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
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B.Tech., V-Sem., CSE-A/S
ACADEMIC YEAR	: 2020-21
COURSE NAME & CODE	: Engineering Economics and Accountancy – 17HS01
L-T-P STRUCTURE	: **3-0-0**
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Mr. B KALYAN KUMAR
COURSE COORDINATOR	: Dr. A ADISESHA REDDY
PRE-REQUISITE	: Basic Sciences & Humanities

COURSE OBJECTIVE: The objective of this course is to inculcate basic knowledge to students relating to concepts of Engineering Economics and Accountancy to make them effective business decision makers.

Other course educational objectives of this course:

1. To know the concepts of engineering economics and to make them effective business decision makers.

2. To understand the concepts of production and cost for various business decision.

3. To understand the different types of market, market structures& pricing strategies and their applications in business decision making.

4. To explain the strategies of raising and utilization of business capital.

5. To understand the Fundamental of accounting and analysis of accounting statements for Managerial decision making.

COURSE OUTCOMES (CO)
Upon The Successful Completion of This Course Students Will Able To:

CO1: Capable of analyzing fundamentals of economics concepts which helps in effectivebusiness administration.

CO2: Discuss cost- output relationship in business operations.

CO3: Analyze the features of market structures and present the pricing policies.

CO4: Identify the types of Business organization of the company and the implementation Requirements of each one.

CO5: Financial position of the company can be analyzing with the help of financial statements.

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

Cos	a	b	c	d	e	f	G	H	I	J	k	l	PSOa	PSOb	PSOc	PSOd
CO1	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO2	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO3	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-

CO4	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO5	-	-	-	2	3	2	-	-	2	-	3	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).

BOS APPROVED TEXT BOOKS:
T1   Aryasri: Managerial Economics and Financial Analysis, MHE, 2014

BOS APPROVED REFERENCE BOOKS:
R1   Varshney & Maheswari : Managerial Economics, Sultan Chand, 2003.

R2   Ambrish Guptha, Financial Accounting for Management, Pearson Education, New delhi.

R3   Lipey & Chrystal, Economics, Oxford University press.

COURSE DELIVERY PLAN (LESSON PLAN): Section-A
UNIT – I: Introduction to Engineering Economics

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 Subject, Course Outcomes	01	18.08.2020		**TLM2**	CO1	T1	
2.	Economics- definations, nature & scope	01	20.08.2020		**TLM2**	CO1	T1	
3.	Branches of economics, engineering economics – features and scope.	01	22.08.2020		**TLM2**	CO1	T1	
4.	Demand- types, determinants, law of demand	01	25.08.2020		**TLM2**	CO1	T1	
5.	Exemption of law damand and Elasticity of demand	01	27.08.2020		**TLM2**	CO1	T1	
6.	Elasticity of demand significance-	01	29.08.2020		**TLM2**	CO1	T1	
7.	Types of elasticity of demand	01	01.09.2020		**TLM2**	CO1	T1	
8.	Demand forecasting types- factor governing-	01	03.09.2020		**TLM2**	CO1	T1	
9.	Methods of demand forecasting.	01	05.09.2020		**TLM2**	CO1	T1	
No. of classes required to complete UNIT-I		09				No. of classes taken:		

UNIT – II Theory of Production & Cost Analysis

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 UNIT-II	01	08.09.2020		**TLM2**	CO2	T1	
2.	Production function and ISO Quant and ISO Cost	01	10.09.2019		**TLM2**	CO2	T1	
3.	MRTS, least cost combination of inputs ,	01	12.09.2020		**TLM2**	CO2	T1	
4.	law of returns	01	15.09.2020		**TLM2**	CO2	T1	
5.	Internal and external economies of scale	01	17.09.2020		**TLM2**	CO2	T1	
6.	Cost analysis: cost concepts, cost & output relationshipin short run & long run,	01	19.09.2020		**TLM2**	CO2	T1	
7.	Break even analysis, determination of BEP, Significance & limitation of BEA.	01	22.09.2020		**TLM 2**	CO2	T1	
8.	BEP Problems	01	24.09.2020					
	I MID EXAM		26.09.2020					
	I MID EXAM		29.09.2020					
	I MID EXAM		01.10.2020					
No. of classes required to complete UNIT-II		08				No. of classes taken:		

UNIT-III:Market Pricing Policies- Market 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 UNIT-III	01	03.10.2020		**TLM2**	CO3	T1	
2.	Types of markets, features & price output determinations under perfect competitions.	01	06.10.2020		**TLM2**	CO3	T1	
3.	Monopoly, monopolistic competitions, oligopoly markets.	01	08.10.2020		**TLM2**	CO3	T1	

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
4.	Pricing policies- Pricing objectives- methodes	01	10.10.2020		**TLM2**	CO3	T1	
5.	Applications in business	01	13.10.2020		**TLM2**	CO3	T1	
No. of classes required to complete UNIT-III		05		No. of classes taken:				

UNIT IV–Capital & Capital Budgeting

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 UNIT-IV Capital & its significance- types of capital Estimation of fixed cost and working capital	01	15.10.2020		**TLM2**	CO4	T1	
2.	Components of working capital & factors determining the need of working capital	01	17.10.2020		**TLM2**	CO4	T1	
3.	Sources of raising working capital.	01	20.10.2020		**TLM2**	CO4	T1	
4.	Capital budgeting significance- process	01	22.10.2020		**TLM2**	CO4	T1	
5.	Techniques of capital budgeting : Non discounted cash flow techniques	01	24.10.2020		**TLM2**	CO4	T1	
6.	Discounted cash flow techniques.	01	27.10.2020		**TLM2**	CO4	T1	
No. of classes required to complete UNIT-IV		06		No. of classes taken:				

UNIT-V.Financial Accounting & Analysis

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 UNIT-V	01	29.10.2020		**TLM2**	CO5	T1	
2.	Accounting significance- book keeping- double entry system	01	31.10.2020		**TLM2**	CO5	T1	
3.	Journal- ledger- trail balance	01	03.11.2020		**TLM2**	CO5	T1	
4.	Final accounts with simple adjustments.	01	05.11.2020		**TLM2**	CO5	T1	
5.	Final accounts with simple adjustments.	01	07.11.2020		**TLM2**	CO5	T1	
6.	Financial statement analysis through ratios.	01	10.11.2020		**TLM2**	CO5	T1	
7.	Financial statement analysis through ratios.	01	12.11.2020		**TLM2**	CO5	T1	
	II MID EXAM		16.11.2020					
	II MID EXAM		18.11.2020					
	II MID EXAM		20.11.2020					
No. of classes required to complete UNIT-V		07			No. of classes taken:			

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM2	PPT	**TLM6**	Assignment or Quiz
TLM3	Tutorial	**TLM7**	Group Discussion/Project
TLM4	Demonstration (Lab/Field Visit)		

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5

Assignment-II (Unit-II)	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

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**: 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.

B.Kalyan Kumar	Dr. A ADISESHA REDDY	Dr. A ADISESHA REDDY	Dr. A ADISESHA REDDY
Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B.Tech., V-Sem., CSE-A/S
ACADEMIC YEAR	: 2020-21
COURSE NAME & CODE	: HUMAN COMPUTER INTERACTION-17CI12
L-T-P STRUCTURE	: 3-0-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Mr. J NAGESWARA RAO
COURSE COORDINATOR	: Mr. J NAGESWARA RAO
PRE-REQUISITE	: Knowledge of Computer and Its Architecture.

Course Educational Objective (CEO):

To provide basic methodologies and processes for designing interfaces.

To improve the interaction between users and computers by making computers more usable and receptive to the user 's needs.

To provide relevant principles of behaviour, mostly derived from cognitive science and psychology and other sources that describe human ethologic in particular environment, especially technological ones.

To make the students familiar with developing new interfaces and interaction techniques.

Course Outcomes (COs): After the completion of this course, student will be able to:

CO1: Identify the elements of good user interface design through effective GUI.

CO2: Identify the importance of human characteristics and understanding business functions.

CO3: Analyze screen design principles for making good decisions based on technological considerations in interface design.

CO4: Select the window, device and screen based controls through navigation schemes.

CO5: Identify the basic components and interaction devices to interact with the computers.

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

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

TEXT BOOK:

Wilbert O Galitz, ‖The Essential Guide to User Interface Design‖, Wiley DreamaTech, Third Edition, 2007.

REFERENCES:

1.Ben Shneiderman, CatherinePlaisant, —Designing the User Interface, Fourth Edition, Pearson Education ,2008.

2. ALAN DIX, JANET FINLAY, GREGORYD. ABOWD, RUSSELL BEALE, —Human Computer Interaction, Third Edition, PEARSON,2009.

3. http://ps.fragnel.edu.in/~dipalis/prgdwnl/eguid.pdf

4. https://www.alljntuworld.in/download/human-computer-interaction-materials-notes/

5. http://www.crectirupati.com/sites/default/files/lecture_notes/HCI-notes.pdf

COURSE DELIVERY PLAN (LESSON PLAN): Section-A
UNIT –I: Introduction to Graphical User Interface

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 :** Importance of user Interface	1	17-08-2020		**TLM1**	CO1	T1	
2.	Overview of user Interface	1	19-08-2020		**TLM1 /TLM4**	CO1	T1	
3.	Importance of good design	1	21-08-2020		**TLM1 /TLM4**	CO1	T1	
4.	Benefits of good design.	1	24-08-2020		**TLM1 /TLM4**	CO1	T1	
5.	A brief history of Screen design	1	26-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
6.	**The graphical user interface** – popularity of graphics	1	28-08-2020		**TLM1 /TLM4**	CO1	T1,R2	
7.	the concept of direct manipulation	1	31-08-2020		**TLM1 /TLM4**	CO1	T1,R2	
8.	graphical system Characteristics	1	02-09-2020		**TLM1 /TLM4**	CO1	T1,R2	
9.	Web user – Interface popularity	1	04-09-2020		**TLM1 /TLM4**	CO1	T1	
10.	Characteristics-Principles of user interface.	1	07-09-2020		**TLM1 /TLM4**	CO1	T1	
11.	Tutorial	1	10-09-2020		**TLM 3**	CO1	T1,R1,R2	
No. of classes required to complete UNIT-I		11			No. of classes taken: 11			

