Write a C program to implement the following graph Traversals a) DFS b) BFS	2	03-09-21		TLM4/TL M5	C03	
Lab Internal Examination	2	10-09-21		TLM4/TL M5		

Teaching Learning Methods

TLM1	Chalk and Talk	TLM4	Problem Solving	TLM7	Seminars or GD
TLM2	PPT	TLM5	Programming	TLM8	Lab Demo

TLM3	Tutorial	TLM6	Assignment or Quiz	TLM9	Case Study
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PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAM OUTCOMES

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 **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.

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):

1. Programming Paradigms:

To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.

2. Data Engineering:

To inculcate an ability to Analyze, Design and implement data driven applications into the students.

3. Software Engineering:

Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. P. Bhagath	Dr. P. Bhagath	Dr. M. Srinivas Rao	Dr. D Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor	: Dr. D. Veeraiah	
Course Name & Code	: CONSTITUTION OF INDIA (20MC01)	
L-T-P Structure	: 2-0-0	Credits : 0
Program/Sem/Sec	: B.Tech., CSE., II-Sem., A/Sec	A.Y: 2020-21

PRE-REQUISITE: Understand the Indian Constitution

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution
- To understand the structure of Executive, Legislature and Judiciary.
- To Understand Philosophy of fundamental rights and duties.
- To Understand the autonomous nature of constitution bodies like Supreme Court and High

Court Controller and Auditor General of India and Election Commission of India

- To Understand the Central and State relation, financial and administrative.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand history and philosophy of constitution with reference to preamble, Fundamental Rights and Duties.
CO 2	Understand the concept of Unitary and Federal Government along with the role of President, Prime Minister and Judicial System.
CO 3	Understand the structure of the state government, Secretariat, Governor and Chief Minister and their functions.
CO 4	Learn local administration viz. Panchayat, Block, Municipality and Corporation.
CO 5	Learn about Election Commission and the process and about SC,ST,OBC and women.

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	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-

Note: Enter Correlation Levels **1** or **2** or **3**. If there is no correlation, put '-'

1- Slight (Low), **2 –** Moderate (Medium), **3 -** Substantial (High).

TEXT BOOKS:

- T1** Dr.B.R Ambedkar ,The Constitution of India ,General Press First edition 2020., New Delhi
- T2** Dr.B.R Ambedkar ,The Constitution of India, Government of India

REFERENCE BOOKS:

- R1** Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt.Ltd., New Delhi.
- R2** Subash Kashyap, Indian Constitution, National Book Trust.
- R3** J.A. Siwach, Dynamics of Indian Government and Politics.
- R4** D.C. Gupta, Indian Government and Politics.
- R5** H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication).
- R6** J.C. Johari, Indian Government and Politics Hans.
- R7** J.Raj, Indian Government and Politics.
- R8** M.V. Pylee, Indian Constitution, Durga Das Basu, Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd., New Delhi.
- R9** Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right). Challenges to Civil Rights Guarantees in India, Oxford University Press 2012.

E RESOURCES

1. nptel.ac.in/courses/109104074/8.
2. nptel.ac.in/courses/109104045.
3. nptel.ac.in/courses/101104065.
4. www.hss.iitb.ac.in/en/lecture-details.
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indianconstitution.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section A

UNIT-I : Introduction to Indian Constitution

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction and Co-Po and Syllabus	1	12-05-2021		TLM2	CO1	T1 / T2	
2.	Constitution meaning and the term	1	13-05-2021		TLM2	CO1	T1 / T2	
3.	Sources and History of Indian Constitution	1	19-05-2021		TLM2	CO1	T1 / T2	
4.	Features-Citizenship, Preamble	1	20-05-2021		TLM2	CO1	T1 / T2	
5.	Fundamental Rights and Duties	1	26-05-2021		TLM2	CO1	T1 / T2	
6.	Directive Principles of State Policy	1	27-05-2021		TLM2	CO1	T1 / T2	
7.	Assignment -I	1	02-06-2021		TLM7	CO1	T1 / T2	
No. of classes required to complete UNIT-I		7			No. of classes taken:			

UNIT-II: Union Government and its Administration Structure of the Indian Union

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8	Union Government structure in India	1	03-06-2021		TLM2	CO2	T1 / T2	
9	Federalism Centre	1	09-06-2021		TLM2	CO2	T1 / T2	
10	State Relationships to the Union	1	10-06-2021		TLM2	CO2	T1 / T2	
11	President Role, Power and Position	1	16-06-2021		TLM2	CO2	T1 / T2	
12	Prime Minister (PM) and Council of Ministers ,cabinet and Central Secretariat Powers and duties	1	17-06-2021		TLM2	CO2	T1 / T2	
13	Lok Sabha,Rajya Sabha, Supreme Court and High Court Powers and Functions.	1	23-06-2021		TLM2	CO2	T1 / T2	

14	Assignment II	1	24-06-2021		TLM7	CO2	T1 / T2	
		7			No. of classes taken:			

UNIT-III: State Government and its administration Governor

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15	State Government and its Administration Governor and Role	1	30-06-2021		TLM2 / TLM4	CO3	T1 / T2	
16	Role of Chief Ministers and Council of Ministers	1	01-07-2021		TLM2 / TLM4	CO3	T1 / T2	
17	State Secretariat Functions	1	07-07-2021		TLM2 / TLM4	CO3	T1 / T2	
18	Organisation ,Structure and Functions of State Governments	1	08-07-2021		TLM2 / TLM4	CO3	T1 / T2	
19	Assignment –III	1	14-07-2021		TLM2 / TLM4	CO3	T1 / T2	
No. of classes required to complete UNIT-III		05			No. of classes taken:			

UNIT-IV: A Local Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20	A Local Administration	1	15-07-2021		TLM2 / TLM4	CO4	T1 / T2	
21	Role and importance of local administration	1	22-07-2021		TLM2 / TLM4	CO4	T1 / T2	
22	Municipalities –Mayor and Role of Elected Representative	1	28-07-2021		TLM2 / TLM4	CO4	T1 / T2	
23	Functions of Panchayati Raj Institution,Zilla Panchayats ,Elected Official and their roles	1	29-07-2021		TLM2 / TLM4	CO4	T1 / T2	
24	Village level-Role of Elected and Appointed officials./Assignment-IV	1	04-08-2021		TLM2/ TLM 7	CO4	T1 / T2	
No. of classes required to complete UNIT-IV		05			No. of classes taken:			

UNIT-V: Election Commission

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Election Commission: Role of Chief Election Commissioner and Election Commission	1	05-08-2021		TLM2 / TLM4	CO5	T1 / T2	
26.	State Election Commission	1	11-08-2021		TLM2 / TLM4	CO5	T1 / T2	
27.	Functions and Commissions for the Welfare of SC/ST/OBC and Women.	1	12-08-2021		TLM2 / TLM4	CO5	T1 / T2	
28	Assignment-V	1	18-08-2021		TLM7	CO5	T1 / T2	
No. of classes required to complete UNIT-V		04			No. of classes taken:			

Content Beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Consumer Rights	1	18.08.2021		TLM2/ TLM5		T2/R3	
2.	Industrial policies							

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
TLM 7	Assignment /Quiz		

PART-C

EVALUATION PROCESS (R20 Regulations):

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 teamwork: 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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr.D.Veeraiah	Dr.D.Veeraiah	Dr.D.Veeraiah	Dr.D.Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : BAJJURI USHA RANI
Course Name & Code : SHELL SCRIPTING LAB & 20CS55
L-T-P Structure : 0-0-2 Credits : 1
Program/Sem/Sec : B.Tech., CSE., II-Sem., Section- A A.Y : 2020-21
PRE-REQUISITES : Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to familiarize with the Unix/Linux command line and running simple commands and concept of environment variables and with the simple use of environment variables.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand the basic Unix/Linux commands.
CO 2	Learn importance of shell scripting.
CO 3	Apply shell programming to various files.
CO 4	Improve individual / teamwork skills, communication & report writing skills with ethical values.

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	-	-	-	-	-	-	-	2	3	-	-
CO2	3	2	3	1	-	-	-	-	-	-	-	2	3	-	-
CO3	3	2	3	1	-	-	-	-	-	-	-	2	3	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

REFERENCE BOOKS:

- R1** Learning the bash Shell, 3rd Edition by Cameron Newham, Publisher(s): O'Reilly Media, Inc., ISBN: 9780596009656
- R2** UNIX and Shell Programming by Behrouz A. Forouzan, Richard F. Gilberg Publisher: Thomson Press (India) Ltd, ISBN: 9788131503256, 9788131503256

PART-B**COURSE DELIVERY PLAN (LESSON PLAN): Section - B**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	Module – I: Basic Linux Command -Introduction to Operating systems, Features of Unix/Linux kernel and shell	2	18-05-2021		
2.	study of vi editor ,Unix/Linux file systems, Unix/Linux Commands (man, who, cat, cd, cp, ps, ls, mv, rm, mkdir, rmdir, echo, more, date)	2	25-05-2021		
3.	Unix/Linux Commands (time, kill, history, chmod, chown, finger, pwd, cal, logout, shutdown) 1.Use of Basic UNIX Shell Commands: ls, mkdir, rmdir, cd, cat, touch, file, wc, sort, cut, grep,dd, dfspace, du, ulimit	2	01-06-2021		
4.	Module–II: Introduction to Shell- Introduction to Shell, Shell responsibilities, running a shell script, Variables, passing arguments, Basic Operators	2	08-06-2021		
5.	Decision Making, Loops, Arrays, Arrays –Comparison, Shell functions.	2	15-06-2021		
6.	Shell Programming: Shell script exercises based on following: (i) Interactive shell scripts (ii) Positional parameters (iii) Arithmetic (iv) if-then-fi, if-then- else-fi, nested if-else (v) Logical operators (vi) else + if equals elif case structure (vii) while, until, for loops, use of break	2	22-06-2021		
7.	Module – III: Advanced Shell Special Variables, Bash trap command, File Testing, Input Parameter Parsing.	2	29-06-2021		
8.	Pipelines, Process Substitution, Regular Expressions, Special Commands: sed, awk, grep, sort.	2	06-07-2021		

9.	Commands related to inode, I/O redirection and piping, process control commands, mails.	2	13-07-2021		
10.	Write a shell script to create a file. Follow the instructions (i) Input a page profile to yourself, copy it into other existing file (ii) Start printing file at certain line (iii) Print all the difference between two file, copy the two files. (iv) Print lines matching certain word pattern	2	20-07-2021		
11.	Write shell script for- (i) Showing the count of users logged in, (ii) Printing Column list of files in your home directory (iii) Listing your job with below normal priority (IV) Continue running your job after logging out.	2	27-07-2021		
12.	Write a shell script to change data format. Show the time taken in execution of this script. Write a shell script to print files names in a directory showing date of creation & serial number of the file. Write a shell script to count lines, words, and characters in its input (do not use wc).	2	03-08-2021		
13.	Lab Internal Exam	2	10-08-2021		

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 teamwork: 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	Programming Paradigms: To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms. 2. Data Engineering: To inculcate an ability to Analyze, Design and implement data driven applications into the students. 3. Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.
PSO 2	Data Engineering: To inculcate an ability to Analyze, Design and implement data driven applications into the students.
PSO 3	Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mrs. B. Usha Rani	Mr.G Balu Narasimha Rao	Dr. D Jagan Mohan Reddy	Dr. D. Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. B. Sreenivasa Reddy

Course Name & Code : PC-II, 20FE02

L-T-P Structure : 2-0-0

Credits: 02

Program/Sem/Sec : CSE -B- II SEM

A.Y. : 2020-21

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

C01	Produce a coherent paragraph interpreting a figure/graph/chart/table.	L2
C02	Comprehend the given texts thoroughly by guessing the meanings of the words Contextually.	L2
C03	Use language appropriately for describing/comparing/contrasting/giving directions & suggestions.	L1
C04	Write formal/informal dialogues with an understanding of verbal/non-verbal features of communication. Guess meanings of the words from the context.	L2
C05	Write well structured essays; Reports &Résumé.	L3

UNIT-I

Fabric of Change-'H.G. Wells and the Uncertainties of Progress–Peter J. Bowler';

Reading: Studying the use of Graphic elements in texts; Grammar & Vocabulary:

Quantifying Expressions; Adjectives and adverbs; Comparing and Contrasting;

Degrees of Comparison; Writing: Information Transfer.

UNIT-II

Tools for Life - 'Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far';

Reading: Global Comprehension; Detailed Comprehension; Grammar &

Vocabulary: Active & Passive Voice; Idioms & Phrases; Writing: Structured Essays

using suitable claims and evidences.

UNIT-III

'Homi Jahangir Bhabha'; Grammar & Vocabulary: Words often confused; Common Errors;

Writing: Incident & Investigation Reports.

UNIT-IV

'Jagadish Chandra Bose'; Grammar & Vocabulary: Use of antonyms; Correction of Sentences; Writing: Dialogue Writing.