UNIT –II: Design process

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion (DD-MM-YY)	Actual Date of Completion (DD-MM-YY)	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
12.	**Design process** – Human interaction with	2	09-09-2020, 11-09-2020		TLM1	CO2	T1	

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
	computers							
13.	importance of human characteristics	2	14-09-2020,		**TLM1 /TLM4**	CO2	T1,R2	
14.	human consideration	1	16-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
15.	Human interaction speeds	1	18-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
16.	Understanding business junctions.	2	23-09-2020		**TLM1 /TLM4**	CO2	T1,R1	
17.	Revision	1	25-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
No. of classes required to complete **UNIT-2**		09			No. of classes taken:			

UNIT –III: Screen Designing

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
18.	**Screen Designing : Design goals**	1	28-09-2020		**TLM1**	CO3	T1	
19.	Screen planning and purpose	1	30-09-2020		**TLM1 /TLM4**	CO3	T1,R1	
20.	organizing screen elements	1	02-10-2020		**TLM1 /TLM4**	CO3	T1,R1	
21.	ordering of screen data and content ,	1	,05-10-2020		**TLM1 /TLM4**	CO3	T1,R1	
22.	screen navigation and flow	1	07-10-2020		**TLM1 /TLM4**	CO3	T1,R1	
23.	Visually pleasing composition , amount of information	1	09-10-2020		**TLM1**	CO3	T1,R1	
24.	Distinctiveness, focus and	1	12-10-2020		**TLM1**	CO3	T1,R2	

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
	emphasis							
25.	revision	1	14-10-2020		**TLM1**	CO3	T1,R2	
No. of classes required to complete **UNIT-3**		08			No. of classes taken:			

UNIT –IV: Windows

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
26.	**Windows** – New and Navigation schemes	1	14-10-2020		**TLM1**	CO4	T1	
27.	Structure of Menus, Functions of Menus	1	16-10-2020		**TLM1 /TLM4**	CO4	T1,R1,R2	
28.	Phrasing the Menu, Selecting Menu Choices	1	19-10-2020		**TLM1 /TLM4**	CO4	T1,R1,R2	
29.	Navigating Menus, Kinds of Graphical Menus	1	21-10-2020		**TLM1 /TLM4**	CO4	T1,R1	
30.	selection of window, Components of Window	1	26-10-2020		**TLM1 /TLM4**	CO4	T1,R1	
31.	Window Presentation Styles, Types of Windows, Selection of devices based controls	1	28-10-2020		**TLM1 /TLM4**	CO4	T1,R1	
32.	REVISION	1	30-10-2020		**TLM 3 /TLM 6**	CO4	T1,R1,R2	
No. of classes required to complete **UNIT-4**		09			No. of classes taken:			

UNIT-V: Components

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
33.	**Components** – text and messages, **Text**	1	02-11-2020		**TLM1**	CO5	T1	

Sno.	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
	for web pages							
34.	Icons and increases , Kinds of Icons, characteristics of Icons	1	04-11-2020		**TLM1 /TLM4**	CO5	T1,R1,R2	
35.	Multimedia, Colors uses. problems with choosing colors	1	06-11-2020		**TLM1 /TLM4**	CO5	T1,R1,R2	
36.	Keyboard and function keys, pointing devices,	1	09-11-2020		**TLM1 /TLM4**	CO5	T1,R2	
37.	digitization and generation, Drivers.	1	11-11-2020		**TLM1 /TLM4**	CO5	T1,R2	
38.	Revision	1	11-11-2020,		**TLM 3 /TLM 6**	CO5	T1,R1,R2	
No. of classes required to complete **UNIT-5**		06			No. of classes taken:			

Contents beyond the Syllabus

Sno.	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
39.	speech recognition	1	16-11-2020		**TLM1 /TLM4**	CO1	T1	
40.	image and video displays	1	18-11-2020, 20-11-2020		**TLM1 /TLM4**	CO2	T1	

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:

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	Cos	Marks
Assignment/Quiz – 1	1	A1=5

Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME 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.

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 enginee**ring 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.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	J.N.RAO	J.N.RAO	Dr Ch V Narayana	Dr. D Veeraiah
Signature				

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http://cse.lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222933, Fax: 08659-222931
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	:	B.Tech., V-Sem., CSE
ACADEMIC YEAR	:	2020-21
COURSE NAME & CODE	:	UML and Design Patterns - 17CS03
L-T-P STRUCTURE	:	3-0-0
COURSE CREDITS	:	3
COURSE INSTRUCTOR	:	Dr .O.Rama Devi
COURSE COORDINATOR	:	Dr. O.Rama Devi
PRE-REQUISITE	:	**Knowledge of Object Oriented Methods**

COURSE OBJECTIVE:

The main objective of this course is that the students become familiar with all phases of OOAD and master the main features of the UML. They come to know about the main concepts of Object Technologies and how to apply them at work and develop the ability to analyze and solve challenging problem in various domains. And Learn the Object Design Principles and understand how to apply them towards implementation.

COURSE OUTCOMES (CO):

CO1: Select the basic elements of modeling such as Things, Relationships and Diagrams depending on the views of UML Architecture and SDLC.

CO2: Apply basic and Advanced Structural Modeling Concepts for designing real time applications.

CO3: Design Class and Object Diagrams that represent Static Aspects of a Software System.

CO4: Analyze Dynamic Aspects of a Software System using Use Case, Interaction and Activity Diagrams.

CO5: Apply techniques of State Chart Diagrams and Implementation Diagrams to model behavioral aspects and Runtime environment of Software Systems

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

CO4	2	3	3	-	-	-	-	-	-	-	-	1	1	-	3
CO5	2	3	3	-	-	-	-	-	-	-	-	1	1	-	3

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

BOS APPROVED TEXT BOOKS:

T1 Grady Booch, James Rumbaugh, Ivar Jacobson "The Unified Modeling Language User Guide, Pearson Education, 2nd edition.

BOS APPROVED REFERENCE BOOKS:

R1 Meilir Page-Jones: Fundamentals of Object Oriented Design in UML, Pearson Education.

R2 Pascal Roques: Modeling Software Systems Using UML2, WILEY- Dreamtech India Pvt. Ltd.

R3 Atul Kahate: Object Oriented Analysis & Design, TMH Companies.

R4 Craig Larman, Applying UML and Patterns: An introduction to Object – Oriented Analysis and Design and Unified Process, Pearson Education.

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT – 1: INTRODUCTION TO UML

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.	Why Modeling? and Importance of Modeling	1	17-08-2020		TLM2	CO1	T1	
2.	Principles of Modeling and Object Oriented Modeling	1	19-08-2020		TLM2	CO1	T1	
3.	Overview of the UML	1	20-08-2020		TLM2	CO1	T1	
4.	Conceptual Model of the UML & Building Blocks: Things – Part 1	1	24-08-2020		TLM2, TLM8	CO1	T1, R1	
5.	Building Blocks: Things – Part	1	26-08-2020		TLM2, TLM8	CO1	T1, R1	

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
	2							
6.	Relationships with Examples & UML Diagrams	1	27-08-2020		TLM2, TLM8	CO1	T1, R1	
7.	Architecture	1	31-08-2020		TLM2	CO1	T1, R1	
8.	Software Develoment Life Cycle	1	2-08-2020		TLM2, TLM8	CO1	T1	
No. of classes required to complete UNIT-I:		**8**	**No. of classes taken:**					

UNIT – 2: STRUCTURAL MODELING

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
9.	Classes	1	3-08-2020		TLM2	CO2	T1	
10.	Relationships in Class Diagrams	1	7-09-20		TLM2	CO2	T1	
11.	Common Mechanisms	1	9-09-20		TLM2	CO2	T1	
12.	Class Diagram	1	10-09-20		TLM2	CO2	T1	
13.	Advanced Classes	1	14-09-20		TLM2	CO2	T1	
14.	Advanced Relationships	1	16-09-20		TLM2	CO2	T1	
15.	Interfaces	1	17-09-20		TLM2	CO2	T1, R2	
16.	Types & Roles	1	21-09-20		TLM2	CO2	T1, R2	
17.	Packages	1	23-09-20		TLM2	CO2	T1, R2	
18.	Object Diagarm	1	24-09-20		TLM2	CO2	T1, R2	

No. of classes required to complete UNIT-II:	10	No. of classes taken:					

UNIT – 3: Behavioral Modeling

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
19.	Interactions, Interaction Diagrams	1	5-10-2020		TLM2	CO3	T1, R2	
20.	Use Cases, Use Case Diagrams	1	7-10-2020		TLM2, TLM8	CO3	T1, R2	
21.	Activity Diagrams	1	8-10-2020		TLM9	CO3	T1	
22.	**Advanced Behavioral Modeling:** Events and Signals	1	12-10-2020		TLM2	CO3	T1, R2	
23.	Time and Space	1	14-10-2020		TLM2, TLM8	CO3	T1, R2	
24.	State Diagrams, Architectural Modeling: Component	1	15-10-2020		TLM2	CO3	T1	
25.	Deployment	1	19-10-2020		TLM2	CO3	---	
No. of classes required to complete UNIT-III:	7	No. of classes taken:						

UNIT – 4: Introduction to Design Patterns:

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
26.	What is Design pattern?, Design Patterns in Smalltalk MVC.	1	21-10-2020		TLM2	CO4	T1	
27.	Describing Design	1	22-10-		TLM1,	CO4	T1	

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
	Patterns		2020		TLM2			
28.	The Catalog of Design Patterns	1	26-10-2020		TLM1, TLM2, TLM8	CO4	T1	
29.	Organizing the Catalog	1	28-10-2020		TLM1, TLM2	CO4	T1	
30.	How Design Patterns Solve Design Problem	1	29-10-2020		TLM1, TLM2, TLM8	CO4	T1	
31.	How to select a Design Pattern,	1	2-11-2020		TLM1, TLM2	CO4	T1	
32.	How to use a Design Pattern.	1	4-11-2020		TLM1, TLM2, TLM8	CO4	T1	
No. of classes required to complete UNIT-IV		**7**	**No. of classes taken:**					

UNIT – V: Types of Patterns:

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
33.	Creational Patterns: Abstract Factory, Builder and Factory method	1	5-11-2020		TLM2	CO5	T1	
34.	Creational Patterns: Abstract Factory, Builder and Factory method	1	09-11-2020		TLM2	CO5	T1	
35.	Structural Patterns: Adapter, Decorator, and Facade.	1	11-11-2020		TLM2	CO5	T1	
36.	Structural Patterns:	1	12-11-202		TLM2	CO5	T1	

	Adapter, Decorator, and Facade.						
37.	Structural Patterns: Adapter, Decorator, and Facade.	1	16-11-202		TLM2	CO5	T1
38.	Behavioral Patterns: Chain of Responsibility, State, and Strategy.	1	18-11-2020		TLM2, TLM8	CO5	T1
39.	Behavioral Patterns: Chain of Responsibility, State, and Strategy.	1	19-11-2020		TLM2	CO5	T1
No. of classes required to complete UNIT-V		**7**	**No. of classes taken:**				

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	17-08-2020	3-10-2020	6W
I Mid Examinations	28-09-2020	02-10-2020	1W
II Phase of Instructions	05-10-2020	28-11-2020	7W
II Mid Examinations	23-11-2020	28-11-2020	1W
Preparation and Practicals	30-11-2020	05-12-2020	1W
Semester End Examinations	07-12-2020	21-12-2020	2W

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. O Rama devi	Dr. O Rama devi	Dr. Ch. Venkata Narayana	Dr. D VEERAIAH
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B.Tech., V-Sem., CSE-A/S
ACADEMIC YEAR	: 2020-21
COURSE NAME & CODE	: **Operating Systems** – 17CS04
L-T-P STRUCTURE	: 4-0-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Dr CH V NARAYANA
COURSE COORDINATOR	: Dr CH V NARAYANA
PRE-REQUISITE	: C, JAVA & DBMS, CO

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of the course is to provide basic knowledge of computer operating system structure and functioning. Students able to understand how Operating Systems evolved with advent of computer architecture. Comprehend the different CPU scheduling algorithms, page replacement algorithms and identify best one.

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

CO 1	Identify the functional aspects and implementation methods (system call And System programs of different modules in a general-purpose operating System).
CO 2	Evaluate scheduling and communication methods of **processes** handled by Operating systems through examples.
CO 3	Analyze the **process synchronization** methods and deadlock handling Approaches employed in operating systems.
CO 4	Evaluate **memory management** strategies such as paging and segmentation, Virtual Memory, swapping, and page replacement algorithms.
CO 5	Analyze the implementation strategies of **file systems** regarding directory, Allocation, free space management and file recovery.

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

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

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

1. Silberschatz& Galvin, ―Operating System Concepts‖, Wiley, 7th edition, 2007.

REFERENCES:

1. William Stallings, ―Operating Systems‖, PHI, 5th Edition, 2004.

2. Charles Crowley, ―Operating Systems: A Design-Oriented Approach‖, TMH Publications, 1998.

3. Andrew S.Tanenbaum, ―Modern Operating Systems‖, PHI, 2nd edition, 1995.

4. http://codex.cs.yale.edu/avi/os-book/OS9/slide-dir/index.html

5. https://www.youtube.com/watch

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, COs.	1	19/08/20		**TLM2**	
2.	Computer-System Organization, Computer-System Architecture	1	21/08/20		**TLM2**	
3.	Operating System Structure, Operating-System Operations.	1	2408/20		**TLM2**	
4.	Operating System Operations	1	24/08/20		**TLM2**	
5.	Distributed Systems, Special-Purpose Systems	1	26/08/20		**TLM2**	
6.	Operating-System Structures (User Operating-System Interface)	1	28/08/20		**TLM2**	
7.	System Calls, Types of System Calls	1	31/08/20		**TLM2**	
8.	System Programs	1	31/08/20		**TLM2**	
9.	Operating-System	1	02/09/20		**TLM2**	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	Design and Implementation					
10.	Virtual Machines	1	04/09/20		**TLM2**	
11.	Operating-System Generation,System Boot.	1	07/09/20		**TLM2**	
No. of classes required to complete UNIT-I : 11				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
12.	Processes: Concept, Process Scheduling	1	07/09/20		**TLM2**	
13.	Operations on Processes, Inter-processcomm.	1	09/09/20		**TLM2**	
14.	Examples of IPC Systems, Communication in Client-Server Systems	1	11/09/20		**TLM2**	
15.	Multithreaded Programming	1	14/09/20		**TLM2**	
16.	Multithreaded Programming	1	14/09/20		**TLM2**	
17.	Scheduling Criteria, Scheduling Algorithms	1	16/09/20		**TLM2**	
18.	Scheduling Algorithms	1	18/09/20		**TLM2**	
19.	Scheduling Algorithms	1	21/09/20		**TLM2**	
20.	Multiple-ProcessorScheduling.	1	21/09/20		**TLM2**	
No. of classes required to complete UNIT-II : 09				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
21.	Synchronization-The Critical-Section Problem	1	23/09/20		**TLM2**	
22.	Synchronization-The Critical-Section Problem	1	25/09/20		**TLM2**	
23.	Synchronization-	1	28/09/20			

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	The Critical-Section Problem					
24.	Peterson's solution	1	28/09/20		**TLM2**	
25.	Synchronization Hardware	1	30/09/20		**TLM2**	
26.	Semaphores	1	02/10/20		**TLM2**	
27.	Classic Problems of Synchronization, Monitors	1	05/10/20		**TLM2**	
28.	Deadlocks- System Model, Deadlock Characterization	1	05/10/20		**TLM2**	
29.	Methods for Handling Deadlocks, Deadlock Prevention. Deadlock Avoidance	1	07/10/20		**TLM2**	
30.	Deadlock Detection, Recovery from deadlock		09/10/20			
No. of classes required to complete UNIT-III : 09			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
31.	Memory Management Strategies: Swapping, Contiguous Memory Allocation	1	12/10/20		**TLM2**	
32.	Paging	1	12/10/20		**TLM2**	
33.	Structure of the Page Table	1	14/10/20		**TLM2**	
34.	Segmentation	1	16/10/20		**TLM2**	
35.	Virtual Memory Management: Demand Paging	1	19/10/20		**TLM2**	
36.	Page Replacement	1	19/10/20		**TLM2**	
37.	Page replacement	1	21/10/20		**TLM2**	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
38.	Allocation of frames.	1	23/10/20		**TLM2**	
39.	Thrashing, Memory-Mapped Files	1	26/10/20		**TLM2**	
40.	Allocating Kernel Memory.	1	26/10/20		**TLM2**	
41.	Revision	1	28/10/20		**TLM2**	
No. of classes required to complete UNIT-IV : 11				No. of classes taken:		

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42.	File-System- The Concept of a File	1	02/11/20		**TLM2**	
43.	Access Methods.	1	02/11/20		**TLM2**	
44.	Access Methods	1	04/11/20		**TLM2**	
45.	Directory Structure	1	06/11/20		**TLM2**	
46.	File-System Mounting	1	9/11/20		**TLM2**	
47.	File Sharing, Protection	1	9/11/20		**TLM2**	
48.	Implementing File System: File-System Structure	1	11/11/20		**TLM2**	
49.	File-System Implementation, Directory Implementation	1	13/11/20		**TLM2**	
50.	Allocation Methods, Free-Space Management.	1	16/11/20		**TLM2**	
51.	Controller components	1	16/11/20		**TLM2**	
52.	Revision	1	18/11/20		**TLM2**	
No. of classes required to complete UNIT-V : 10				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	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 = 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)	Q=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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**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.

Course Instructor   Course Coordinator   Module Coordinator   HOD
(Dr Ch V Narayana)   (Dr Ch V Narayana)   (Dr. D veeraiah)   (Dr. D. Veeraiah)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	**:** B.Tech. V-Sem., CSE	
ACADEMIC YEAR	**:** 2020 -21	
COURSE NAME & CODE	**:** ADVANCED GRAPH ALOGRITHMS -17CS90	
L-T-P STRUCTURE	**:** 3-0-0	
COURSE CREDITS	**:** 3	
COURSE INSTRUCTOR	**:** Mr. G Balu NarasimhaRao	
COURSE COORDINATOR	**:** Mr. G Balu NarasimhaRao	
PRE-REQUISITE	**:** Discrete mathematics, basic concepts of graphs and of graph algorithms	

COURSE OBJECTIVE:

The main objective of this course is aimed to cover a variety of different problems in Graph Theory. In this course students will come across a number of theorems and proofs. Theorems will be stated and proved formally using various techniques

COURSE OUTCOMES (CO): After the completion of this course, student will be able to:

CO1: To understand and apply the fundamental concepts in graph theory.

CO2: To learn to model problems using graphs and to solve these problems algorithmically.

CO3: Understand basic properties of Matchings

CO4: Understand various versions of connectedness of a graph, understand structural theorems.

CO5: Know about many different coloring problems for graphs. Be able to formulate applied problems as coloring problems.

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

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

BOS APPROVED TEXT BOOK/S:

1. D.B. West, Introduction to Graph Theory, Prentice Hall, 2001.

BOS APPROVED REFERENCES:

1. Jon Kleinberg and Eva Tardos, Algorithm Design, Addison-Wesley, 2005.
2. J.A.Bondy and U.S.R.Murty: Graph Theory, Springer, 2008.
3. R.Diestel: Graph Theory, Springer (Low Price Edition) 2000.
4. F.Harary: Graph Theory, Narosa, (1988)
5. C. Berge: Graphs and Hyper graphs, North Holland/Elsevier, (1973)

COURSE DELIVERY PLAN (LESSON PLAN): Section-A
UNIT – 1

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 Graphs & its Applications	1	18/8/20		TLM1	CO1	T1	
2.	Basics of Paths, Cycles, and Trails	1	21/8/20		TLM1	CO1	T1	
3.	Connection, Bipartite Graphs,	1	22/8/20		TLM1	CO1	T1	
4.	Eulerian Circuits,	1	25/8/20,		TLM1	CO1	T1, R1	
5.	Vertex Degrees and Counting	1	28/8/20		TLM1	CO1	T1, R1	
6.	Degree-sum formula	1	29/8/20		TLM1	CO1	T1, R1	
7.	The Chinese Postman Problem	1	1/9/20		TLM1	CO1	T1	
8.	Graphic Sequences.	1	4/9/20		TLM1	CO1	T1	
No. of classes required to complete UNIT-I:		**08**	**No. of classes taken:**					