UNIT-V

'Prafulla Chandra Ray'; Grammar & Vocabulary: Analogy; Sentence Completion; Writing: Writing a Résumé

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01		1		1		1			3	3		2			
C02		1		1		1			3	3		2			
C03		1		1		1			3	3		2			
C04		1		1		1			3	3		2			
C05		1		1		1			3	3		2			
			1 - Low			2 -Medium			3 - High						

TEXTBOOKS:

- T1** Prabhavati. Y & etal , "English All Round –Communication Skills for Undergraduate Learners" ,Orient Black Swan, Hyderabad, 2019
- T2** "The Great Indian Scientists" published by Cengage Learning India Pvt. Ltd., Delhi, 2017

REFERENCE BOOKS:

- R1** Swan, M., "Practical English Usage", Oxford University Press, 2016.
- R2** Kumar, Sand Latha, P, "Communication Skills", Oxford University Press, 2018.
- R3** Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, NewDelhi, 2008.
- R4** Baradwaj Kumkum, "Professional Communication", I. K. International PublishingHousePvt.Lt.,NewDelhi,2008.
- R5** Wood, F. T., "Remedial English Grammar" , Macmillan, 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

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 syllabus	01	12-05-2021		TLM2	
2.	Fabric of Change -‘H.G. Wells and the Uncertainties of Progress– Peter J. Bowler’	01	15-05-2021		TLM2	
3.	Reading: Studying the use of Graphic elements in texts;	01	19-05-2021		TLM2	
4.	Quantifying Expressions; Comparing and Contrasting	01	22-05-2021		TLM2	
5.	Adjectives and adverbs	01	26-05-2021		TLM2	
6.	Degrees of Comparison	01	29-05-2021		TLM2	
7.	Writing: Information Transfer.	01	02-06-2021		TLM2 TLM6	
No. of classes required to complete UNIT-I: 07				No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	Tools for Life - ‘Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far’;	01	05-06-2021		TLM2	
9.	Reading: Global Comprehension & Detailed Comprehension	01	09-06-2021		TLM2	
10.	Active & Passive Voice	01	12-06-2021		TLM2	
11.	Idioms & Phrases	01	16-06-2021		TLM2	
12.	Essay Writing - Structured Essays using suitable claims and evidences	01	19-06-2021		TLM2 TLM6	
No. of classes required to complete UNIT-II: 05				No. of classes taken:		

UNIT-III:

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.	‘Homi Jahangir Bhabha’	02	23-06-2021		TLM2	
			26-06-2021		TLM6	
14.	Words often confused	01	07-07-2021		TLM2	
15.	Common Errors	01	10-07-2021		TLM2	
16.	Report Writing - Types & Formats	01	14-07-2021		TLM2	
17.	Incident and Investigation Reports	01	17-07-2021		TLM2 TLM6	
No. of classes required to complete UNIT-III: 06				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
18.	Jagadish Chandra Bose	01	28-07-2021		TLM2 TLM2	
19.	Use of antonyms	01	31-07-2021		TLM2	
20.	Correction of Sentences	01	04-08-2021		TLM2	
21.	Formal and Informal dialogues	01	07-08-2021		TLM2	
22.	Dialogue Writing.	01	11-08-2021		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 05				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
23.	Prafulla Chandra Ray	01	14-08-2021		TLM2	
24.	Analogy	01	19-08-2021		TLM2	
25.	Sentence Completion	01	21-08-2021		TLM2	
26.	Resume - Formats	01	21-08-2021		TLM2	
27.	Writing a Résumé	01	21-08-2021		TLM2 TLM6	
No. of classes required to complete UNIT-V: 05				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 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	B. Sreenivasa Reddy	Dr. B. Samrajya Lakshmi	Dr. B. Samrajya Lakshmi	Dr. A. Ramireddy
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Y.P.C.S. Anil Kumar

Course Name & Code : LATT 20FE04

L-T-P Structure : 2-1-0

Program/Sem/Sec : CSE/II/B

Credits: 3

A.Y.:2020-21

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

CO1	Investigate the consistency of equations and solve them.
CO2	Determine the Eigen Values, Inverse and Powers of a matrix using Cayley – Hamilton Theorem
CO3	Use the concepts of Laplace Transforms to various forms of functions
CO4	Solve Ordinary Differential Equations by using Laplace Transforms
CO5	Apply Z-Transforms to solve Difference Equations

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. Dippima, “Elementary Differential Equations”, 7th Edition, John Wiley & sons, New Delhi, 2011.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: System of Linear 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
1.	Introduction Course and CO's	1	11-5-21		TLM2	
2.	Matrices - Rank of a Matrix	1	12-5-21		TLM2	
3.	Echelon Form	1	13-5-21		TLM2	
4.	Normal Form	1	18-5-21		TLM2	
5.	PAQ Form	1	19-5-21		TLM2	
6.	System of Non Homogeneous Equations	2	20-5-21 21-5-21		TLM2	
7.	System of Non Homogeneous Equations	2	25-5-21 26-5-21		TLM2	
8.	Tutorial - 1	1	27-5-21		TLM3	
No. of classes required to complete UNIT-I: 10				No. of classes taken:		

UNIT-II: Eigen Values and Eigen Vectors

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Introduction to Unit -II and Definitions	1	28-5-21		TLM2	
10.	Eigen Value Problems	2	1-6-21 2-6-21		TLM2	
11.	Properties of Eigen Values	2	3-6-21 4-6-21		TLM2	
12.	Cayley - Hamilton Theorem	2	8-6-21 9-6-21		TLM2	
13.	Inverse and Powers of Matrix by using Cayley- Hamilton Theorem	2	10-6-21 11-6-21		TLM2	
14.	Tutorial- 2	1	15-6-21		TLM3	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III: Laplace Transforms

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 Subject, course outcomes	1	16-6-21		TLM2	
16.	Introduction to Laplace Transforms	1	17-6-21		TLM2	
17.	Transforms of Elementary functions	1	18-6-21		TLM2	
18.	Linear Property	1	22-6-21		TLM2	
19.	Shifting Property	1	23-6-21		TLM2	
20.	Change of Scale Property	1	24-6-21		TLM2	
21.	Multiplication by 't'	1	25-6-21		TLM2	
22.	Division by 't'	1	6-7-21		TLM2	
23.	Transforms of derivatives and integrals	1	7-7-21		TLM2	
24.	Unit Step Function and Dirac's Delta Function	1	8-7-21		TLM2	
25.	Tutorial - 3	1	9-7-21		TLM3	
No. of classes required to complete UNIT-III: 11				No. of classes taken:		

UNIT-IV: Inverse Laplace Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Inverse Laplace Transforms	1	13-7-21		TLM2	
27.	Inverse Laplace Transforms - properties	2	14-7-21 15-7-21		TLM2	
28.	Inverse Laplace Transforms – partial fractions	2	16-7-21 20-7-21		TLM2	
29.	Inverse Laplace Transforms – Convolution Theorem	2	22-7-21 23-7-21		TLM2	
30.	Application of Laplace Transforms to solve Ordinary Differential Equations	3	27-7-21 28-7-21 29-7-21		TLM2	
31.	Tutorial – 4	1	30-7-21		TLM3	
No. of classes required to complete UNIT-IV: 11				No. of classes taken:		

UNIT-V: Z - Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Introduction to Z – Transforms	1	3-8-21		TLM2	
33.	Linear Property	1	4-8-21		TLM2	
34.	Damping Rule	1	5-8-21		TLM2	
35.	Shifting Rule	1	6-8-21		TLM2	
36.	Initial and Final Value Theorems	1	10-8-21		TLM2	
37.	Inverse Z – Transforms	1	11-8-21		TLM2	
38.	Inverse Transforms by partial fractions	1	12-8-21		TLM2	
39.	Convolution Theorem	1	13-8-21		TLM2	
40.	Applications to Difference Equations	2	17-8-21 18-8-21		TLM2	
41.	Tutorial – 5	1	20-8-21		TLM3	
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 (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

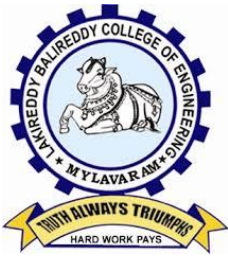
PROGRAMME OUTCOMES (POs):

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 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	
PSO 2	
PSO 3	

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Y.P.C.S. Anil Kumar	Dr. K. Jhansi Rani	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: S.NAGARJUNA REDDY

Course Name & Code : DATA STRUCTURES & 20CS03

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

Program/Sem/Sec : B.Tech/II/B

Credits: 3

A.Y.: 2020-21

PREREQUISITE: Programming Language

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to make students familiar with writing algorithms to implement different data structures like stacks, queues, trees and graphs, and various sorting techniques.

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

CO1	Write the algorithms for various operations on list using arrays and linked list and analyze the time complexity of its operations.(Understand - L2)
CO2	Apply linear data structures like stack and queue in problem solving.(Apply - L3)
CO3	Demonstrate various sorting techniques and compare their computational complexities in terms of space and time.(Understand - L2)
CO4	Write the algorithms for various operations on binary trees, binary search trees and AVL trees.(Understand - L2)
CO5	Demonstrate graph traversal techniques and hashing techniques.(Understand - L2)

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		
CO2	3	1											3		
CO3	3	2											2		
CO4	3	1											3		
CO5	3	1											1		
	1 - Low			2 -Medium						3 - High					

TEXTBOOKS:

T1 Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", Pearson Education, 2nd edition [1,2,3 units].

T2 ReemaThareja, Data Structures using c, Oxford Publications [3,4,5].

REFERENCE BOOKS:

R1 Langson, Augenstein &Tenenbaum, 'Data Structures using C and C++', 2nd Ed, PHI.

R2 RobertL.Kruse, Leung and Tando, 'Data Structures and Program Design in C', 2ndedition, PHI.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

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 Data Structures	1	11-05-2021		TLM1	
2.	Classification of Data Structures	1	13-05-2021		TLM1	
3.	Introduction to Algorithm	1	15-05-2021		TLM1	
4.	Algorithm Analysis	2	18-05-2021 & 20-05-2021		TLM1	
5.	Asymptotic Notations	1	21-05-2021		TLM1	
6.	List using Arrays	1	22-05-2021		TLM1	
7.	Single Linked List	2	25-05-2021, 27-06-2021		TLM1	
8.	Double Linked List	2	28-06-2021 29-06-2021		TLM1	
9.	Circular Linked List	1	01-06-2021		TLM1	
No. of classes required to complete UNIT-I: 14				No. of classes taken:		

UNIT-II:

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.	STACKS ADT	1	03-06-2021		TLM1	
11.	STACKS USING ARRAYS	1	04-06-2021		TLM1	
12.	STACKS USING LINKED LIST	1	05-06-2021		TLM1	
13.	INFIX TO POSTFIX CONVERSION	2	08-06-2021 & 10-06-2021		TLM2	
14.	POSTFIX EVALUTION	1	11-06-2021		TLM2	
15.	CHECKING BALANCED PARANTHESIS	1	12-06-2021		TLM2	
16.	QUEUE	1	15-06-2021		TLM1	
17.	QUEUE USING ARRAY	1	17-06-2021		TLM1	
18.	QUEUE USING LINKED LIST	1	18-06-2021		TLM1	
19.	CIRCULAR QUEUE	2	18-06-2021 & 22-06-2021		TLM1	
20.	DEQUE	1	24-06-2021		TLM1	
No. of classes required to complete UNIT-II: 13				No. of classes taken:		

UNIT-III: SORTING TECHNIQUES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
21.	Bubble sort	1	25-06-2021		TLM2	
22.	Insertion Sort	1	26-06-2021		TLM2	
23.	Selection Sort	1	06-07-2021		TLM2	
24.	Merge Sort	2	08-07-2021 & 09-07-2021		TLM2	

25.	Quick Sort	2	10-07-2021 & 13-07-2021		TLM2	
26.	Heap Sort	2	15-07-2021 & 16-07-2021		TLM2	
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV: TREES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	Introduction	1	17-07-2021		TLM1	
28.	Tree Traversals	2	20-07-2021 & 22-07-2021		TLM1	
29.	Binary Trees	1	23-07-2021		TLM1	
30.	Binary Search Trees	2	24-07-2021 & 27-07-2021		TLM1	
31.	AVL Trees	1	29-07-2021		TLM1	
32.	Operations	2	30-07-2021 & 31-07-2021		TLM1	
No. of classes required to complete UNIT-IV: 09				No. of classes taken:		

UNIT-V: GRAPHS & HASHING TECHNIQUES

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	GRAPHS, FUNDAMENTALS	1	03-08-2021		TLM2	
34.	REPRESENTATION OF GRAPHS	1	05-08-2021		TLM1	
35.	BFS	1	06-08-2021		TLM2	
36.	DFS	2	07-08-2021 & 10-08-2021		TLM2	
37.	Hashing Introduction	1	12-08-2021		TLM2	
38.	Hash Table, Hash Function	1	13-08-2021		TLM2	
39.	Separate Chaining	1	14-08-2021		TLM2	
40.	Linear Probing	1	17-08-2021		TLM2	
41.	Quadratic Probing	1	19-08-2021		TLM2	
42.	Double Hashing	1	20-08-2021		TLM2	
43.	Rehashing	1	21-08-2021		TLM1	
No. of classes required to complete UNIT-V: 12				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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	To inculcate an ability to analyze, design and implement data driven applications into the students
PSO 3	Develop an ability to implement various processes/methodologies/practices employed in design, validation, testing and maintenance of software products.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. S.Nagarjuna Reddy	Dr. P.Bagath	Dr. D.Jagan Mohan Reddy	Dr. D.Veeriahah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor	: Dr. D. Veeraiah	
Course Name & Code	: CONSTITUTION OF INDIA (20MC01)	
L-T-P Structure	: 2-0-0	Credits : 0
Program/Sem/Sec	: B.Tech., CSE., II-Sem., B/Sec	A.Y: 2020-21

PRE-REQUISITE: Understand the Indian Constitution

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution
- To understand the structure of Executive, Legislature and Judiciary.
- To Understand Philosophy of fundamental rights and duties.
- To Understand the autonomous nature of constitution bodies like Supreme Court and High Court Controller and Auditor General of India and Election Commission of India
- To Understand the Central and State relation, financial and administrative.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand history and philosophy of constitution with reference to preamble, Fundamental Rights and Duties.
CO 2	Understand the concept of Unitary and Federal Government along with the role of President, Prime Minister and Judicial System.
CO 3	Understand the structure of the state government, Secretariat, Governor and Chief Minister and their functions.
CO 4	Learn local administration viz. Panchayat, Block, Municipality and Corporation.
CO 5	Learn about Election Commission and the process and about SC,ST,OBC and women.