UNIT – 2

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
9.	Trees and Distance	1	5/9/20		TLM1	CO2	T1	
10.	Properties of Trees	1	8/9/20		TLM1	CO2	T1	
11.	Spanning Trees and Enumeration	2	11/9/20, 12/9/20		TLM1	CO2	T1	
12.	Optimization and Trees.	2	15/9/20, 18/9/20		TLM1	CO2	T1	
13.	Matrix-tree computation	1	19/9/20		TLM1	CO2	T1, R1	
14.	Cayley's Formula	1	22/9/20		TLM1	CO2	T1, R1	
15.	Prufer code	1	25/9/20		TLM1	CO2	T1, R1	
No. of classes required to complete UNIT-II:		**09**	**No. of classes taken:**				

UNIT – 3

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
16.	Matchings and Covers	1	26/9/20		TLM1	CO3	T1	
17.	Hall's Condition, Min-Max Theorem	1	6/10/20		TLM1	CO3	T1	
18.	Independent Sets, Covers and Maximum Bipartite Matching	1	9/10/20		TLM1	CO3	T1	
19.	Augmenting Path Algorithm	1	10/10/20		TLM1	CO3	T1, R1	
20.	Weighted Bipartite Matching, Hungarian Algorithm	1	13/10/20		TLM1	CO3	T1, R1	
21.	Stable Matchings and Faster Bipartite Matching	1	16/10/20		TLM1	CO3	T1	

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
22.	Factors & Perfect Matching in General Graphs	1	17/10/20		TLM1	CO3	T1	
23.	Matching in General Graphs:	1	20/10/20		TLM1	CO3	T1	
24.	Edmonds' Blossom Algorithm	1	23/10/20		TLM1	CO3	T1, R1	
No. of classes required to complete UNIT-III		**09**	**No. of classes taken:**					

UNIT – 4

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.	Connectivity and Paths: Cuts and Connectivity	1	24/10/20		TLM1	CO4	T1	
26.	k-Connected Graphs	1	27/10/20		TLM1	CO4	T1	
27.	Network Flow Ford-Fulkerson Labeling Algorithm,	1	30/10/20		TLM1	CO4	T1	
28.	Max-Flow Min-cut Theorem, Menger's Proof using Max-Flow Min-Cut Theorem.	1	31/10/20		TLM1	CO4	T1	
29.	Vertex Coloring and Upper Bounds	1	3/11/20		TLM1	CO4	T1	
30.	Brooks' Theorem and Color-Critical Graphs	1	6/11/20		TLM1	CO4	T1	
31.	Counting Proper Colorings	1	7/11/20		TLM1	CO4	T1	
No. of classes required to complete UNIT-IV		**07**	**No. of classes taken:**					

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
32.	Planar Graphs, Characterization of Planar Graphs	1	10/11/20		TLM1	CO5	T2, R4	
33.	Kuratowski's Theorem, Wagner's Theorem	2	13/11/20, 14/11/19		TLM1	CO5	T2, R4	
34.	Line Graphs and Edge-coloring	1	17/11/20		TLM1	CO5	T2, R4	
35.	Hamiltonian Graph, Traveling Salesman Problem	1	20/11/20		TLM1	CO5	T2, R4	
36.	NP-Completeness, Dominating Sets.	1	21/11/20		TLM1	CO5	T2, R4	
No. of classes required to complete UNIT-V		**06**	**No. of classes taken:**					

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	Text Book followed	HOD Sign Weekly
37.	Graph Monors	1						
38.	Decomposition Tree Algorithms	2						
39.	Permutation Graphs	1						

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	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Descriptive Examination	1, 2	B1=20
I-Mid Online Quiz Examination	1, 2	C1 = 10
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Descriptive Examination	3, 4, 5	B2=20
II-Mid Online Quiz Examination	3, 4, 5	C2 = 10
Evaluation of Assignment/Quiz Marks: A = (A1+A2+A3+A4+A5	**1,2,3,4,5**	**A=5**
Evaluation of Mid Descriptive Marks: B = 75% of Max(B1,B2) + 25% of Min(B1,B2)	**1,2,3,4,5**	**B=20**
Evaluation of Mid Online Quiz Marks: C = Average(C1, C2)	**1,2,3,4,5**	**C=10**
Cumulative Internal Examination : A+B+C	**1,2,3,4,5**	**A+B+C=35**
Attendance	**-**	**D = 0 to 5**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAMME 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.

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.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Programming Paradigms:
       To inculcate algorithmic thinking, formulation techniques and visualization, leading to problem solving skills using different programming paradigms.
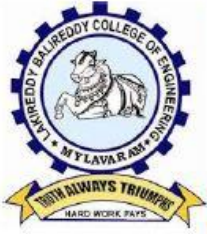
2. Data Engineering:
       To inculcate an ability to Analyze, Design and implement data driven applications into the students.

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. G Balu NarasimhaRao	Mr. G Balu NarasimhaRao	Dr. Ch. Venkata Narayana	Dr. D VEERAIAH
Signature				

COURSE HANDOUT

PROGRAM	: B.Tech., V-Sem., CSE-A/S
ACADEMIC YEAR	: 2020-21
COURSE NAME & CODE	: Automata Theory & Compiler Design – 17CI15
L-T-P STRUCTURE	: 2-2--
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Mr. L V KRISHNA RAO
COURSE COORDINATOR	: Dr. D VEERAIAH
PRE-REQUISITE	: Knowledge in Discrete mathematics (set theoryand graph theory) and programming language.

COURSE OBJECTIVE:
To introduce students to the mathematical foundations of computation like automata theory, the theory of formal languages and grammars, the notion of algorithm, decidability, complexity, and computability. Understand the theory and practice of compiler implementation.
.
COURSE OUTCOMES (CO):

CO1: Design Finite Automata and Regular expression for regular languages.

CO2: Design Context free grammar and push down automata for CFL.

CO3: Design and implement lexical analyzer and syntax analyzer.

CO4: Create framework for syntax directed translation schemes and understand the runtime organization of the program.

CO5: Analyze various code optimization techniques and code generation algorithms.

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

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

BOS APPROVED TEXT BOOKS:

1. John.E .Hopcroft and J.D Ullman, "Introduction to Automata Theory Languages and Computation", Narosa Publications,1999.
2. Alfred V.Aho,Jeffery Ullman,Ravi sethi,"Compiler Principles, Techniques and Tools",Pearson Education,2nd Edition,2008

BOS APPROVED REFERENCE BOOKS:

1. Sipser —Introduction to Theory of Computation‖ ,Thomson,2nd Edition

2. Mishra and Chandrashekaran, ‖Theory of Computer Science –Automata languages and computation –—2nd edition, PHI

3. ParagH.Dave, HimanshuB.Dave —Compilers Principles and Practice‖ , Person Education, First Edition, 2012.

4. Andrew W.appel —Modern compiler implementation in C‖ Cambridge, Revised Edition, 2010.

5. http://nptel.ac.in/courses/111103016/ (Video lectures for Automata theory and formal languages)

6. http://nptel.ac.in/courses/106108052/ (Video lectures for Compiler design)

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – 1: Finite Automata and Regular Expressions

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.	Basic Mathematical notations and techniques	1	17-08-2020		**TLM1**	CO1	T1,R1	
2.	classification of automata , definition and its applications	1	19-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
3.	Deterministic Finite Automata	1	21-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
4.	Nondeterministic Finite Automata	1	24-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
5.	Equivalence of NFA and DFA (Conversion of NFA to DFA)	1	26-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
6.	Minimization of DFA	1	28-08-2020		**TLM1 /TLM4**	CO1	T1,R2	
7.	Regular Expression	1	31-08-2020		**TLM1 /TLM4**	CO1	T1,R2	
8.	Equivalence of Regular expression and Finite Automata (Conversion of RE to FA)	1	02-09-2020		**TLM1 /TLM4**	CO1	T1,R2	
9.	Conversion of Finite automata to Regular expression	1	04-09-2020		**TLM1 /TLM4**	CO1	T1,R1	
10.	Pumping lemma for Regular language and closure properties	1	07-09-2020		**TLM1 /TLM4**	CO1	T1,R1	
11.	Tutorial-1	1	09-09-2020		**TLM 3**	CO1	T1,R1,R2	
No. of classes required to complete UNIT-I		11			No. of classes taken:			

UNIT - 2: Context-free grammars and pushdown automata

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion (DD-MM-YY)	Actual Date of Completion (DD-MM-YY)	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Classification ofGrammars and introduction to Context-free grammar	1	09-09-2020		**TLM1**	CO2	T1,R1	
2.	Derivations and parse tress, and ambiguity	1	11-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
3.	Simplification CFG: removing unit productions,null productions and useless productions	1	14-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
4.	Convert CFG to CNF and CFG to GNF	1	16-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
5.	Pushdown automata-Deterministic and Nondeterministic	1	16-09-2020		**TLM1 /TLM4**	CO2	T1,R1	
6.	Equivalence of PDA and CFG	1	18-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
7.	Pumping lemma of context free language and properties of CFLs	1	21-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
8.	Tutorial-2	1	23-09-2020		**TLM 3 /TLM 6**	CO2	T1,R1,R2	
No. of classes required to complete **UNIT-2**		08			No. of classes taken:			

UNIT – 3: Introduction to compiler, Lexical Analysis, Syntax Analysis

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 Language translator,Basic language Processing system	1	23-09-2020		TLM1/ TLM2	CO4	T2,R4	
2.	Phases of a compiler and example	1	25-09-2020		TLM2 /TLM4	CO4	T2,R4	
3.	Lexical analyzer - definitions,Specification of tokens	1	28-09-2020		TLM2 /TLM4	CO4	T2,R4	
4.	recognizition of tokens ,and input buffering	1	30-09-2020		TLM2 /TLM4	CO4	T2,R4	
5.	Design of Lexical analyzer using LEX tool	1	30-09-2020		TLM2 /TLM4	CO4	T2,R4	
6.	Role of parser, top-down parser design methods-Recurive descent and predictive parser	2	02-10-2020,05-10-2020		TLM2 /TLM4	CO4	T2,R4	
7.	Bottom-up parisng- Handle pruning, shift-reduce parsing	1	07-10-2020		TLM2 /TLM4	CO4	T2,R4	
8.	LR parsers-SLR,CLR and LALR parser design methods and YACC tool	2	07-10-2020,09-10-2020		TLM2 /TLM4	CO4	T2,R4	
9.	Tutorial-3/ Assignment-3	1	12-10-2020		TLM 3	CO4	T2,R3 ,R4	
No. of classes required to complete **UNIT-4**		10			No. of classes taken:			

UNIT – 4: Syntax-Directed translation (SDT), Intermediate Code Representations, Run-time Environment

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
10.	Attribute Grammar- Syntax directed definition	1	23-10-2020		**TLM1/ TLM2**	CO4	T2,R4	
11.	Translation schemes	1	26-10-2020		**TLM2 /TLM4**	CO4	T2,R4	
12.	Applications of SDTs – syntax tree	1	28-10-2020		**TLM2 /TLM4**	CO4	T2,R4	
13.	Intermediate code generation – syntax tree, 3-address code, and SSA	1	28-10-2020		**TLM2 /TLM4**	CO4	T2,R4	
14.	Translation of statements and expressions	1	30-10-2020		**TLM2 /TLM4**	CO4	T2,R4	
15.	Run-time strorage organization and storage allocation strategies	2	29-10-2020 &02-11-2020		**TLM2 /TLM4**	CO4	T2,R4	
16.	Access to non-local data	1	04-11-2020		**TLM2 /TLM4**	CO4	T2,R4	
17.	parameter passing techniques	1	04-11-2020		**TLM2 /TLM4**	CO4	T2,R4	
18.	Tutorial-4	1	06-11-2020		**TLM 3**	CO4	T2,R3,R4	
No. of classes required to complete **UNIT-4**		10			No. of classes taken:			

UNIT – 5: Basics of Code optimization, Code generation

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.	Construction basic blocks and flow graphs	1	09-11-2020		TLM2 /TLM4	CO5	T2,R3	
2.	The prinicpal sources of optimization	1	11-11-2020		TLM2 /TLM4	CO5	T2,R3	
3.	Optimization of Basic Blocks	1	11-11-2020		TLM2 /TLM4	CO5	T2,R4	
4.	Loops in flow graph	1	13-11-2020		TLM2 /TLM4	CO5	T2,R4	
5.	Issues in the design of a code generator and generic code generation algorithm	1	16-11-2020		TLM2 /TLM4	CO5	T2,R3	
6.	Register allocation and Assignment	1	18-11-2020		TLM2 /TLM4	CO5	T2,R3	
7.	Peephole optimization	1	18-11-2020		TLM2 /TLM4	CO5	T2,R3	
8.	DAG representation of basic blocks and generating the code from DAG	1	20-11-2020		TLM2 /TLM4	CO5	T2,R3	
9.	Tutorial-5	1	21-11-2020		TLM 3	CO5	T2,R3,R4	
No. of classes required to complete **UNIT-5**		10			No. of classes taken:			

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	Text Book followed	HOD Sign Weekly
1	Introduction to Turing machine	1	23-11-2020					
2	Decidability and Undecidability	1	25-11-2020					

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	Cos	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME 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.

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 enginee**ring 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.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr L V krishna rao	Dr D Veeraiah	Dr. Ch. Venkata Narayana	Dr. D VEERAIAH
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM   : B.Tech., V-Sem., CSE-A/S

ACADEMIC YEAR   : 2020-21

COURSE NAME & CODE   : **Web Tecnologies** – 17CI14

L-T-P STRUCTURE   : 3-0--

COURSE CREDITS   : 3

COURSE INSTRUCTOR   : Mr. N Srinivasa rao

COURSE COORDINATOR   : Mr. N Srinivasa rao

PRE-REQUISITE   : JAVA and Data structures

PRE-REQUISITE:C, JAVA & DBMS

COURSE EDUCATIONAL OBJECTIVES (CEOs): Students will be familiarized with the tools and web technologies necessary for business application design and development. This course covers client side and server side scripting languages to develop static and dynamic web applications.

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

CO 1	Design web pages by using HTML and DHTML.
CO 2	Develop user defined tags and transfer data between components by using XML and Java Beans.
CO 3	Create data driven web applications by applying database connectivity techniques.
CO 4	Design and implement dynamic Webpages using server side components like servlets.
CO 5	Understand concepts of JSP and struts framework and apply them in solving real world Problems.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	3	-	2	1	-	-	-	-	-	1	3	-	-
CO2	2	1	3	-	2	1	-	-	-	-	-	1	3	1	-
CO3	2	2	3	-	2	1	-	-	-	-	-	1	3	3	-
CO4	2	2	3	-	2	1	-	-	-	-	-	1	3	3	1
CO5	2	2	3	-	2	1	-	-	-	-	-	1	3	3	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   Chris Bates, Web Programming, building internet applications, WILEYDreamtech, 2nd edition.
T2   MartyHall and Larry Brown, "Core Servlets and Java Server Pages Volume 1: Core Technologies", Pearson, 2nd Edition, 2004.
T3   Bill Siggelkow,"Jakarta Struts Cookbook", O'Reilly Media, 2005.

REFERENCE BOOKS:
R1   Robert W Sebesta, "Programming the World Wide Web", Pearson Education, 8th Edition, 2015.
R2   A.A.Puntambekar, "Web Technologies", Technical Publications, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: HTML, CSS, & JAVA SCRIPT

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, COs.	1	18/08/2020		**TLM2 TLM5**	
2.	Versions of HTML, Text formatting tags, lists.	1	20/08/2020		**TLM2 TLM5**	
3.	Tables, images concept.	1	21/08/2020		**TLM2 TLM5**	
4.	Links, marquee tag.	1	25/08/2020		**TLM2 TLM5**	
5.	HTML Forms.	1	27/08/2020		**TLM2 TLM5**	
6.	HTML Frames.	1	28/08/2020		**TLM2 TLM5**	
7.	Types of CSS, CSS selectors. Assignment I.	1	29/08/2020		**TLM2 TLM5 TLM6**	
8.	Properties in CSS.	1	01/09/2020		**TLM2 TLM5**	
9.	JavaScript Introduction, objects in JS.	1	03/09/2020		**TLM2 TLM5**	

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.	Dynamic HTML with JS.	1	04/09/2020		**TLM2 TLM5**	
11.	Form validation using JS.	1	05/09/2020		**TLM2 TLM5**	

No. of classes required to complete UNIT-I : 11	No. of classes taken:

UNIT-II: XML & JAVA BEANS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Introduction to XML.	1	08/09/2020		**TLM2 TLM5**	
13.	XML DTD and its types.	1	10/09/2020		**TLM2 TLM5**	
14.	XML Schema.	1	11/09/2020		**TLM2 TLM5**	
15.	Presenting XML.	1	12/09/2020		**TLM2 TLM5**	
16.	XML Processors: DOM & SAX.	1	15/09/2020		**TLM2 TLM5**	
17.	Introduction to JavaBeans, advantages.	1	17/09/2020		**TLM2 TLM5**	
18.	JavaBean Persistence.	1	18/09/2020		**TLM2 TLM5**	
19.	JavaBean API. Assignment II.	1	19/09/2020		**TLM2 TLM5,6**	
20.	EJB Introduction.	1	22/09/2020		**TLM2 TLM5**	

No. of classes required to complete UNIT-II : 09	No. of classes taken:

UNIT-III: JDBC

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.	JDBC Introduction, Types of JDBC Drivers.	1	24/09/2020		**TLM2 TLM5**	
22.	Java.sql package.	1	25/09/2020		**TLM2 TLM5**	
23.	Procedure to establish database connection	1	26/09/2020		**TLM2 TLM5**	
24.	JDBC steps.	1	06/10/2020		**TLM2 TLM5**	
25.	Database operations: Create, Insert.	1	08/10/2020		**TLM2 TLM5**	
26.	Database operations: Delete,	1	09/10/2020		**TLM2 TLM5**	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	Update.					
27.	Types of Statements.	1	10/10/2020		**TLM2 TLM5**	
28.	ResultSet Types. Assignment III.	1	13/10/2020		**TLM2 TLM5,6**	
29.	Example Programs using JDBC.	1	15/10/2020		**TLM2 TLM5**	

No. of classes required to complete UNIT-III : 09   No. of classes taken:

UNIT-IV:SERVLETS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
30.	Introduction to Servlets.	1	16/10/2020		**TLM2 TLM5**	
31.	Servlet Lifecycle.	1	17/10/2020		**TLM2 TLM5**	
32.	Servlet API: javax.servlet.*, .http.*.	1	20/10/2020		**TLM2 TLM5**	
33.	Servlet Request, Response.	1	22/10/2020		**TLM2 TLM5**	
34.	GenericServlet, ServletConfig.	1	23/10/2020		**TLM2 TLM5**	
35.	ServletContext, RequestDispatcher.	1	24/10/2020		**TLM2 TLM5**	
36.	HTTPServlet, Request, Response.	1	27/10/2020		**TLM2 TLM5**	
37.	HTTPSession, Assignment IV.	1	29/10/2020		**TLM2 TLM5,6**	
38.	Cookie concept.	1	30/10/2020		**TLM2 TLM5**	
39.	Database access by using Servlets	1	31/10/2020		**TLM2 TLM5**	
40.	Example Programs.	1	03/11/2020		**TLM2 TLM5**	

No. of classes required to complete UNIT-IV : 11   No. of classes taken:

UNIT-V:JSP & STRUTS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
41.	Intro., Lifecycle of JSP.	1	05/11/2020		**TLM2 TLM5**	
42.	Scripting elements.	1	06/11/2020		**TLM2 TLM5**	
43.	Implicit objects.	1	07/11/2020		**TLM2 TLM5**	
44.	Directive elements, Action elements.	1	10/11/2020		**TLM2 TLM5**	
45.	Error handling, debugging.	1	12/11/2020		**TLM2 TLM5**	
46.	Access database from JSP pages.	1	13/11/2020		**TLM2 TLM5**	
47.	Strut Framework.	1	17/11/2020		**TLM2 TLM5**	

48.	MVC design pattern. Assignment V.	1	19/11/2020		**TLM2** **TLM5** **TLM6**	
49.	Strut main components.	1	20/11/2020		**TLM2** **TLM5**	
50.	Controller components	1	21/11/2020		**TLM2** **TLM5**	

No. of classes required to complete UNIT-V : 10	No. of classes taken:

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

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	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 = 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)	Q=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.