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	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

TEXT BOOKS:

- T1** Dr.B.R Ambedkar ,The Constitution of India ,General Press First edition 2020., New Delhi
- T2** Dr.B.R Ambedkar ,The Constitution of India, Government of India

REFERENCE BOOKS:

- R1** Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt.Ltd., New Delhi.
- R2** Subash Kashyap, Indian Constitution, National Book Trust.
- R3** J.A. Siwach, Dynamics of Indian Government and Politics.
- R4** D.C. Gupta, Indian Government and Politics.
- R5** H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication).
- R6** J.C. Johari, Indian Government and Politics Hans.
- R7** J.Raj, Indian Government and Politics.
- R8** M.V. Pylee, Indian Constitution, Durga Das Basu, Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd., New Delhi.
- R9** Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right). Challenges to Civil Rights Guarantees in India, Oxford University Press 2012.

E RESOURCES

1. nptel.ac.in/courses/109104074/8.
2. nptel.ac.in/courses/109104045.
3. nptel.ac.in/courses/101104065.
4. www.hss.iitb.ac.in/en/lecture-details.
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indianconstitution.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section A

UNIT-I : Introduction to Indian Constitution

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction and Co-Po and Syllabus	1	15-05-2021		TLM2	CO1	T1 / T2	
2.	Constitution meaning and the term	1	18-05-2021		TLM2	CO1	T1 / T2	
3.	Sources and History of Indian Constitution	1	22-05-2021		TLM2	CO1	T1 / T2	
4.	Features-Citizenship, Preamble	1	25-05-2021		TLM2	CO1	T1 / T2	
5.	Fundamental Rights and Duties	1	29-05-2021		TLM2	CO1	T1 / T2	
6.	Directive Principles of State Policy	1	01-06-2021		TLM2	CO1	T1 / T2	
7.	Assignment -I	1	05-06-2021		TLM7	CO1	T1 / T2	
No. of classes required to complete UNIT-I		7			No. of classes taken:			

UNIT-II: Union Government and its Administration Structure of the Indian Union

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8	Union Government structure in India	1	08-06-2021		TLM2	CO2	T1 / T2	
9	Federalism Centre	1	12-06-2021		TLM2	CO2	T1 / T2	
10	State Relationships to the Union	1	15-06-2021		TLM2	CO2	T1 / T2	
11	President Role, Power and Position	1	19-06-2021		TLM2	CO2	T1 / T2	
12	Prime Minister (PM) and Council of Ministers, cabinet and Central Secretariat Powers and duties	1	22-06-2021		TLM2	CO2	T1 / T2	
13	Lok Sabha, Rajya Sabha, Supreme Court and High Court Powers and Functions.	1	26-06-2021		TLM2	CO2	T1 / T2	
14	Assignment II	1	29-06-2021		TLM7	CO2	T1 / T2	
		7			No. of classes taken:			

UNIT-III: State Government and its administration Governor

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15	State Government and its Administration Governor and Role	1	03-07-2021		TLM2 / TLM4	CO3	T1 / T2	
16	Role of Chief Ministers and Council of Ministers	1	06-07-2021		TLM2 / TLM4	CO3	T1 / T2	
17	State Secretariat Functions	1	10-07-2021		TLM2 / TLM4	CO3	T1 / T2	
18	Organisation ,Structure and Functions of State Governments	1	13-07-2021		TLM2 / TLM4	CO3	T1 / T2	
19	Assignment –III	1	20-07-2021		TLM2 / TLM4	CO3	T1 / T2	
No. of classes required to complete UNIT-III		05			No. of classes taken:			

UNIT-IV: A Local Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20	A Local Administration	1	24-07-2021		TLM2 / TLM4	CO4	T1 / T2	
21	Role and importance of local administration	1	27-07-2021		TLM2 / TLM4	CO4	T1 / T2	
22	Municipalities –Mayor and Role of Elected Representative	1	31-07-2021		TLM2 / TLM4	CO4	T1 / T2	
23	Functions of Panchayati Raj Institution,Zilla Panchayats ,Elected Official and their roles	1	03-08-2021		TLM2 / TLM4	CO4	T1 / T2	
24	Village level-Role of Elected and Appointed officials./Assignment-IV	1	07-08-2021		TLM2/ TLM 7	CO4	T1 / T2	
No. of classes required to complete UNIT-IV		05			No. of classes taken:			

UNIT-V: Election Commission

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Election Commission: Role of Chief Election Commissioner and Election Commissionerate	1	10-08-2021		TLM2 / TLM4	CO5	T1 / T2	
26.	State Election Commission	1	14-08-2021		TLM2 / TLM4	CO5	T1 / T2	
27.	Functions and Commissions for the Welfare of SC/ST/OBC and Women.	1	17-08-2021		TLM2 / TLM4	CO5	T1 / T2	
28	Assignment-V	1	21-08-2021		TLM7	CO5	T1 / T2	
No. of classes required to complete UNIT-V		04			No. of classes taken:			

Content Beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Consumer Rights	1	21.08.2021		TLM2/ TLM5		T2/R3	
2.	Industrial policies							

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
TLM 7	Assignment /Quiz		

PART-C

EVALUATION PROCESS (R20 Regulations):

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
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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 teamwork: 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	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr.D.Veeraiah	Dr.D.Veeraiah	Dr.D.Veeraiah	Dr.D.Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: S.NAGARJUNA REDDY

Course Name & Code : DATA STRUCTURES LAB & 20CS53

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

Credits: 1.5

Program/Sem/Sec : B.Tech/II/B

A.Y.: 2020-21

PREREQUISITE: Programming Language

COURSE OBJECTIVE:

The objective of this course is to make students familiar with writing algorithms to implement different data structures like stacks, queues, trees and graphs, and various sorting techniques

COURSE OUTCOMES (CO):

CO1: Implement Linear Data Structures using array and Linked list. (Apply - L3)

CO2: Implement Various Sorting Techniques. (Apply - L3)

CO3: : Implement Non-Linear Data Structure such as Trees & Graphs. (Apply - L3)

CO4: Improve individual / teamwork skills, communication & report writing skills with ethical values.

COURSE ARTICULATION MATRIX (Correlation between Cos, Pos & PSOs):

Cos	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1		2	1		1								3		
CO2		2	1		1								3		
CO3		2	1		1								3		
CO4								2	2	2					

Note: 1- Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High)

PART-B:**COURSE DELIVERY PLAN (LESSON PLAN): Section-B**

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	List using Arrays	3	13-05-2021		
2.	Linked List Programs	6	20-05-2021 27-05-2021		
3.	Stack Using Arrays, Linked List	3	03-06-2021		
4.	Queue Using arrays ,Linked List	3	10-06-2021		
5.	Infix to Postfix Infix to Prefix	3	17-06-2021		
6.	Evolution of Postfix Balanced Parenthesis	3	24-06-2021		
7.	Circular Queue Double Ended Queue	3	08-07-2021		
8.	Bubble sort Selection sort Insertion sort	3	15-07-2021		
9.	Merge sort Quick sort	3	22-07-2021		
10.	Heap sort Binary Tree	3	29-07-2021		
11.	Binary Search Tree	3	05-08-2021		
12.	BFS,DFS	3	12-08-2021		
13.	Lab Internal Exam	3	19-08-2021		

PART-C

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.
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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 inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
PSO 2	To inculcate an ability to analyze, design and implement data driven applications into the students
PSO 3	Develop an ability to implement various processes/methodologies/practices employed in design, validation, testing and maintenance of software products.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. S.Nagarjuna Reddy	Dr. P.Bagath	Dr. D.Jagan Mohan Reddy	Dr. D. Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : SUDHAKAR ATCHALA
Course Name & Code : SHELL SCRIPTING LAB & 20CS55
L-T-P Structure : 0-0-2 Credits : 1
Program/Sem/Sec : B.Tech., CSE., II-Sem., Section- B A.Y : 2020-21
PRE-REQUISITES : Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to familiarize with the Unix/Linux command line and running simple commands and concept of environment variables and with the simple use of environment variables.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand the basic Unix/Linux commands.
CO 2	Learn importance of shell scripting.
CO 3	Apply shell programming to various files.
CO 4	Improve individual / teamwork skills, communication & report writing skills with ethical values.

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	-	-	-	-	-	-	-	2	3	-	-
CO2	3	2	3	1	-	-	-	-	-	-	-	2	3	-	-
CO3	3	2	3	1	-	-	-	-	-	-	-	2	3	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

REFERENCE BOOKS:

- R1** Learning the bash Shell, 3rd Edition by Cameron Newham, Publisher(s): O'Reilly Media, Inc., ISBN: 9780596009656
- R2** UNIX and Shell Programming by Behrouz A. Forouzan, Richard F. Gilberg Publisher: Thomson Press (India) Ltd, ISBN: 9788131503256, 9788131503256
- R3** Shell Scripting: Expert Recipes for Linux, Bash, and More by Steve Parke

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section - B

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	Module – I: Basic Linux Command -Introduction to Operating systems, Features of Unix/Linux kernel and shell	2	17-05-2021		
2.	study of vi editor ,Unix/Linux file systems, Unix/Linux Commands (man, who, cat, cd, cp, ps, ls, mv, rm, mkdir, rmdir, echo, more, date)	2	24-05-2021		
3.	Unix/Linux Commands (time, kill, history, chmod, chown, finger, pwd, cal, logout, shutdown) 1.Use of Basic UNIX Shell Commands: ls, mkdir, rmdir, cd, cat, touch, file, wc, sort, cut, grep,dd, dfspace, du, ulimit	2	31-05-2021		
4.	Module–II: Introduction to Shell- Introduction to Shell, Shell responsibilities, running a shell script, Variables, passing arguments, Basic Operators	2	07-06-2021		
5.	Decision Making, Loops, Arrays, Arrays –Comparison, Shell functions.	2	14-06-2021		
6.	Shell Programming: Shell script exercises based on following: (i) Interactive shell scripts (ii) Positional parameters (iii) Arithmetic (iv) if-then-fi, if-then- else-fi, nested if-else (v) Logical operators (vi) else + if equals elif case structure (vii) while, until, for loops, use of break	2	21-06-2021		
7.	Module – III: Advanced Shell Special Variables, Bash trap command, File Testing, Input Parameter Parsing.	2	28-06-2021		
8.	Pipelines, Process Substitution, Regular Expressions, Special Commands: sed, awk, grep, sort.	2	05-07-2021		
9.	Commands related to inode, I/O redirection and piping, process control commands, mails.	2	12-07-2021		

10.	Write a shell script to create a file. Follow the instructions (i) Input a page profile to yourself, copy it into other existing file (ii) Start printing file at certain line (iii) Print all the difference between two file, copy the two files. (iv) Print lines matching certain word pattern	2	19-07-2021		
11.	Write shell script for- (i) Showing the count of users logged in, (ii) Printing Column list of files in your home directory (iii) Listing your job with below normal priority (IV) Continue running your job after logging out.	2	26-07-2021		
12.	Write a shell script to change data format. Show the time taken in execution of this script. Write a shell script to print files names in a directory showing date of creation & serial number of the file. Write a shell script to count lines, words, and characters in its input (do not use wc).	2	02-08-2021		
13.	Lab Internal Exam	2	09-08-2021		

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 teamwork: 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	Programming Paradigms: To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms. 2. Data Engineering: To inculcate an ability to Analyze, Design and implement data driven applications into the students. 3. Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.
PSO 2	Data Engineering: To inculcate an ability to Analyze, Design and implement data driven applications into the students.
PSO 3	Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.Sudhakar.Atchala	Mr.G Balu Narasimha Rao	Dr. D Jagan Mohan Reddy	Dr. D. Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. Shaik Johny Basha
 Course Name & Code : Python Programming (20CS05)
 L-T-P Structure : 3-0-0 Credits : 3
 Program/Sem/Sec : B.Tech. – CSE / II Sem / B A.Y. : 2020-21

PRE-REQUISITE: C Programming and Problem-Solving Skills

COURSE EDUCATIONAL OBJECTIVE (CEO): The objective of the course is to provide basic knowledge of python. Python Programming is intended for Software Engineers, System Analysts, Program Managers and User Support Personnel who wish to learn the Python Programming language for problem solving and programming capability.