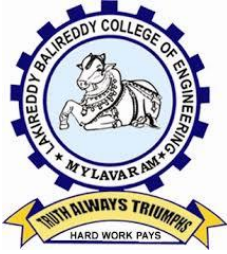## PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**Programming Paradigms:** 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.

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Mr. N. SrinivasaRao)	(Mr. N. SrinivasaRao)	(Dr. M. SrinivasaRao)	(Dr. D. Veeraiah)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM	: B.Tech., V-Sem., CSE-A/S
ACADEMIC YEAR	: 2020-21
COURSE NAME & CODE	: **UML and Design patterns Lab** – 17CS62
L-T-P STRUCTURE	: **0-0-2**
COURSE CREDITS	: 1
COURSE INSTRUCTOR	: Ms. M Sreebala
COURSE COORDINATOR	: Dr.O. Ramadevi
PRE-REQUISITE	: Knowledge in Basics of JAVA Programming.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to present the basic concepts in information retrieval and the significance of various indexing and searching techniques for information retrieval.

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

CO1	Analyze Software Requirements for the given Software Application.
CO2	Develop the UML Diagrams to view Software System in Static and Dynamic Aspects.
CO3	Select a Design Pattern related to their problem and draw the Class and Object Diagrams using the UML notations.
CO4	Improve individual / team work 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	2	3	1	-	3	1	-	-	-	-	-	2	-	-	3
CO2	1	3	1	-	3	-	-	-	-	-	-	2	-	-	3
CO3	1	1	3	1	3	-	-	-	-	-	-	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).

TEXT BOOKS:

T1
1. Grady Booch, James Rumbaugh, Ivar Jacobson, ―The Unified Modeling Language UserGuide‖, Pearson Education, 2nd Edition, ISBN: 0-201-57168-4, 1998.
2. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, ―Design Patterns: Elements of Reusable Object-Oriented Software‖, Addison-Wesley Professional, 1st Edition, ASIN: B000SEIBB8, 1994.

<u>**PART-B**</u>

COURSE DELIVERY PLAN (LESSON PLAN):

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.	Basics of UML	2	18-08-2020		TLM2	
2.	For each case study given earlier, Construct Use Case Diagram in the following manner	2	25-08-2020		TLM2	
3.	For each case study given earlier, Construct Class and Object Diagram in the following manner	2	1-09-2020		TLM2	
4.	For each case study given earlier, Construct Interaction Diagrams in the following manner	2	8-09-2020		TLM2	
5.	For each case study given earlier, Construct Activity Diagram in the following manner	2	15-09-2020		TLM2	
6.	For each case study given earlier, Construct State Chart Diagram in the following manner	2	22-09-2020		TLM2	
7.	For each case study given earlier,	2	29-09-2020		TLM2	

	Construct Component Diagram in the following manner				
8.	For each case study given earlier, Construct Deployment Diagram in the following manner	2	06-10-2020		TLM2
9.	Construct the CLASS DIAGRAM/OBJECT DIAGRAM for: 1) Drawing Editor based on ABSTRACT FACTORY Design Pattern. 2) Converter (Text to ASCII, PDF, Doc.,etc. based on BUILDER Design Pattern.	2	06-10-2020		TLM2
10.	Construct the CLASS DIAGRAM OBJECT DIAGRAM for: 1) Media Player based on ADAPTER Design Pattern. 2) Different Toppings on Pizza based on DECORATOR Design Pattern.	4	13-10-2020 27-10-2020		TLM2
11.	Construct the CLASS DIAGRAM/OBJECT DIAGRAM for Conducting a Quiz Competition based on CHAIN OF RESPONSIBILITY Design Pattern.	2	02-9-2020 09-9-2020		TLM2
	No. of classes required to complete lab :26			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 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	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
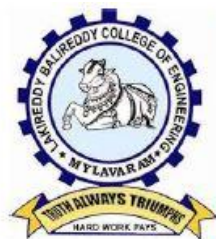
PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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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.
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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	Ms. M. Sreebala	Dr. O. Ramadevi	Dr. Ch. Venkata Narayana	Dr. D VEERAIAH
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM   : B.Tech., V-Sem., CSE-A/S

ACADEMIC YEAR   : 2020-21

COURSE NAME & CODE   : Web Technologies Lab – 17CI15

L-T-P STRUCTURE   : **0-0-2**

COURSE CREDITS   : 1

COURSE INSTRUCTOR   : Mr. N SRINIVASA RAO

COURSE COORDINATOR   : Mr. N SRINIVASA RAO

PRE-REQUISITE   : C, JAVA & DBMS

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of the course is, student will be familiar with client server architecture and able to develop interactive, dynamic web applications by using java technologies.

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

CO 1	Design and implement static & dynamic websites.
CO 2	Create reusable components by using Java Beans.
CO 3	Design and implement data driven web applications.
CO 4	Improve individual / team work 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
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CO2	3	2	3	-	3	-	-	-	-	-	-	2	3	3	-
CO3	3	2	3	-	3	-	-	-	-	-	-	2	3	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).

TEXT BOOKS:
T1   Chris Bates, Web Programming, building internet applications, WILEYDreamtech, 2nd edition.

T2 MartyHall and Larry Brown, "Core Servlets and Java Server Pages Volume 1: Core Technologies", Pearson, 2nd Edition, 2004.

T3 Bill Siggelkow,"Jakarta Struts Cookbook", O'Reilly Media, 2005.

REFERENCE BOOKS:

R1 Robert W Sebesta, "Programming the World Wide Web", Pearson Education, 8th Edition, 2015.

R2 A.A.Puntambekar, "Web Technologies", Technical Publications, 2009.

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	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Web Technologies Lab, COs.	1	20/08/2020		TLM5 TLM8	
2.	Lab Cycle-1	1	20/08/2020		TLM5 TLM8	
3.	Lab Cycle-2	1	27/08/2020		TLM5 TLM8	
4.	Lab Cycle-3	1	27/08/2020		TLM5 TLM8	
5.	Lab Cycle-4	1	03/09/2020		TLM5 TLM8	
6.	Lab Cycle-5	1	03/09/2020		TLM5 TLM8	
7.	Lab Cycle-6	1	10/09/2020		TLM5 TLM8	
8.	Lab Cycle-7	1	17/09/2020		TLM5 TLM8	
9.	Lab Cycle-8	1	24/09/2020		TLM5 TLM8	
10.	Lab Cycle-9	1	08/10/2020		TLM5 TLM8	
11.	Lab Cycle-10	1	15/10/2020		TLM5 TLM8	
12.	Lab Cycle-11	1	22/10/2020		TLM5 TLM8	
13.	Lab Cycle-12	1	29/10/2020		TLM5 TLM8	
14.	Lab Cycle-13	1	05/11/2020		TLM5 TLM8	
15.	Lab Cycle-14	1	12/11/2020		TLM5 TLM8	
16.	Internal Exam	1	19/11/2020		TLM6 TLM9	

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

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Day-Day Performance	I1=20
Viva	I2=5
Internal Test	I3=10
Attendance	I4=5
Internal Exam (A = I1+I2+I3+I4)	A=40
End Exam (B)	B=60
Total Marks = A+B	100

PART-D

PROGRAMME OUTCOMES (POs):

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

	consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**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.

Course Instructor Course Coordinator Module Coordinator   HOD

(Mr. N. SrinivasaRao) (Mr. N. SrinivasaRao) (Dr. M. SrinivasaRao) (Dr. D. Veeraiah)

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B.Tech., V-Sem., CSE-B/S
ACADEMIC YEAR	: 2020-21
COURSE NAME & CODE	: Automata Theory & Compiler Design – 17CI15
L-T-P STRUCTURE	: 2-2--0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Dr. D VEERAIAH
COURSE COORDINATOR	: Dr. D VEERAIAH
PRE-REQUISITE	: Knowledge in Discrete mathematics (set theory and graph theory) and programming language.

COURSE OBJECTIVE:
To introduce students to the mathematical foundations of computation like automata theory, the theory of formal languages and grammars, the notion of algorithm, decidability, complexity, and computability. Understand the theory and practice of compiler implementation.
.
COURSE OUTCOMES (CO):

CO1: Design Finite Automata and Regular expression for regular languages.

CO2: Design Context free grammar and push down automata for CFL.

CO3: Design and implement lexical analyzer and syntax analyzer.

CO4: Create framework for syntax directed translation schemes and understand the runtime organization of the program.

CO5: Analyze various code optimization techniques and code generation algorithms.

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

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

BOS APPROVED TEXT BOOKS:

1. John.E .Hopcroft and J.D Ullman, "Introduction to Automata Theory Languages and Computation", Narosa Publications,1999.
2. Alfred V.Aho,Jeffery Ullman,Ravi sethi,"Compiler Principles, Techniques and Tools",Pearson Education,2nd Edition,2008

BOS APPROVED REFERENCE BOOKS:

1. Sipser ―Introduction to Theory of Computation‖ ,Thomson,2nd Edition

2. Mishra and Chandrashekaran, ‖Theory of Computer Science –Automata languages and computation ––2nd edition, PHI

3. ParagH.Dave, HimanshuB.Dave ―Compilers Principles and Practice‖ , Person Education, First Edition, 2012.

4. Andrew W.appel ―Modern compiler implementation in C‖ Cambridge, Revised Edition, 2010.

5. http://nptel.ac.in/courses/111103016/ (Video lectures for Automata theory and formal languages)

6. http://nptel.ac.in/courses/106108052/ (Video lectures for Compiler design)

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT – 1: Finite Automata and Regular Expressions

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.	Basic Mathematical notations and techniques	1	17-08-2020		**TLM1**	CO1	T1,R1	
2.	Classification of automata, definition and its applications	1	19-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
3.	Deterministic Finite Automata	1	21-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
4.	Nondeterministic Finite Automata	1	24-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
5.	Equivalence of NFA and DFA (Conversion of NFA to DFA)	1	26-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
6.	Minimization of DFA	1	28-08-2020		**TLM1 /TLM4**	CO1	T1,R2	
7.	Regular Expression	1	31-08-2020		**TLM1 /TLM4**	CO1	T1,R2	
8.	Equivalence of Regular expression and Finite Automata (Conversion of RE to FA)	1	02-09-2020		**TLM1 /TLM4**	CO1	T1,R2	
9.	Conversion of Finite automata to Regular expression	1	04-09-2020		**TLM1 /TLM4**	CO1	T1,R1	
10.	Pumping lemma for Regular language and closure properties	1	07-09-2020		**TLM1 /TLM4**	CO1	T1,R1	
11.	Tutorial-1	1	08-09-2020		**TLM 3**	CO1	T1,R1,R2	
No. of classes required to complete UNIT-I		11			No. of classes taken:			

UNIT - 2: Context-free grammars and pushdown automata

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion (DD-MM-YY)	Actual Date of Completion (DD-MM-YY)	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Classification of Grammars and introduction to Context-free grammar	1	09-09-2020		**TLM1**	CO2	T1,R1	
2.	Derivations and parse tress, and ambiguity	1	11-09-2020		**TLM1 /TLM4**	CO2	T1, R2	
3.	Simplification CFG	1	14-09-2020		**TLM1 /TLM4**	CO2	T1, R2	
4.	Convert CFG to CNF and CFG to GNF	2	15-09-2020 16-09-2020		**TLM1 /TLM4**	CO2	T1, R2	
5.	Pushdown automata-Deterministic and Nondeterministic	2	18-09-2020 21-09-2020		**TLM1 /TLM4**	CO2	T1, R1	
6.	Equivalence of PDA and CFG	2	21-09-2020 23-09-2020		**TLM1 /TLM4**	CO2	T1, R2	
7.	Pumping lemma of context free language and properties of CFLs	1	25-09-2020		**TLM1 /TLM4**	CO2	T1, R2	
8.	Tutorial-2	1	28-09-2020		**TLM 3 /TLM 6**	CO2	T1, R1, R2	
No. of classes required to complete **UNIT-2**		11			No. of classes taken:			

UNIT – 3: Introduction to compiler, Lexical Analysis, Syntax Analysis

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion (DD-MM-YY)	Actual Date of Completion (DD-MM-YY)	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Language translator, Basic language Processing system	1	28-09-2020		**TLM1**	CO2	T2, R3	
2.	Phases of a compiler and example	1	30-09-2020		**TLM1 /TLM4**	CO2	T2, R3	
3.	Lexical analyzer - definitions, Specification of tokens	1	02-10-2020		**TLM1 /TLM4**	CO2	T2, R3	

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
4.	Recognition of tokens, and input buffering	1	05-10-2020		**TLM1 /TLM4**	CO2	T2	
5.	Design of Lexical analyzer using LEX tool	1	05-10-2020		**TLM1 /TLM4**	CO2	T2	
6.	Role of parser, top-down parser design methods- Recursive descent and predictive parser, First and Follow calculation	2	07-10-2020 & 09-10-2020		**TLM1 /TLM4**	CO2	T2, R3	
7.	Bottom-up parsing- Handle pruning, shift-reduce parsing	1	12-10-2020		**TLM1 /TLM4**	CO2	T2, R3	
8.	LR parsers- SLR, CLR and LALR parser design methods and YACC tool	1	12-10-2020		**TLM1 /TLM4**	CO2	T2, R3	
9.	CLR and LALR parser	2	14-10-2020 & 16-10-2020					
10.	Tutorial-3	1	19-10-2020		**TLM 3**		T2, R3, R4	
No. of classes required to complete **UNIT-3**		13			No. of classes taken:			

UNIT – 4: Syntax-Directed translation (SDT), Intermediate Code Representations, Run-time Environment

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.	Attribute Grammar- Syntax directed definition	1	21-10-2020		**TLM1/ TLM2**	CO4	T2,R4	
2.	Translation schemes	1	23-10-2020		**TLM2 /TLM4**	CO4	T2,R4	
3.	Applications of SDTs – syntax tree	1	26-10-2020		**TLM2 /TLM4**	CO4	T2,R4	
4.	Intermediate code generation – syntax tree, 3-address code, and SSA	1	26-10-2020		**TLM2 /TLM4**	CO4	T2,R4	
5.	Translation of statements and expressions	1	28-10-2020		**TLM2 /TLM4**	CO4	T2,R4	

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
6.	Run-time storage organization and storage allocation strategies	2	30-10-2020 & 02-11-2020		**TLM2 /TLM4**	CO4	T2,R4	
7.	Access to non-local data	1	02-11-2020		**TLM2 /TLM4**	CO4	T2,R4	
8.	parameter passing techniques	1	04-11-2020		**TLM2 /TLM4**	CO4	T2,R4	
9.	Tutorial-4	1	06-11-2020		**TLM 3**	CO4	T2,R3,R4	
No. of classes required to complete **UNIT-4**		10			No. of classes taken:			

UNIT – 5: Basics of Code optimization, Code generation

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.	Construction basic blocks and flow graphs	1	09-11-2020		**TLM2 /TLM4**	CO5	T2,R3	
2.	The principle sources of optimization	1	09-11-2020		**TLM2 /TLM4**	CO5	T2,R3	
3.	Optimization of Basic Blocks	1	11-11-2020		**TLM2 /TLM4**	CO5	T2,R4	
4.	Loops in flow graph	1	13-11-2020		**TLM2 /TLM4**	CO5	T2,R4	
5.	Issues in the design of a code generator and generic code generation algorithm	1	16-11-2020		**TLM2 /TLM4**	CO5	T2,R3	
6.	Register allocation and Assignment	1	16-11-2020		**TLM2 /TLM4**	CO5	T2,R3	
7.	Peephole optimization	1	18-11-2020		**TLM2 /TLM4**	CO5	T2,R3	
8.	DAG representation of basic blocks and generating the code from DAG	1	20-11-2020		**TLM2 /TLM4**	CO5	T2,R3	
9.	Tutorial-5	1	21-11-2020		**TLM 3**	CO5	T2,R3,R4	
No. of classes required to complete **UNIT-5**		10			No. of classes taken:			

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	Text Book followed	HOD Sign Weekly
11.	Introduction to Turing machine	1						
12.	Decidability and undecidability	1						
13.	DAG examples	1						

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	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination: A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME 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.

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 engineer**ing 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   HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE DELIVERY PLAN (LESSON PLAN): Section-B
UNIT –I: Introduction to Graphical User Interface

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
12.	**Introduction :** Importance of user Interface	1	18-08-2020		**TLM1**	CO1	T1	
13.	Overview of user Interface	1	20-08-2020		**TLM1 /TLM4**	CO1	T1	
14.	Importance of good design	1	22-08-2020		**TLM1 /TLM4**	CO1	T1	
15.	Benefits of good design.	1	25-08-2020		**TLM1 /TLM4**	CO1	T1	
16.	A brief history of Screen design	1	27-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
17.	**The graphical user interface** – popularity of graphics	1	29-08-2020		**TLM1 /TLM4**	CO1	T1,R2	
18.	the concept of direct manipulation	1	1-09-2020		**TLM1 /TLM4**	CO1	T1,R2	
19.	graphical system Characteristics	1	03-09-2020		**TLM1 /TLM4**	CO1	T1,R2	
20.	Web user – Interface popularity	1	05-09-2020		**TLM1 /TLM4**	CO1	T1	
21.	Characteristics-Principles of user interface.	1	08-09-2020		**TLM1 /TLM4**	CO1	T1	
22.	Tutorial	1	10-09-2020		**TLM 3**	CO1	T1,R1,R2	
No. of classes required to complete UNIT-I		11			No. of classes taken: 11			

UNIT –II: Design process

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion (DD-MM-YY)	Actual Date of Completion (DD-MM-YY)	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
23.	**Design process –** Human interaction with computers	2	12-09-2020, 15-09-2020		TLM1	CO2	T1	
24.	importance of human characteristics	2	17-09-2020,		TLM1 /TLM4	CO2	T1,R2	
25.	human consideration	1	19-09-2020		TLM1 /TLM4	CO2	T1,R2	
26.	Human interaction speeds	1	22-09-2020		TLM1 /TLM4	CO2	T1,R2	
27.	Understanding business junctions.	2	24-09-2020		TLM1 /TLM4	CO2	T1,R1	
28.	Revision	1	26-09-2020		TLM1 /TLM4	CO2	T1,R2	
No. of classes required to complete **UNIT-2**		09			No. of classes taken:			

UNIT –III: Screen Designing

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.	**Screen Designing :** Design goals	1	29-09-2020		TLM1	CO3	T1	
30.	Screen planning and purpose	1	01-10-2020		TLM1 /TLM4	CO3	T1,R1	
31.	organizing screen elements	1	03-10-2020		TLM1 /TLM4	CO3	T1,R1	
32.	ordering of screen data and content ,	1	06-10-2020		TLM1 /TLM4	CO3	T1,R1	
33.	screen navigation and flow	1	08-10-2020		TLM1 /TLM4	CO3	T1,R1	
34.	Visually pleasing composition , amount of information	1	10-10-2020		TLM1	CO3	T1,R1	
35.	Distinctiveness, focus and emphasis	1	13-10-2020		TLM1	CO3	T1,R2	
36.	revision	1	15-10-2020		TLM1	CO3	T1,R2	

No. of classes required to complete **UNIT-3**	08			No. of classes taken:

UNIT –IV: Windows

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
37.	**Windows** – New and Navigation schemes	1	17-10-2020		**TLM1**	CO4	T1	
38.	Structure of Menus, Functions of Menus	1	20-10-2020		**TLM1 /TLM4**	CO4	T1,R1,R2	
39.	Phrasing the Menu, Selecting Menu Choices	1	22-10-2020		**TLM1 /TLM4**	CO4	T1,R1,R2	
40.	Navigating Menus, Kinds of Graphical Menus	1	27-10-2020		**TLM1 /TLM4**	CO4	T1,R1	
41.	selection of window, Components of Window	1	29-10-2020		**TLM1 /TLM4**	CO4	T1,R1	
42.	Window Presentation Styles, Types of Windows, Selection of devices based controls	1	31-10-2020		**TLM1 /TLM4**	CO4	T1,R1	
43.	REVISION	1	03-11-2020		**TLM 3 /TLM 6**	CO4	T1,R1,R2	
No. of classes required to complete **UNIT-4**	09			No. of classes taken:				