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

CO1:	Identify basic building blocks of python to solve mathematical problems.	Understand – Level 2
CO2:	Apply the in-built data structures like list, tuple, set and dictionary for solving problems.	Apply – Level 3
CO3:	Use exception-handling mechanism to catch run-time errors	Apply – Level 3
CO4:	Demonstrate compelling concepts about string manipulation, regular expressions, and file handling.	Understand – Level 2
CO5:	Demonstrate object-oriented programming principles of python.	Understand – Level 2

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	-	-
CO2	-	3	2	-	1	-	-	-	-	-	-	-	3	-	-
CO3	-	3	2	-	2	-	-	-	-	-	-	-	3	-	-
CO4	-	3	2	-	2	-	-	-	-	-	-	-	3	-	-
CO5	-	3	2	-	2	-	-	-	-	-	-	-	3	-	-
			1 – Low					2 – Medium					3 – High		

TEXTBOOKS:

- T1:** Reema Thareja, “Python Programming Using Problem Solving Approach”, Oxford Publications
T2: Python for Everybody: Exploring Data in Python 3 by Dr. Charles Russell Severance, Sue Blumenberg

REFERENCE BOOKS:

- R1:** Gowrishankar S and Veena A, “Introduction to Python Programming”, CRC Press, Taylor, and Francis Group – A CHAPMAN & HALLBOOK
R2: R. Nageswara Rao, “Core python programming”, Dreamtech, 2017.
R3: Y. Daniel Liang, “Revel for Introduction to Python Programming and Data Structures”, Pearson Publications.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – I: Introduction to Python, Operators & Control Structures

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.	History, Features, and Applications of Python	1	10/05/21			
2.	Compiler vs Interpreter, Usage of Python Interpreter, Python Shell	1	11/05/21			
3.	Python Built-in Types, Variables, Indentation	1	15/05/21			
4.	Input-Output Statements	1	17/05/21			
5.	Identifiers, Keywords, Literals, Simple Programs	1	18/05/21			
6.	Arithmetic, Relational, Logical and Assignment Operators	1	21/05/21			
7.	Bitwise, Membership, and Identity Operators	1	22/05/21			
8.	Operator Precedence, Programming Examples	1	24/05/21			
9.	Conditional Statements – if, if-else, Nested If-else	1	25/05/21			
10.	Jumping Statements – continue, break, pass	1	28/05/21			
11.	Python Loops – While loop, while loop with else, sample programs	1	29/05/21			
12.	Python Loops – for loop, for loop with else, Nested Loops, sample Programs	1	31/05/21			
13.	Mathematical functions & constants, Random Number functions	1	01/06/21			
No. of classes required to complete UNIT – I: 13				No. of classes taken:		

UNIT – II: Lists, Tuples, Sets, and Dictionaries

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
14.	List: Basics of List, Creating and Accessing Elements	1	04/06/21			
15.	Updating Lists & Deleting Lists, Sample Programs	1	05/06/21			
16.	Basic List Operations: Reverse, Indexing, and Slicing with Programs	1	07/06/21			
17.	Operations on Matrices, Built-in List Functions	1	08/06/21			
18.	Tuples: Basics of Tuples, Creating and Deleting elements in a Tuple	1	11/06/21			
19.	Accessing Values in a Tuple, updating tuples, Delete tuple elements	1	12/06/21			
20.	Basic Tuple Operations: Indexing, Slicing and Matrices, Built-in tuple functions	1	14/06/21			
21.	Sets: Basics of Sets, Operations on sets, Sample Programs	1	15/06/21			
22.	Dictionaries: Basics of Dictionaries, Accessing Elements in a Dictionary, Working on Dictionaries	1	18/06/21			
23.	Dictionary Properties & Functions	1	19/06/21			
No. of classes required to complete UNIT – II: 10				No. of classes taken:		

UNIT – III: Functions, Modular Design & Exception Handling

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.	Functions: Basics of Function, Defining and Calling a function, Sample Programs	1	21/06/21			
25.	Types of functions, Function Arguments, Anonymous functions	1	22/06/21			
26.	Global and Local variables, Sample Programs	1	25/06/21			
27.	Recursion, Sample Programs	1	26/06/21			
28.	Modular Design: Introduction to Modules, creating a Module, import statement	1	05/07/21			
29.	from statement, Date and Time Module	1	06/07/21			
30.	Programs on Modules	1	09/07/21			
31.	Exception Handling: Basics of Exception, except clause, try clause	1	10/07/21			
32.	Finally clause and User Defined Exceptions	1	12/07/21			
No. of classes required to complete UNIT – III: 09				No. of classes taken:		

UNIT – IV: Strings, Regular Expression Operations & Files

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Strings: Basics of Strings, Slicing, Escape Characters	1	13/07/21			
34.	String Special Operations, String Formatting Operator, Triple quotes, Raw string, Unicode strings	1	16/07/21			
35.	Built-in string methods	1	17/07/21			
36.	Programs on Strings	1	19/07/21			
37.	Regular Expressions: Using Special Characters, Regular Expression Methods	1	20/07/21			
38.	Named Groups in Python RegEx, glob Module	1	23/07/21			
39.	Programs on Regular Expressions	1	24/07/21			
40.	Files: Basics of File, Creating files	1	26/07/21			
41.	Operation on files – Read, Write and Search	1	27/07/21			
No. of classes required to complete UNIT – IV: 09				No. of classes taken:		

UNIT – V: Object Oriented Programming (OOP) in Python

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42.	Object-Oriented Programming: Basics of OOP	1	30/07/21			
43.	Introduction to Classes	1	31/07/21			
44.	Programming Examples	1	02/08/21			
45.	Self-Variable, Methods	1	03/08/21			

46.	Constructor Method	1	06/08/21		
47.	Inheritance	1	07/08/21		
48.	Programs on Inheritance	1	09/08/21		
49.	Overriding Methods	1	10/08/21		
50.	Data Hiding	1	13/08/21		
51.	Programs on Overriding and Data Hiding	1	14/08/21		
No. of classes required to complete UNIT - V: 10				No. of classes taken:	

Content Beyond the Syllabus:

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.	Introduction to NumPy	1	16/08/21			
53.	Introduction to Pandas	1	17/08/21			
54.	Basic Operations using NumPy	1	20/08/21			
55.	Basic Operations using Pandas	1	21/08/21			

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):

PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	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.
PO3	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.
PO4	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.
PO5	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
PO6	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
PO7	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.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and teamwork: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	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.
PO11	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.
PO12	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):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. Shaik Johny Basha	Mr. K. Sundeep Saradhi	Dr. D. Veeraiah	Dr. D. Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor	: Mr. Shaik Johny Basha	
Course Name & Code	: Python Programming Lab (20CS54)	
L-T-P Structure	: 0-0-3	Credits : 1.5
Program/Sem/Sec	: B.Tech. – CSE / II Sem / B	A.Y. : 2020-21

PRE-REQUISITE: Programming and Problem-Solving Skills

COURSE EDUCATIONAL OBJECTIVE (CEO): The Objective of Python course is to lead the students from the basics of writing and running Python scripts in problem solving and to design and implement the modules and understands the working of classes and objects in python.

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

CO1:	Apply building blocks of Python in solving computational problems.	Apply – Level 3
CO2:	Implement in-built data structures available in Python to solve computational problems.	Apply – Level 3
CO3:	Implement modular programming, string manipulations and Object-oriented programming in python.	Apply – Level 3
CO4:	Improve individual / teamwork skills, communication & report writing skills with ethical values.	---

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	-	-	-	-	-	-	-	3	-	-
CO2	-	3	2	3	2	-	-	-	-	-	-	-	3	-	-
CO3	-	3	2	3	2	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 – Low			2 – Medium						3 – High						

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Programs to be covered	No. of Classes		Date of Completion	Delivery Method
		Required as per the Schedule	Taken		
1.	Python Software Installation and Basics of Python	2			DM5
2.	Language basics and example problems	4			DM5
3.	Programs on Lists	2			DM5
4.	Programs on Tuples	2			DM5
5.	Programs on Sets	2			DM5
6.	Programs on Dictionaries	2			DM5
7.	Programs on Functions and Recursion	2			DM5
8.	Programs on Date and Time Modules, Exception Handling	2			DM5
9.	Programs on Strings	2			DM5
10.	Programs on Regular Expressions	2			DM5
11.	Programs on Object-Oriented Programming	2			DM5
12.	Internal Lab Exam	2			DM4

Delivery Methods			
DM1	Chalk and Talk	DM4	Assignment/Test/Quiz
DM2	ICT Tools	DM5	Laboratory/Field Visit
DM3	Tutorial	DM6	Web-based Learning

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. Shaik Johnny Basha	Mr. K. Sundeep Saradhi	Dr. D. Veeraiah	Dr. D. Veeraiah
Signature				

PART-C

PROGRAMME OUTCOMES (POs):

PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	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.
PO3	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.
PO4	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.
PO5	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
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PO7	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.
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PO11	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.
PO12	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):

PSO1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. Shaik Johny Basha	Mr. K. Sundeep Saradhi	Dr. D. Veeraiah	Dr. D. Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr B.SAGAR

Course Name & Code : PC-II, 20FE02

L-T-P Structure : 2-0-0

Credits: 02

Program/Sem/Sec : CSE-C –II SEM

A.Y. : 2020-21

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.	L2
CO2	Comprehend the given texts thoroughly by guessing the meanings of the words Contextually.	L2
CO3	Use language appropriately for describing/comparing/contrasting/giving directions & suggestions.	L1
CO4	Write formal/informal dialogues with an understanding of verbal/non-verbal features of communication. Guess meanings of the words from the context.	L2
CO5	Write well structured essays; Reports & Résumé.	L3

UNIT-I

Fabric of Change-‘H.G. Wells and the Uncertainties of Progress–Peter J. Bowler’;

Reading: Studying the use of Graphic elements in texts; Grammar & Vocabulary:

Quantifying Expressions; Adjectives and adverbs; Comparing and Contrasting;

Degrees of Comparison; Writing: Information Transfer.

UNIT-II

Tools for Life - ‘Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far’;

Reading: Global Comprehension; Detailed Comprehension; Grammar &

Vocabulary: Active & Passive Voice; Idioms & Phrases; Writing: Structured Essays

using suitable claims and evidences.

UNIT-III

‘**Homi Jahangir Bhabha**’; Grammar & Vocabulary: Words often confused; Common Errors;

Writing: Incident & Investigation Reports.

UNIT-IV

'Jagadish Chandra Bose'; Grammar & Vocabulary: Use of antonyms; Correction of Sentences; Writing: Dialogue Writing.

UNIT-V

'Prafulla Chandra Ray'; Grammar & Vocabulary: Analogy; Sentence Completion; Writing: Writing a Résumé

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C01		1		1		1			3	3		2			
C02		1		1		1			3	3		2			
C03		1		1		1			3	3		2			
C04		1		1		1			3	3		2			
C05		1		1		1			3	3		2			
1 - Low			2 -Medium					3 - High							

TEXTBOOKS:

- T1** Prabhavati. Y & etal , "English All Round –Communication Skills for Undergraduate Learners" ,Orient Black Swan, Hyderabad, 2019
- T2** "The Great Indian Scientists" published by Cengage Learning India Pvt. Ltd., Delhi, 2017

REFERENCE BOOKS:

- R1** Swan, M., "Practical English Usage", Oxford University Press, 2016.
- R2** Kumar, Sand Latha, P, "Communication Skills", Oxford University Press, 2018.
- R3** Rizvi Ashraf M., "Effective Technical Communication", Tata Mc Graw Hill, NewDelhi, 2008.
- R4** Baradwaj Kumkum, "Professional Communication", I. K. International PublishingHousePvt.Lt.,NewDelhi,2008.
- R5** Wood, F. T., "Remedial English Grammar" , Macmillan, 2007.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

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 syllabus	01	10-05-2021		TLM2	
2.	Fabric of Change -‘H.G. Wells and the Uncertainties of Progress– Peter J. Bowler’	01	12-05-2021		TLM2	
3.	Reading: Studying the use of Graphic elements in texts;	01	17-05-2021		TLM2	
4.	Quantifying Expressions; Comparing and Contrasting	01	19-05-2021		TLM2	
5.	Adjectives and adverbs	01	24-05-2021		TLM2	
6.	Degrees of Comparison	01	26-05-2021		TLM2	
7.	Writing: Information Transfer.	01	31-05-2021		TLM2 TLM6	
No. of classes required to complete UNIT-I: 07				No. of classes taken:		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
8.	Tools for Life - ‘Leaves from the Mental Portfolio of a Eurasian – Sui Sin Far’;	01	01-06-2021		TLM2	
9.	Reading: Global Comprehension & Detailed Comprehension	01	07-06-2021		TLM2	
10.	Active & Passive Voice	01	09-06-2021		TLM2	
11.	Idioms & Phrases	01	14-06-2021		TLM2	
12.	Essay Writing - Structured Essays using suitable claims and evidences	01	16-06-2021		TLM2 TLM6	
No. of classes required to complete UNIT-II: 05				No. of classes taken:		

UNIT-III:

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.	‘Homi Jahangir Bhabha’	02	21-06-2021		TLM2	
			23-06-2021		TLM6	
14.	Words often confused	01	05-07-2021		TLM2	
15.	Common Errors	01	07-07-2021		TLM2	
16.	Report Writing - Types & Formats	01	12-07-2021		TLM2	
17.	Incident and Investigation Reports	01	14-07-2021		TLM2 TLM6	
No. of classes required to complete UNIT-III: 06				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes	Tentative Date of	Actual Date of	Teaching Learning	HOD Sign
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		Required	Completion	Completion	Methods	Weekly
18.	Jagadish Chandra Bose	01	19-07-2021		TLM2 TLM2	
19.	Use of antonyms	01	26-07-2021		TLM2	
20.	Correction of Sentences	01	28-07-2021		TLM2	
21.	Formal and Informal dialogues	01	02-08-2021		TLM2	
22.	Dialogue Writing.	01	04-08-2021		TLM2 TLM6	
No. of classes required to complete UNIT-IV: 05				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
23.	Prafulla Chandra Ray	01	04-08-2021		TLM2	
24.	Analogy	01	09-08-2021		TLM2	
25.	Sentence Completion	01	11-08-2021		TLM2	
26.	Resume - Formats	01	16-08-2021		TLM2	
27.	Writing a Résumé	01	18-08-2021		TLM2 TLM6	
No. of classes required to complete UNIT-V: 05				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 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	Mr B.SAGAR	Dr. B. Samrajya Lakshmi	Dr. B. Samrajya Lakshmi	Dr. A. Ramireddy
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. A. Rami Reddy

Course Name & Code : LATT 20FE04

L-T-P Structure : 2-1-0

Program/Sem/Sec : CSE/II/C

Credits: 3

A.Y.:2020-21

PREREQUISITE: Nil

COURSE EDUCATIONAL OBJECTIVES (CEOs):

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

CO1	Investigate the consistency of equations and solve them.
CO2	Determine the Eigen Values, Inverse and Powers of a matrix using Cayley – Hamilton Theorem
CO3	Use the concepts of Laplace Transforms to various forms of functions
CO4	Solve Ordinary Differential Equations by using Laplace Transforms
CO5	Apply Z-Transforms to solve Difference Equations

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. Dippima, “Elementary Differential Equations”, 7th Edition, John Wiley & sons, New Delhi, 2011.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: System of Linear 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
1.	Introduction Course and CO's	1	12-5-21		TLM2	
2.	Matrices - Rank of a Matrix	1	13-5-21		TLM2	
3.	Echelon Form	1	15-5-21		TLM2	
4.	Normal Form	1	19-5-21		TLM2	
5.	PAQ Form	1	20-5-21		TLM2	
6.	System of Non Homogeneous Equations	2	21-5-21 22-5-21		TLM2	
7.	System of Non Homogeneous Equations	2	26-5-21 27-5-21		TLM2	
8.	Tutorial - 1	1	28-5-21		TLM3	
No. of classes required to complete UNIT-I: 10				No. of classes taken:		

UNIT-II: Eigen Values and Eigen Vectors

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Introduction to Unit -II and Definitions	1	29-5-21		TLM2	
10.	Eigen Value Problems	2	2-6-21 3-6-21		TLM2	
11.	Properties of Eigen Values	2	4-6-21 5-6-21		TLM2	
12.	Cayley - Hamilton Theorem	2	9-6-21 10-6-21		TLM2	
13.	Inverse and Powers of Matrix by using Cayley- Hamilton Theorem	2	11-6-21 12-6-21		TLM2	
14.	Tutorial- 2	1	16-6-21		TLM3	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III: Laplace Transforms

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 Subject, course outcomes	1	17-6-21		TLM2	
16.	Introduction to Laplace Transforms	1	18-6-21		TLM2	
17.	Transforms of Elementary functions	1	19-6-21		TLM2	
18.	Linear Property	1	23-6-21		TLM2	
19.	Shifting Property	1	24-6-21		TLM2	
20.	Change of Scale Property	1	25-6-21		TLM2	
21.	Multiplication by 't'	1	26-6-21		TLM2	
22.	Division by 't'	1	7-7-21		TLM2	
23.	Transforms of derivatives and integrals	1	8-7-21		TLM2	
24.	Unit Step Function and Dirac's Delta Function	1	9-7-21		TLM2	
25.	Tutorial - 3	1	10-7-21		TLM3	
No. of classes required to complete UNIT-III: 11				No. of classes taken:		

UNIT-IV: Inverse Laplace Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
26.	Inverse Laplace Transforms	1	14-7-21		TLM2	
27.	Inverse Laplace Transforms - properties	2	15-7-21 16-7-21		TLM2	
28.	Inverse Laplace Transforms – partial fractions	2	17-7-21 22-7-21		TLM2	
29.	Inverse Laplace Transforms – Convolution Theorem	2	23-7-21 24-7-21		TLM2	
30.	Application of Laplace Transforms to solve Ordinary Differential Equations	3	28-7-21 29-7-21 30-7-21		TLM2	
31.	Tutorial – 4	1	31-7-21		TLM3	
No. of classes required to complete UNIT-IV: 11				No. of classes taken:		

UNIT-V: Z - Transforms

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Introduction to Z – Transforms	1	4-8-21		TLM2	
33.	Linear Property	1	5-8-21		TLM2	
34.	Damping Rule	1	6-8-21		TLM2	
35.	Shifting Rule	1	7-8-21		TLM2	
36.	Initial and Final Value Theorems	1	11-8-21		TLM2	
37.	Inverse Z – Transforms	1	12-8-21		TLM2	
38.	Inverse Transforms by partial fractions	1	13-8-21		TLM2	
39.	Convolution Theorem	1	14-8-21		TLM2	
40.	Applications to Difference Equations	2	18-8-21 19-8-21		TLM2	
41.	Tutorial – 5	1	20-8-21		TLM3	
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 (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 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	An ability to apply softwareengineering practices and strategies in software project development using open source programming environment for the success of organization.
PSO 2	An Ability to design and develop computer programs in networking, web applications andIoT as per the society needs.
PSO 3	To inculcate an ability to analyze,design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Y.P.C.S. Anil Kumar	Dr. K. Jhansi Rani	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 : Engineering Chemistry&20FE06

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

Credits:03

Program/Sem/Sec : B.Tech/IIsem/CSE-C

A.Y. : 2020-21

PREREQUISITE: Electrode potential, Cell potential of a cell/EMF of a cell, primary & secondary batteries, isotropy and anisotropy in crystals, qualitative and quantitative analysis.

COURSE EDUCATIONAL OBJECTIVES (CEOs): It enables the students to understand the fundamental concepts of chemistry and to provide them with the knowledge of industrial problems and finding the solutions. It helps to strengthen the basic concepts of electrochemistry, corrosion, nanotechnology, polymers, liquid crystals and analytical techniques

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

CO1	Apply Nernst Equation for calculating electrode cell potentials and compare batteries for different applications.
CO2	Apply principles of corrosion for design and effective maintenance of various equipment.
CO3	Analyse the suitability of advanced materials like nano materials in electronics and medicine.
CO4	Identify the importance of liquid crystals, polymers in advanced technologies.
CO5	Apply the principles of analytical techniques in chemical analysis.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	1		2	2					2
CO2	3	2	2	1		2	1					2
CO3	3	2	2	1		1	1					2
CO4	3	2	2	1		1	1					2
CO5	3	2	1	1		1	1					2

TEXTBOOKS:

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

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: ELECTRO CHEMISTRY & 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 to Course and COs	1	10-05-2021		TLM1	
2.	Introduction to Unit-I	1	12-05-2021		TLM1	
3.	Applications of Electro chemical Series,	1	15-05-2021		TLM1	
4.	Calculation of EMF of Cell,	1	17-05-2021		TLM1	
5.	Practice exercises on applications of Electro chemical series,	1	19-05-2021		TLM1	
6.	Glass Electrode	1	21-05-2021		TLM1	
7.	Calomel Electrode, Nernst equation derivation	1	22-05-2021		TLM1	
8.	Applications of Nernst Equation	1	24-05-2021		TLM1	
9.	Lead-acid Battery	1	26-05-2021		TLM1	
10.	Lithium-ion Battery	1	28-05-2021		TLM1	
11.	H ₂ – O ₂ Fuel cell, Mg-Cu reserve battery.	1	29-05-2021		TLM1	
12.	Revision of unit 1	1	31-05-2021		TLM1	
13.	Assignment		02-06-2021		TLM1	
No. of classes required to complete UNIT-I: 13				No. of classes taken:		

UNIT-II: SCIENCE 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.	Definition, Examples, dry corrosion	1	04-06-2021		TLM1	
2.	corrosion by other gases and liquid metal corrosion dry corrosion, pilling bed worth rule.	1	05-06-2021		TLM1	
3.	Conditions to occur wet corrosion. Mechanism- oxygen absorption, hydrogen evolution, types of wet corrosion	1	07-06-2021		TLM1	
4.	Galvanic Corrosion, passivity and Galvanic series.	1	09-06-2021		TLM1	
5.	Concentration Cell Corrosion	1	11-06-2021		TLM1	
6.	Factors influencing corrosion Nature of metal, Nature of environment	1	14-06-2021		TLM1	
7.	Cathodic Protection	1	16-06-2021		TLM1	
8.	Electroplating, metal cladding.	1	18-06-2021		TLM1	
9.	Assignment	1	19-06-2021			
No. of classes required to complete UNIT-II: 09				No. of classes taken:		

UNIT-III: CHEMISTRY 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.	Introduction, types of nano-materials,	1	21-06-2021		TLM1	
2.	Gas-Phase Synthesis of nanomaterials, Applications.	1	23-06-2021			
3.	Materials in Electronic devices	1	25-06-2021		TLM1	
4.	Contd.. Materials in Electronic devices	1	26-06-2021		TLM1	
5.	Discussion on MID-I marks evaluation		05-07-2021			
6.	Characteristics of Molecular motors and machines	1	07-07-2021		TLM1	
7.	Rotaxanes and Catenanes as artificial molecular machines	1	09-07-2021		TLM1	
8.	Contd..rotaxanes and Catenanes as artificial molecular machines	1	12-07-2021		TLM1	

9.	Automated light powered molecular motor	1	14-07-2021		TLM1	
10.	Assignment	1	16-07-2021		TLM1	
No. of classes required to complete UNIT-III: 10				No. of classes taken:		

UNIT-IV: LIQUID CRYSTALS & POLYMERS

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.	Classification of liquid crystals	1	17-07-2021		TLM1	
2.	Applications of liquid crystals.	1	19-07-2021		TLM1	
3.	Introduction and types of polymers,	1	23-07-2021		TLM1	
4.	Plastics	1	24-07-2021		TLM1	
5.	Rubbers	1	26-07-2021		TLM1	
6.	Conducting polymers.	1	28-07-2021		TLM1	
7.	Bio-degradable polymers	1	30-07-2021		TLM1	
8.	Revision	1	31-08-2021			
9.	Assignment	1	02-08-2021		TLM1	
No. of classes required to complete UNIT-IV: 9				No. of classes taken:		

UNIT-V: ANALYTICAL TECHNIQUES

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 analysis	1	04-08-2021		TLM1	
2.	Principle of conductometric titrations, strong acid vs strong base titration	1	06-08-2021		TLM1	
3.	Strong acid vs weak base titrations.	1	07-08-2021		TLM1	
4.	Strong base vs weak acid, weak acid vs weak base titrations.	1	09-08-2021		TLM1	
5.	Principle of potentiometry Acid-base titration.	1	11-08-2021		TLM1	
6.	Determination of iron using thiocyanate as a reagent.	1	13-08-2021		TLM1	
7.	Colorimetry, Principle determination of iron using thiocyanate as a reagent.	1	16-08-2021		TLM1	

8.	Revision	1	18-08-2021			
9.	Assignment	1	20-08-2021			
10.	Old question papers discussion	1	21-08-2021			
No. of classes required to complete UNIT-V: 10				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.

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				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : K SUNDEEP SARADHI
Course Name & Code : Python Programming (20CS05)
L-T-P Structure : 3-0-0 Credits : 3
Program/Sem/Sec : B.Tech., CSE., II-Sem., C A.Y : 2020-21

PRE-REQUISITE: C Programming

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to provide basic knowledge of python. python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language for Problem solving and programming capability.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Identify basic building blocks of python to solve mathematical problems. (UnderstandL2)
CO 2	Apply the in-built data structures like list, tuple, set and dictionary for solving problems. (Apply - L3)
CO 3	Use exception-handling mechanism to catch run-time errors (Apply - L3)
CO 4	Demonstrate compelling concepts about string manipulation, regular expressions, and file handling. (Understand - L2)
CO 5	Demonstrate object-oriented programming principles of python. (Understand - L2)

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	-	-
CO2	-	3	2	-	1	-	-	-	-	-	-	-	3	-	-
CO3	-	3	2	-	2	-	-	-	-	-	-	-	3	-	-
CO4	-	3	2	-	2	-	-	-	-	-	-	-	3	-	-
CO5	-	3	2	-	2	-	-	-	-	-	-	-	3	-	-

Note: Enter Correlation Levels **1** or **2** or **3**. If there is no correlation, put '-'

1- Slight (Low), **2** - Moderate (Medium), **3** - Substantial (High).

TEXT BOOKS:

- T1** Reema Thareja, "Python Programming Using Problem Solving Approach", Oxford Publications
T2 Python for Everybody: Exploring Data In Python 3 by Dr. Charles Russell Severance, Sue Blumenberg

REFERENCE BOOKS:

- R1** Gowrishankar S and Veena A, "Introduction to Python Programming", CRC Press, Taylor, and Francis Group – A CHAPMAN & HALLBOOK
- R2** R. Nageswara Rao, "Core python programming", Dreamtech, 2017.
- R3** Y. Daniel Liang, "Revel for Introduction to Python Programming and Data Structures", Pearson Publications.

PART-B**COURSE DELIVERY PLAN (LESSON PLAN): Section C****UNIT-I : Introduction to Python , Operators & Control Structures**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction to Programming, History of Python	1	10.05.2021		TLM2/ TLM4	CO1	T1 / T2	
2.	Usage of Python Interpreter, Python Shell.	1	11.05.2021		TLM2/ TLM4	CO1	T1 / T2	
3.	Indentation, Python Built-in types , Variables	1	12.05.2021		TLM2/ TLM4	CO1	T1 / T2	
4.	Input-Output Statements	1	15.05.2021		TLM2/ TLM4	CO1	T1 / T2	
5.	Identifiers, keywords, Literals, Simple programs	1	17.05.2021		TLM2/ TLM4	CO1	T1 / T2	
6.	Arithmetic , Relational, Logical Operators, Assignment Operators	1	18.05.2021		TLM2/ TLM4	CO1	T1 / T2	
7.	Bitwise Operators, Python Membership Operator, Python Identity Operator	1	19.05.2021		TLM2/ TLM4	CO1	T1 / T2	
8.	Operator Precedence , Programming Examples	1	22.05.2021		TLM2/ TLM4	CO1	T1 / T2	
9.	Conditonal Statements – if, if-else, Nested If-else	1	24.05.2021		TLM2/ TLM4	CO1	T1 / T2	
10.	Jumping Statements – continue, break, pass , Python Loops – While loop	1	25.05.2021		TLM2/ TLM4	CO1	T1 / T2	
11.	Python Loops – for loop , Nested Loops with Programs	1	26.05.2021		TLM2/ TLM4	CO1	T1 / T2	
12.	Mathematical functions & constants, Random Number functions	1	29.05.2021		TLM2/ TLM4	CO1	T1 / T2	
13.	Tutorial - 1	1	01.06.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-I		13			No. of classes taken:			

UNIT-II: Python Lists , Tuples , Sets , Dictionaries

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
14.	Python List - concept , Creating and Accessing Elements	1	02.06.2021		TLM2 / TLM4	CO2	T1 / T2	
15.	Updating Lists & Deleting Lists , Basic List operations	1	05.06.2021		TLM2 / TLM4	CO2	T1 / T2	
16.	Reverse, Indexing , Slicing , Matrices	1	07.06.2021		TLM2 / TLM4	CO2	T1 / T2	
17.	Built-in List Functions	1	08.06.2021		TLM2 / TLM4	CO2	T1 / T2	
18.	Python Tuples – Introduction , Creating and Deleting	1	09.06.2021		TLM2 / TLM4	CO2	T1 / T2	
19.	Accessing Values in a Tuple , Updating tuples , Delete tuple elements	1	14.06.2021		TLM2 / TLM4	CO2	T1 / T2	
20.	Basic tuple operations , Indexing , Slicing and Matrices, Built-in tuple functions	1	15.06.2021		TLM2 / TLM4	CO2	T1 / T2	
21.	Sets-concepts, operations	1	16.06.2021		TLM2 / TLM4	CO2	T1 / T2	
22.	Dictionaries – Introduction , Accessing , Working	1	19.06.2021		TLM2 / TLM4	CO2	T1 / T2	
23.	Dictionary Properties & Functions	1	21.06.2021		TLM2 / TLM4	CO2	C	
24.	Tutorial – II / Quiz - II	1	22.06.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-II		11			No. of classes taken:			

UNIT-III: Python Functions, Modular Design & Exception Handling

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Defining and calling a function - Examples	1	23.06.2021		TLM2 / TLM4	CO3	T1 / T2	
26.	Types of functions, Function arguments , Anonymous functions	1	26.06.2021		TLM2 / TLM4	CO3	T1 / T2	
27.	Global and Local variables, Recursion with programs	1	05.07.2021		TLM2 / TLM4	CO3	T1 / T2	
28.	Introduction to Modules – Creating , Import statement , from	1	06.07.2021		TLM2 / TLM4	CO3	T1 / T2	

29.	Date and Time Module	1	07.07.2021		TLM2 / TLM4	CO3	T1 / T2	
30.	Programs on Modules	1	12.07.2021		TLM2 / TLM4	CO3	T1 / T2	
31.	Exception Handling – Exceptions, Except clause , try Finally clause		13.07.2021		TLM2 / TLM4	CO3	T1 / T2	
32.	User Defined Exceptions	1	14.07.2021		TLM2 / TLM4	CO3	T1 / T2	
33.	Tutorial – III / Quiz - III	1	17.07.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-III		09			No. of classes taken:			

UNIT-IV: Python Strings , Regular Expression Operations & Files

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
34.	Python Strings - concept , Slicing, Escape Characters , String Special Operations	1	19.07.2021		TLM2 / TLM4	CO4	T1 / T2	
35.	String formatting operator , Triple quotes , raw string, Unicode strings	1	21.07.2021		TLM2 / TLM4	CO4	T1 / T2	
36.	Built-in string methods	1	26.07.2021		TLM2 / TLM4	CO4	T1 / T2	
37.	Programs on Strings	1	27.07.2021		TLM2 / TLM4		T1 / T2	
38.	Regular Expressions – Using Special Characters, Regular Expression Methods	1	28.07.2021		TLM2 / TLM4	CO4	T1 / T2	
39.	Named Groups in Python RegEx, Glob Module	1	31.07.2021		TLM2 / TLM4	CO4	T1 / T2	
40.	Programs on Regular Expressions	1	02.08.2021		TLM2 / TLM4	CO4	T1 / T2	
41.	Files – Creating files, Operation on files	1	03.08.2021		TLM2 / TLM4	CO4	T1 / T2	
42.	Tutorial – IV / Quiz - IV	1	04.08.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-IV		09			No. of classes taken:			

UNIT-V: Object Oriented Programming OOP in Python

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
43.	OOPs Concepts – Introduction , Classes	1	07.08.2021		TLM2 / TLM4	C05	T1 / T2	
44.	Programming Examples	1	09.08.2021		TLM2 / TLM4	C05	T1 / T2	
45.	Self-Variable, Methods , Constructor Method	1	10.08.2021		TLM2 / TLM4	C05	T1 / T2	
46.	Inheritance	1	11.08.2021		TLM2 / TLM4	C05	T1 / T2	
47.	Example Programs	1	16.08.2021		TLM2 / TLM4	C05	T1 / T2	
48.	Overriding Methods , Data Hiding	1	17.08.2021		TLM2 / TLM4	C05	T1 / T2	
49.	Tutorial – V / Quiz - V	1	18.08.2021		TLM3/ TLM6			
No. of classes required to complete UNIT-V		09			No. of classes taken:			

Content Beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Libraries	1	21.08.2021		TLM2/ TLM5		T2/R3	
2.	Overview of NumPy Library							

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 Regulations):

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	Programming Paradigms: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 2	Data Engineering: To inculcate an ability to analyze, design and implement database applications.
PSO 3	Software Engineering: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.

Course Instructor
K Sundeep Saradhi

Course Coordinator
K Sundeep Saradhi

Module Coordinator
Dr.M.Srinivasa Rao

HOD
Dr.D.Veeraiah



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DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr L V Krishna rao

Course Name & Code : Data structures , 20CS03

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

Credits: 03

Program/Sem/Sec : B.Tech-CSE / II SEM / C

A.Y. : 2020-21

PREREQUISITE : C programming language

PRE-REQUISITE:

COURSE OBJECTIVE: To make students familiar with:

Writing algorithms to implement operations involved in different data structures like stack and queue using arrays as well as linked list, to implement different types of trees, various searching and sorting techniques.

COURSE OUTCOMES (CO)

CO 1: Write the algorithms for various operations on list using arrays and linked list and analyze the time complexity of its operations.(**Understand - L2**)

CO 2: Apply linear data structures like stack and queue in problem solving.(**Apply - L3**)

CO 3: Demonstrate various searching and sorting techniques and compare their computational complexities in terms of space and time.(**Understand - L2**)

CO 4: Write the algorithms for various operations on binary trees, binary search trees and AVL trees.(**Understand - L2**)

CO 5: Demonstrate graph traversal techniques and hashing techniques.(**Understand - L2**)

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

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2											3		
CO2	3	1											3		
CO3	3	2											2		
CO4	3	1											3		
CO5	3	1											1		

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight(Low), 2 - Moderate(Medium), 3 - Substantial (High).

TEXT BOOKS:

T1 Mark Allen Weiss, “Data Structures and Algorithm Analysis in C”, Pearson Education, 2nd edition

T2 Reema Thareja, Data Structures using c, Oxford Publications.

REFERENCE BOOKS:

R1 Langson, Augenstein & Tenenbaum, ‘Data Structures using C and C++’, 2nd Ed, PHI.

R2 Robert L. Kruse, Leung and Tando, ‘Data Structures and Program Design in C’, 2nd edition, PHI.

R3 Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, Fundamentals of Computer Algorithms, Second Edition, Universities Press, 2011.

R4 Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, Introduction to Algorithms, Second Edition, PHI, 2009.

COURSE DELIVERY PLAN (LESSON PLAN): Section-A**UNIT-I:**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Introduction	1	13-05-2021		TLM2	CO1	
2.	Mathematical Background	1	14-05-2021		TLM2	CO1	
3.	Model, Analysis and Run Time Calculations	2	15-05-2021, 18-05-2021		TLM2	CO1	
4.	Introduction to Data Structure and Abstract Data Type(ADTs)	1	20-05-2021		TLM2	CO1	
5.	List ADT: List implementation using arrays and its operations	1	21-05-2021		TLM2	CO1	
6.	List ADT : List implementation using pointers(Linked list)	2	22-05-2021, 25-05-2021		TLM2	CO1	
7.	Operations on singly linked list	1	27-05-2021		TLM2	CO1	
8.	Operations on Doubly linked list	1	28-05-2021		TLM2	CO1	
9.	Operations on Circular linked list	1	29-05-2021		TLM2	CO1	
10.	Polynomial ADT .	1	01-06-2021		TLM2	CO1	

No. of classes required to complete UNIT-I	12		
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UNIT-II: Stacks, Queues and its Applications.

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
11.	Stack: Definition and its operations, implementation using arrays	1	03-06-2021		TLM2	CO2	
12.	Stack implementation Using Linked List	1	04-06-2021		TLM2	CO2	
13.	Infix to postfix expression conversion	1	05-06-2021		TLM2	CO2	
14.	Evaluation of Postfix expressions	1	08-06-2021		TLM2	CO2	
15.	Balancing the symbols	1	10-06-2021		TLM2	CO2	
16.	Queue: definition and its operations, implementation using arrays	1	11-06-2021		TLM2	CO2	
17.	implementation using linked lists	1	12-06-2021		TLM2	CO2	
18.	Circular queue: definition its operations, implementation	1	15-06-2021		TLM2	CO2	
19.	DEQUEUE : Definition & its implementation.	2	17-06-2021, 18-06-2021		TLM2	CO2	
No. of classes required to complete UNIT-II		10					

UNIT-III: Searching & Sorting Techniques

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
20.	Bubble sort	1	19-06-2021		TLM2	CO3	
21.	Insertion Sort	1	22-06-2021		TLM2	CO3	
22.	Selection Sort	1	24-06-2021		TLM2	CO3	
23.	Merge Sort	2	25-06-2021 26-06-2021		TLM2	CO3	
24.	Quick Sort	2	06-07-2021 08-07-2021		TLM2	CO3	
25.	Heap Sort	2	09-07-2021 10-07-2021		TLM2	CO3	
No. of classes required to complete UNIT-III		09					

UNIT-IV: Trees, Traversals, Search Trees

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
26.	Trees: Terminology, Binary Trees: definition	1	13-07-2021		TLM2	CO4	
27.	types of binary trees, Representation	1	15-07-2021		TLM2	CO4	
28.	Implementation using linked list	1	16-07-2021		TLM2	CO4	
29.	Tree traversals: Recursive techniques	2	17-07-2021 20-07-2021		TLM2	CO4	
30.	Expression Tress	1	22-07-2021		TLM2	CO4	
31.	Search Tree: Binary Search Tree-search operation	1	23-07-2021		TLM2	CO4	
32.	insertion, Deletion (all the three cases)	2	24-07-2021 27-07-2021		TLM2	CO4	
33.	Balanced Tree - Introduction to AVL Tress	1	29-07-2021		TLM2	CO4	
34.	AVL tree and Rotations	2	30-07-2021 31-07-2021		TLM2	CO4	
No. of classes required to complete UNIT-IV		12					

UNIT-V: Graphs, Hashing

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
35.	Graphs: Fundamentals, Representation of graphs	1	03-08-2021		TLM2	CO5	
36.	Graph Traversals: BFS, DFS	2	05-08-2021 06-08-2021		TLM2	CO5	
37.	Minimum Cost spanning tree: Definition, Prim's Algorithm	1	07-08-2021		TLM2	CO5	
38.	Kruskal's algorithm	1	10-08-2021		TLM2	CO5	
39.	Hashing: Hash Table and Hash Functions	1	12-08-2021		TLM2	CO5	
40.	Collision resolution Techniques : Open addressing	2	13-08-2021 14-08-2021		TLM2	CO5	
41.	separate Chaining, rehashing.	2	17-08-2021 19-08-2021		TLM2	CO5	
No. of classes required to complete UNIT-V		10					

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
42.	Introduction to B Trees.	1	20-08-2021		TLM1	CO4	
43.	Introduction to Splay Trees	1	21-08-2021		TLM1	CO3	

Teaching Learning Methods

TLM1	Chalk and Talk	TLM4	Problem Solving	TLM7	Seminars or GD
TLM2	PPT	TLM5	Programming	TLM8	Lab Demo
TLM3	Tutorial	TLM6	Assignment or Quiz	TLM9	Case Study

EVALUATION PROCESS :

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

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAM OUTCOMES

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 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.
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.

PROGRAM SPECIFIC OUTCOMES

1. An ability to apply softwareengineering practices and strategies in software project development using open source programming environment for the success of organization.
2. An Ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
3. To inculcate an ability to analyze,design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr L V Krishna rao	Dr P Bhagat	Dr. D Jagan Mohan reddy	Dr. D Veeraiah
Signature				



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor	: K.RAVI KIRAN YASASWI
Course Name & Code	: CONSTITUTION OF INDIA (20MC01)
L-T-P Structure	: 2-0-0
Program/Sem/Sec	: B.Tech., CSE., II-Sem., C
	Credits : 0
	A.Y: 2020-21

PRE-REQUISITE: Understand the Indian Constitution

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To enable the student to understand the importance of constitution
- To understand the structure of Executive, Legislature and Judiciary.
- To Understand Philosophy of fundamental rights and duties.
- To Understand the autonomous nature of constitution bodies like Supreme Court and High Court Controller and Auditor General of India and Election Commission of India
- To Understand the Central and State relation, financial and administrative.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand history and philosophy of constitution with reference to preamble, Fundamental Rights and Duties.
CO 2	Understand the concept of Unitary and Federal Government along with the role of President, Prime Minister and Judicial System.
CO 3	Understand the structure of the state government, Secretariat, Governor and Chief Minister and their functions.
CO 4	Learn local administration viz. Panchayat, Block, Municipality and Corporation.
CO 5	Learn about Election Commission and the process and about SC,ST,OBC and women.

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	-	-	-	-	-	-	-
CO2	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO3	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO4	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-
CO5	-	-	-	-	-	3	-	2	-	-	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

TEXT BOOKS:

- T1** Dr.B.R Ambedkar ,The Constitution of India ,General Press First edition 2020., New Delhi
- T2** Dr.B.R Ambedkar ,The Constitution of India, Government of India

REFERENCE BOOKS:

- R1** Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt.Ltd., New Delhi.
- R2** Subash Kashyap, Indian Constitution, National Book Trust.
- R3** J.A. Siwach, Dynamics of Indian Government and Politics.
- R4** D.C. Gupta, Indian Government and Politics.
- R5** H.M.Sreevai. Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication).
- R6** J.C. Johari, Indian Government and Politics Hans.
- R7** J.Raj, Indian Government and Politics.
- R8** M.V. Pylee, Indian Constitution, Durga Das Basu, Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd., New Delhi.
- R9** Noorani, A.G. (South Asia Human Rights Documentation Centre), Challenges to Civil Right). Challenges to Civil Rights Guarantees in India, Oxford University Press 2012.

E RESOURCES

1. nptel.ac.in/courses/109104074/8.
2. nptel.ac.in/courses/109104045.
3. nptel.ac.in/courses/101104065.
4. www.hss.iitb.ac.in/en/lecture-details.
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indianconstitution.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section C

UNIT-I : Introduction to Indian Constitution

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Introduction and Co-Po and Syllabus	1	10-05-2021		TLM2	CO1	T1 / T2	
2.	Constitution meaning and the term	1	15-05-2021		TLM2	CO1	T1 / T2	
3.	Sources and History of Indian Constitution	1	17-05-2021		TLM2	CO1	T1 / T2	
4.	Features-Citizenship, Preamble	1	22-05-2021		TLM2	CO1	T1 / T2	
5.	Fundamental Rights and Duties	1	24-05-2021		TLM2	CO1	T1 / T2	
6.	Directive Principles of State Policy	1	29-05-2021		TLM2	CO1	T1 / T2	
7.	Assignment -I	1	31-05-2021		TLM7	CO1	T1 / T2	
No. of classes required to complete UNIT-I		7			No. of classes taken:			

UNIT-II: Union Government and its Administration Structure of the Indian Union

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8	Union Government structure in India	1	05-06-2021		TLM2	CO2	T1 / T2	
9	Federalism Centre	1	07-06-2021		TLM2	CO2	T1 / T2	
10	State Relationships to the Union	1	12-06-2021		TLM2	CO2	T1 / T2	
11	President Role, Power and Position	1	14-06-2021		TLM2	CO2	T1 / T2	
12	Prime Minister (PM) and Council of Ministers, cabinet and Central Secretariat Powers and duties	1	19-06-2021		TLM2	CO2	T1 / T2	
13	Lok Sabha, Rajya Sabha, Supreme Court and High Court Powers and Functions.	1	21-06-2021		TLM2	CO2	T1 / T2	
14	Assignment II	1	26-06-2021		TLM7	CO2	T1 / T2	
		7			No. of classes taken:			

UNIT-III: State Government and its administration Governor

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15	State Government and its Administration Governor and Role	1	05-07-2021		TLM2 / TLM4	CO3	T1 / T2	
16	Role of Chief Ministers and Council of Ministers	1	10-07-2021		TLM2 / TLM4	CO3	T1 / T2	
17	State Secretariat Functions	1	12-07-2021		TLM2 / TLM4	CO3	T1 / T2	
18	Organisation ,Structure and Functions of State Governments	1	17-07-2021		TLM2 / TLM4	CO3	T1 / T2	
19	Assignment –III	1	19-07-2021		TLM2 / TLM4	CO3	T1 / T2	
No. of classes required to complete UNIT-III		05			No. of classes taken:			

UNIT-IV: A Local Administration

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20	A Local Administration	1	24-07-2021		TLM2 / TLM4	CO4	T1 / T2	
21	Role and importance of local administration	1	26-07-2021		TLM2 / TLM4	CO4	T1 / T2	
22	Municipalities –Mayor and Role of Elected Representative	1	31-07-2021		TLM2 / TLM4	CO4	T1 / T2	
23	Functions of Panchayati Raj Institution,Zilla Panchayats ,Elected Official and their roles	1	02-08-2021		TLM2 / TLM4	CO4	T1 / T2	
24	Village level-Role of Elected and Appointed officials./Assignment-IV	1	07-08-2021		TLM2/ TLM 7	CO4	T1 / T2	
No. of classes required to complete UNIT-IV		05			No. of classes taken:			

UNIT-V: Election Commission

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25	Election Commission :Role of Chief Election Commissioner and Election Commisionerate	1	09-08-2021		TLM2 / TLM4	CO5	T1 / T2	
26	State Election Commission	1	14-08-2021		TLM2 / TLM4	CO5	T1 / T2	
27	Functions and Commissions for the Welfare of SC/ST/OBC and Women.	1	16-08-2021		TLM2 / TLM4	CO5	T1 / T2	
28	Assignment-V	1	21-08-2021		TLM7	CO5	T1 / T2	
No. of classes required to complete UNIT-V		04			No. of classes taken:			

Content Beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
29.	Consumer Rights	1	21.08.2021		TLM2/ TLM5		T2/R3	
	Industrial policies							

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
TLM 7	Assignment /Quiz		

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I , Unit-II , Unit-III)	A1=5
Assignment-II (Unit-III , Unit-IV , Unit-V)	A2=5
I-Mid Examination (Units-I & II)	M1=15
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=15
II-Quiz Examination (Units-III, IV & V)	Q2=10
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=15
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+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	Programming Paradigms: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 2	Data Engineering: To inculcate an ability to analyze, design and implement database applications.
PSO 3	Software Engineering: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.

Course Instructor	Course Coordinator	Module Coordinator	HOD
K.Ravi Kiran Yaraswi	K.Ravi Kiran Yaraswi	Dr.D.Veeraiah	Dr.D.Veeraiah



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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 : Engineering Chemistry Lab&20FE53

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

Credits:1.5

Program/Sem/Sec : B.Tech/IIsem/CSE-C

A.Y. : 2020-21

Pre requisites: Nil

Course Educational Objective: This course enables the students to analyse water sample for alkalinity. perform and distinguish different types of volumetric titrations. get hands-on experience with preparation of polymers. use analytical techniques like conductometry, potentiometry and colorimetry.

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

CO1: Assess alkalinity of water based on the procedure 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

Part-B

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
1.	Introduction to Engineering chemistry lab	3	13-05-2021		TLM1	C04	
2.	Determination of amount of HCl using standard Na ₂ CO ₃ solution	3	20-05-2021		TLM4	C02,C04	
3.	Determination of alkalinity of water sample.	3	27-05-2021		TLM4	C01,C04	
4.	Estimation of Mg ⁺² /Zn ⁺² /Ca ⁺² in given solution by using standard EDTA solution.	3	03-06-2021		TLM4	C02, C04	
5.	Preparation of nylon fibres.	3	10-06-2021		TLM4	C03	
6.	Preparation of Bakelite	3	17-06-2021		TLM4	C03	
7.	Estimation of Mohr's salt by using potassium permanganate.	3	24-06-2021		TLM4	C02,C04	
8.	Estimation of ferrous ion by using potassium dichromate.	3	08-07-2021		TLM4	C02,C04	
9.	Determination of pH of the given sample solution using pH meter	3	15-07-2021		TLM4	C04	
10.	Estimation of amount of HCl conductometrically using standard NaOH solution.	3	22-07-2021		TLM4	C02,C04	
11.	. Estimation of amount of HCl conductometrically using NH ₄ OH solution.	3	29-07-2021		TLM4	C02,C04	
12.	Estimation of amount of HCl potentiometrically using NaOH solution.	3	05-08-2021		TLM4	C02, C04	

13.	Internal lab exam		12-08-2021				
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:

- Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 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.
- 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.
- 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 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.
 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 COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : K SUNDEEP SARADHI
Course Name & Code : Python Programming Lab (20CS54)
L-T-P Structure : 0-0-3 Credits : 1.5
Program/Sem/Sec : B.Tech., CSE., II-Sem., C A.Y : 2020-21

PRE-REQUISITE : C Programming

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The Objective of Python course is to lead the students from the basics of writing and running Python scripts in problem solving and to design and implement the modules and understands the working of classes and objects in python.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Apply building blocks of Python in solving computational problems. (Apply - L3)
CO 2	Implement in-built data structures available in Python to solve computational problems. (Apply - L3)
CO 3	Implement modular programming, string manipulations and Object-oriented programming in python. (Apply - L3)
CO 4	Improve individual / teamwork skills, communication & report writing skills with ethical values

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	-	-	-	-	-	-	-	3	-	-
CO2	-	3	2	3	2	-	-	-	-	-	-	-	3	-	-
CO3	-	3	2	3	2	-	-	-	-	-	-	-	3	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 - Moderate (Medium), 3 - Substantial (High).

PART-B

Introduction: Language basics and example problems (Two weeks)

- a) Implement Python Script for checking the given year is leap year or not.
- b) Implement Python Script for finding biggest number among 3 numbers.
- c) Implement Python Script for displaying reversal of a number.
- d) Implement Python Script to check given number is Armstrong or not.
- e) Implement Python Script to print sum of N natural numbers.
- f) Implement Python Script to check given number is palindrome or not.
- g) Implement Python script to print factorial of a number.
- h) Implement Python Script to print all prime numbers within the given range.
- i) Implement Python Script to calculate the series: $S=1+x+x^2+x^3+\dots+x^n$
- j) Implement Python Script to print the following pattern:

```
*
*  *
*  *  *
```

Module 1: Exercise Programs on Lists.

- a) Write a Python script to display elements of list in reverse order.
- b) Write a Python script to find the minimum and maximum elements without using built-in operations in the lists.
- c) Write a Python script to remove duplicates from a list.
- d) Write a Python script to append a list to the second list.
- e) Write a Python script to count the number of strings in a list where the string length is 2 or more.

Module 2: Exercise Programs on Tuples.

- a) Write a Python script to create a tuple with different data types.
- b) Write a Python script to find the repeated items of a tuple.
- c) Write a Python script to replace last value of tuples in a list.
Sample list: [(10, 20, 40), (40, 50, 60), (70, 80, 90)]
Expected Output: [(10, 20, 100), (40, 50, 100), (70, 80, 100)]
- d) Write a Python script to sort a tuple by its float element.
Sample data: [('item1', '12.20'), ('item2', '15.10'), ('item3', '24.5')]
Expected Output: [('item3', '24.5'), ('item2', '15.10'), ('item1', '12.20')]

Module 3: Exercise Programs on Sets.

- a) Write a Python script to add member(s) in a set.

- b) Write a Python script to perform Union, Intersection, difference and symmetric difference of given two sets.
- c) Write Python script to test whether every element in S is in T and every element in T is in S.

Module 4: Exercise Programs on Dictionaries

- a) Write a Python script to sort (ascending and descending) a dictionary by value.
- b) Write a Python script to check whether a given key already exists or not in a dictionary.
- c) Write a Python script to concatenate following dictionaries to create a new one.
Sample Dictionary : dic1={1:10, 2:20} dic2={3:30, 4:40} dic3={5:50,6:60}
Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60}
- d) Write a Python script to print a dictionary where the keys are numbers between 1 and 15 (both included) and the values are square of keys.
- e) Write a Python program to map two lists into a dictionary.

Module 5: Exercise Programs on functions and recursion.

- a) Define a function max_of_three() that takes three numbers as arguments and returns the largest of them.
- b) Write a program which makes use of function to display all such numbers which are divisible by 7 but are not a multiple of 5, between given range X and Y.
- c) Define functions to find mean, median, mode for the given numbers in a list.
- d) Define a function which generates Fibonacci series up to n numbers.
- e) Implement a python script for factorial of number by using recursion.
- f) Implement a python script to find GCD of given two numbers using recursion.

Module 6: Exercise programs on Date and Time Modules.

- a) Write a Python script to get the current time in Python.
- b) Write a Python script to get current time in milliseconds in Python
- c) Write a Python script to print next 5 days starting from today.

Module 7. Exercise programs on Exception Handling.

- a) Write a Python script to handle simple errors by using exception handling mechanism.
- b) Write a Python script to handle multiple errors with one except statement.

Module 8: Exercise programs on Strings

- a) Implement Python Script to perform various operations on string using string libraries.
- b) Implement Python Script to check given string is palindrome or not.
- c) Implement python script to accept line of text and find the number of characters, number of vowels and number of blank spaces in it.

- d) Implement python script that takes a list of words and returns the length of the longest one.

Module 9: Exercise programs on Regular Expressions

- a) Write a Python script to check that a string contains only a certain set of characters (in this case a-z, A-Z and 0-9).
- b) Write a Python script to check whether password is valid or not.

Conditions for a valid password are:

Should have at least one number.

Should have at least one uppercase and one lowercase character.

Should have at least one special symbol.

Should be between 6 to 20 characters long.

Module 10: Exercise programs on Object Oriented Programming

- a) Write a Python script to create and access class variables and methods.
- b) Write a Python script to implement method overloading.
- c) Write a Python script to implement single inheritance.
- d) Write a Python script to implement method overriding.

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

S.No.	Programs to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Installation and Working on Interpreter	3	21.05.2021		TLM4	CO1,CO4	
2.	Language Basics and Example Programs	3	28.05.2021		TLM4	CO1,CO4	
3.	Language Basics and Example Programs	3	04.06.2021		TLM4	CO1,CO4	
4.	Module-1 Programs on Lists	3	11.06.2021		TLM4	CO2,CO4	
5.	Module-2 Programs on Tuples	3	18.06.2021		TLM4	CO2,CO4	
6.	Module-3 & 4 Programs on Sets Programs on Dictionaries	3	25.06.2021		TLM4	CO2,CO4	
7.	Module-5 Programs on Functions & Recursions	3	09.07.2021		TLM4	CO3,CO4	
8.	Module-6 Programs on Modules	3	16.07.2021		TLM4	CO3,CO4	
9.	Module-7 Programs on Exception Handling	3	23.07.2021		TLM4	CO3,CO4	
10.	Module-8 Programs on Strings	3	30.07.2021		TLM4	CO3,CO4	

11.	Module-9 Programs on Regular Expressions	3	06.08.2021		TLM4	CO3,CO4	
12.	Module-10 Programs on OOP	3	13.08.2021		TLM4	CO3,CO4	
13.	Internal Lab Exam	3	20.08.2021				

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

PROGRAMME OUTCOMES (POs):

PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	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.
PO3	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.
PO4	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.
PO5	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
PO6	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
PO7	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.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	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.
PO11	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.
PO12	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	Programming Paradigms: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 2	Data Engineering: To inculcate an ability to analyze, design and implement database applications.
PSO 3	Software Engineering: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.

Course Instructor
Mr. K.Sundeep Saradhi

Course Coordinator
Mr. K.Sundeep Saradhi

Module Coordinator
Dr. M.Srinivasa Rao

HOD
Dr.D.Veeraiah



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 COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr L V Krishna rao

Course Name & Code : Data structures lab , 20CS53

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

Credits: 1.5

Program/Sem/Sec : B.Tech-CSE / II SEM / C

A.Y. : 2020-21

PREREQUISITE : C Programming Language

Course Educational Objectives:

The objective of this course is to make students familiar with writing algorithms to implement different data structures like stacks, queues, trees and graphs, and various sorting techniques.

Course Outcomes (COs): *At the end of this course, the student will be able to*

CO 1: Implement Linear Data Structures using array and Linked list.(**Apply - L3**)

CO 2: Implement Various Sorting Techniques.(**Apply - L3**)

CO 3: Implement Non-Linear Data Structure such as Trees & Graphs.(**Apply - L3**)

CO 4: Improve individual / teamwork skills, communication & report writing skills with ethical values.

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

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

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight(Low), 2 – Moderate(Medium), 3 - Substantial (High).

Part-B**COURSE DELIVERY PLAN (LESSON PLAN): Section-A**

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1	Practice session on Arrays, structures and pointers Practice session on Dynamic Memory allocation.	3	24-05-2021		TLM4/TLM5	CO1	
2	Write a C program to implement various operations on List using arrays. Write a C program to implement various operations on Single linked List using pointers.	3	31-05-2021		TLM4/TLM5	CO1	
3	Write an interactive C program to create a linear linked list of customer names and their telephone numbers. The program should be menu-driven and include features for adding a new customer, deleting an existing customer and for displaying the list of all customers.	3	07-06-2021		TLM4/TLM5	CO1	
4	Write a C program to create a circular linked list so that the input order of data items is maintained. Add the following functions to carry out the following operations on circular single linked lists. a) Count the number of nodes. b) insert a node c) delete a node	2	14-06-2021		TLM4/TLM5	CO1	
5	Write a C program that will remove a specified node from a given doubly linked list and insert it at the end of the list on an existing list. Also write a function to display the contents of the list. Write a C program to implement a stack using array & linked list in which Push, Pop and display can be performed.	2	21-06-2021		TLM4/TLM5	CO1	
6	Write a program to convert infix expression to post fix expressions using array implementation of stack Write a program for evaluating post fix expressions using array implementation of stack	2	05-07-2021		TLM4/TLM5	CO1	
7	Write a C program to implement a queue using arrays and linked list in which insertions, deletions and	3	12-07-2021		TLM4/TLM5	CO1	

	display can be performed.					
8	Write a C program to implement insertion sort& shell sort	1	19-07-2021		TLM4/TLM5	CO2
9	Write a C program to implement Selection sort. Write a C Program to implement Merge Sort	2	19-07-2021		TLM4/TLM5	CO2
10	Sort a sequence of n integers using Quick sort technique and then search for a key in the sorted array using Binary search, linear search techniques.	2	26-07-2021		TLM4/TLM5	CO2
11	Write a C program to Heap sort	1	26-07-2021		TLM4/TLM5	CO2
12	Write a C program to construct a binary tree and do inorder, preorder and post order traversals, printing the sequence of nodes visited in each case.	3	02-08-2021		TLM4/TLM5	CO3
13	Write a C program to implement BST operations- insert, search and delete	2	09-08-2021		TLM4/TLM5	CO3
14	Write a C program to implement the following graph Traversals a) DFS b) BFS	1	09-08-2021		TLM4/TLM5	CO3
15	Lab Internal Examination		01-10-19			

Teaching Learning Methods					
TLM1	Chalk and Talk	TLM4	Problem Solving	TLM7	Seminars or GD
TLM2	PPT	TLM5	Programming	TLM8	Lab Demo
TLM3	Tutorial	TLM6	Assignment or Quiz	TLM9	Case Study

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO I: To inculcate the adaptability skills into the students for software design, software development or any other allied fields of computing.

PEO II: To equip the graduates with the ability to analyze, design and synthesize data to create novel products.

PEO III: Ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

PEO IV: To empower the student with the qualities of effective communication, team work, continues learning attitude, leadership needed for a successful computer professional.

PROGRAM OUTCOMES

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 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.
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.

PROGRAM SPECIFIC OUTCOMES

1. An ability to apply software engineering practices and strategies in software project development using open source programming environment for the success of organization.
2. An Ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
3. To inculcate an ability to analyze, design and implement database applications.

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr L V Krishna rao	Dr P Bhagat	Dr D jagan Mohan reddy	Dr. D Veeraiah
Signature				



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

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : G BALU NARASIMHA RAO
Course Name & Code : SHELL SCRIPTING& 20CS55
L-T-P Structure : 0-0-2 Credits : 1
Program/Sem/Sec : B.Tech., CSE., II-Sem., Sections- C A.Y : 2020-21
PRE-REQUISITE : Knowledge in Operating Systems

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to familiarize with the Unix/Linux command line and running simple commands and concept of environment variables and with the simple use of environment variables.

COURSE OUTCOMES (COs): At the end of the course, students are able to

CO 1	Understand the basic Unix/linux commands.
CO 2	Learn importance of shell scripting.
CO 3	Apply shell programming to various files.
CO 4	Improve individual / teamwork skills, communication & report writing skills with ethical values.

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	-	-	-	-	-	-	-	2	3	-	-
CO2	3	2	3	1	-	-	-	-	-	-	-	2	3	-	-
CO3	3	2	3	1	-	-	-	-	-	-	-	2	3	-	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

Note: Enter Correlation Levels 1 or 2 or 3. If there is no correlation, put '-'

1- Slight (Low), 2 – Moderate (Medium), 3 - Substantial (High).

REFERENCE BOOKS:

- R1** Learning the bash Shell, 3rd Edition by Cameron Newham, Publisher(s): O'Reilly Media, Inc., ISBN: 9780596009656
- R2** UNIX and Shell Programming by Behrouz A. Forouzan, Richard F. Gilberg Publisher: Thomson Press (India) Ltd, ISBN: 9788131503256, 9788131503256
- R3** Shell Scripting: Expert Recipes for Linux, Bash, and More by Steve Parke

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign
1.	Module – I: Basic Linux Command -Introduction to Operating systems, Features of Unix/Linux kernel and shell	2	18-05-2021		
2.	study of vi editor ,Unix/Linux file systems, Unix/Linux Commands (man, who, cat, cd, cp, ps, ls, mv, rm, mkdir, rmdir, echo, more, date)	2	25-05-2021		
3.	Unix/Linux Commands (time, kill, history, chmod, chown, finger, pwd, cal, logout, shutdown) 1.Use of Basic UNIX Shell Commands: ls, mkdir, rmdir, cd, cat, touch, file, wc, sort, cut, grep,dd, dfspace, du, ulimit	2	01-06-2021		
4.	Module–II: Introduction to Shell- Introduction to Shell, Shell responsibilities, running a shell script, Variables, passing arguments, Basic Operators	2	08-06-2021		
5.	Decision Making, Loops, Arrays, Arrays –Comparison, Shell functions.	2	15-06-2021		
6.	Shell Programming: Shell script exercises based on following: (i) Interactive shell scripts (ii) Positional parameters (iii) Arithmetic (iv) if-then-fi, if-then- else-fi, nested if-else (v) Logical operators (vi) else + if equals elif case structure (vii) while, until, for loops, use of break	2	22-06-2021		
7.	Module – III: Advanced Shell Special Variables, Bash trap command, File Testing, Input Parameter Parsing.	2	29-06-2021		
8.	Pipelines, Process Substitution, Regular Expressions, Special Commands: sed, awk, grep, sort.	2	06-07-2021		
9.	Commands related to inode, I/O redirection and piping, process control commands, mails.	2	13-07-2021		

10.	Write a shell script to create a file. Follow the instructions (i) Input a page profile to yourself, copy it into other existing file (ii) Start printing file at certain line (iii) Print all the difference between two file, copy the two files. (iv) Print lines matching certain word pattern	2	20-07-2021		
11.	Write shell script for- (i) Showing the count of users logged in, (ii) Printing Column list of files in your home directory (iii) Listing your job with below normal priority (IV) Continue running your job after logging out.	2	27-07-2021		
12.	Write a shell script to change data format. Show the time taken in execution of this script. Write a shell script to print files names in a directory showing date of creation & serialnumber of the file. Write a shell script to count lines, words, and characters in its input (do not use wc).	2	03-08-2021		
13.	Lab Internal Exam	2	10-08-2021		

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.
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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	Programming Paradigms: To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms. 2. Data Engineering: To inculcate an ability to Analyze, Design and implement data driven applications into the students. 3. Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.
PSO 2	Data Engineering: To inculcate an ability to Analyze, Design and implement data driven applications into the students.
PSO 3	Software Engineering: Develop an ability to implement various processes / methodologies /practices employed in design, validation, testing and maintenance of software products.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	G Balu Narasimha Rao	G Balu Narasimha Rao	Dr. D Jagan Mohan Reddy	Dr. D. Veeraiah
Signature				