UNIT-V: Components

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
44.	**Components** – text and messages, **Text for web pages**	1	05-11-2020		**TLM1**	CO5	T1	
45.	Icons and increases , Kinds of Icons, characteristics of Icons	1	07-11-2020		**TLM1 /TLM4**	CO5	T1,R1,R2	
46.	Multimedia, Colors uses. problems with choosing colors	1	10-11-2020		**TLM1 /TLM4**	CO5	T1,R1,R2	
47.	Keyboard and function keys, pointing devices,	1	12-11-2020		**TLM1 /TLM4**	CO5	T1,R2	
48.	digitization and	1	16-11-2020		**TLM1**	CO5	T1,R2	

	generation, Drivers.				**/TLM4**			
49.	Revision	1	18-11-2020		**TLM 3 /TLM 6**	CO5	T1,R1,R2	
No. of classes required to complete **UNIT-5**		06			No. of classes taken:			

Contents beyond the Syllabus

Sno.	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
50.	speech recognition	1	20-11-2020		**TLM1 /TLM4**	CO1	T1	
51.	image and video displays	1	20-11-2020		**TLM1 /TLM4**	CO2	T1	

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	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Descriptive Examination	1, 2	B1=20
I-Mid Online Quiz Examination	1, 2	C1 = 10
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Descriptive Examination	3, 4, 5	B2=20
II-Mid Online Quiz Examination	3, 4, 5	C2 = 10
Evaluation of Assignment/Quiz Marks: A = (A1+A2+A3+A4+A5)/5	**1,2,3,4,5**	**A=5**
Evaluation of Mid Descriptive Marks: B = 75% of Max(B1,B2)+25% Min(B1,B2)	**1,2,3,4,5**	**B=20**
Evaluation of Mid Online Quiz Marks: C = Average(C1, C2)	**1,2,3,4,5**	**C=10**
Cumulative Internal Examination : A+B+C	**1,2,3,4,5**	**A+B+C=35**
Attendance	**-**	**D = 0 to 5**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME 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.

PROGRAMME OUTCOMES (POs):
Engineering Graduates will be able to:

13. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
14. **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.

15. **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.
16. **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.
17. **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.
18. **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.
19. **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.
20. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
21. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
22. **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.
23. **Project management and finance**: Demonstrate knowledge and understanding of the enginee**ring 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.
24. **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.

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

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B.Tech. V-Sem., CSE	
ACADEMIC YEAR	: 2020 -21	
COURSE NAME & CODE	: ADVANCED GRAPH ALOGRITHMS -17CS90	
L-T-P STRUCTURE	: 3-0-0	
COURSE CREDITS	: 3	
COURSE INSTRUCTOR	: Mr. G Balu NarasimhaRao	
COURSE COORDINATOR	: Mr. G Balu NarasimhaRao	
MODULE COORDINATOR	: Dr. Ch. Venkata Narayana	

PRE-REQUISITE: Discrete mathematics, basic concepts of graphs and of graph algorithms

COURSE OBJECTIVE:

The main objective of this course is aimed to cover a variety of different problems in Graph Theory. In this course students will come across a number of theorems and proofs. Theorems will be stated and proved formally using various techniques

COURSE OUTCOMES (CO): After the completion of this course, student will be able to:

CO1: To understand and apply the fundamental concepts in graph theory.

CO2: To learn to model problems using graphs and to solve these problems algorithmically.

CO3: Understand basic properties of Matchings

CO4: Understand various versions of connectedness of a graph, understand structural theorems.

CO5: Know about many different coloring problems for graphs. Be able to formulate applied problems as coloring problems.

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

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

BOS APPROVED TEXT BOOK/S:

1. D.B. West, Introduction to Graph Theory, Prentice Hall, 2001.

BOS APPROVED REFERENCES:

1. Jon Kleinberg and Eva Tardos, Algorithm Design, Addison-Wesley, 2005.
2. J.A.Bondy and U.S.R.Murty: Graph Theory, Springer, 2008.
3. R.Diestel: Graph Theory, Springer (Low Price Edition) 2000.
4. F.Harary: Graph Theory, Narosa, (1988)
5. C. Berge: Graphs and Hyper graphs, North Holland/Elsevier, (1973)

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT – 1

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
52.	Introduction to Graphs & its Applications	1	17/8/20		TLM1	CO1	T1	
53.	Basics of Paths, Cycles, and Trails	1	18/8/20		TLM1	CO1	T1	
54.	Connection, Bipartite Graphs,	1	19/8/20		TLM1	CO1	T1	
55.	Eulerian Circuits,	1	24/8/20,		TLM1	CO1	T1, R1	
56.	Vertex Degrees and Counting	1	25/8/20		TLM1	CO1	T1, R1	
57.	Degree-sum formula	1	26/8/20		TLM1	CO1	T1, R1	
58.	The Chinese Postman Problem	1	31/8/20		TLM1	CO1	T1	
59.	Graphic Sequences.	1	1/9/20		TLM1	CO1	T1	
No. of classes required to complete UNIT-I:		**08**			**No. of classes taken:**			

UNIT – 2

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
60.	Trees and Distance	1	2/9/20		TLM1	CO2	T1	
61.	Properties of Trees	1	7/9/20		TLM1	CO2	T1	
62.	Spanning Trees and Enumeration	2	8/9/20, 9/9/20		TLM1	CO2	T1	
63.	Optimization and Trees.	2	14/9/20, 15/9/20		TLM1	CO2	T1	
64.	Matrix-tree computation	1	16/9/20		TLM1	CO2	T1, R1	
65.	Cayley's Formula	1	21/9/20		TLM1	CO2	T1, R1	
66.	Prufer code	1	22/9/20		TLM1	CO2	T1, R1	
No. of classes required to complete UNIT-II:		**09**			**No. of classes taken:**			

UNIT – 3

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
67.	Matchings and Covers	1	23/9/20		TLM1	CO3	T1	
68.	Hall's Condition, Min-Max Theorem	1	5/10/20		TLM1	CO3	T1	
69.	Independent Sets, Covers and Maximum Bipartite Matching	1	6/10/20		TLM1	CO3	T1	
70.	Augmenting Path Algorithm	1	7/10/20		TLM1	CO3	T1, R1	
71.	Weighted Bipartite Matching, Hungarian Algorithm	1	12/10/20		TLM1	CO3	T1, R1	
72.	Stable Matchings and Faster Bipartite Matching	1	13/10/20		TLM1	CO3	T1	
73.	Factors & Perfect	1	14/10/20		TLM1	CO3	T1	

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
	Matching in General Graphs						
74.	Matching in General Graphs:	1	19/10/20		TLM1	CO3	T1
75.	Edmonds' Blossom Algorithm	1	20/10/20		TLM1	CO3	T1, R1
No. of classes required to complete UNIT-III		**09**	**No. of classes taken:**				

UNIT – 4

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
76.	Connectivity and Paths: Cuts and Connectivity	1	21/10/20		TLM1	CO4	T1	
77.	k-Connected Graphs	1	26/10/20		TLM1	CO4	T1	
78.	Network Flow Ford-Fulkerson Labeling Algorithm,	1	27/10/20		TLM1	CO4	T1	
79.	Max-Flow Min-cut Theorem, Menger's Proof using Max-Flow Min-Cut Theorem.	1	28/10/20		TLM1	CO4	T1	
80.	Vertex Coloring and Upper Bounds	1	2/11/20		TLM1	CO4	T1	
81.	Brooks' Theorem and Color-Critical Graphs	1	3/11/20		TLM1	CO4	T1	
82.	Counting Proper Colorings	1	4/11/20		TLM1	CO4	T1	
No. of classes required to complete UNIT-IV		**07**	**No. of classes taken:**					

UNIT – 5

S.	Topics to be	No. of	Tentative	Actual	Teaching	Learning	Text	HOD

No.	covered	Classes Required	Date of Completion	Date of Completion	Learning Methods	Outcome COs	Book followed	Sign Weekly
83.	Planar Graphs, Characterization of Planar Graphs	1	9/11/20		TLM1	CO5	T2, R4	
84.	Kuratowski's Theorem, Wagner's Theorem	2	10/11/20, 11/11/19		TLM1	CO5	T2, R4	
85.	Line Graphs and Edge-coloring	1	16/11/20		TLM1	CO5	T2, R4	
86.	Hamiltonian Graph, Traveling Salesman Problem	1	17/11/20		TLM1	CO5	T2, R4	
87.	NP-Completeness, Dominating Sets.	1	18/11/20		TLM1	CO5	T2, R4	
No. of classes required to complete UNIT-V		**06**	**No. of classes taken:**					

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	Text Book followed	HOD Sign Weekly
88.	Graph Monors	1						
89.	Decomposition Tree Algorithms	2						
90.	Permutation Graphs	1						

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	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Descriptive Examination	1, 2	B1=20
I-Mid Online Quiz Examination	1, 2	C1 = 10
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Descriptive Examination	3, 4, 5	B2=20
II-Mid Online Quiz Examination	3, 4, 5	C2 = 10
Evaluation of Assignment/Quiz Marks: A = (A1+A2+A3+A4+A5	**1,2,3,4,5**	**A=5**
Evaluation of Mid Descriptive Marks: B = 75% of Max(B1,B2) + 25% of Min(B1,B2)	**1,2,3,4,5**	**B=20**
Evaluation of Mid Online Quiz Marks: C = Average(C1, C2)	**1,2,3,4,5**	**C=10**
Cumulative Internal Examination : A+B+C	**1,2,3,4,5**	**A+B+C=35**
Attendance	**-**	**D = 0 to 5**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAMME 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.

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36. **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.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. G Balu NarasimhaRao	Mr. G Balu NarasimhaRao	Dr. Ch. Venkata Narayana	Dr. D VEERAIAH
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor   : B.Kalyan Kumar
Course Name & Code   : **ENGINEERING ECONAMICS & ACCOUNTANCY**&17HS01
L-T-P Structure   : 3-0-0   Credits : 3
Program/Sem/Sec   : B.Tech., CSE., V-Sem., Sections- B   A.Y   : 2020-21

PRE-REQUISITE: Basic Sciences & Humanities

COURSE OBJECTIVE: The objective of this course is to inculcate basic knowledge to students relating to concepts of Engineering Economics and Accountancy to make them effective business decision makers.

Other course educational objectives of this course:

1. To know the concepts of engineering economics and to make them effective business decision makers.

2. To understand the concepts of production and cost for various business decision.

3. To understand the different types of market, market structures& pricing strategies and their applications in business decision making.

4. To explain the strategies of rising and utilization of business capital.

5. To understand the Fundamental of accounting and analysis of accounting statements for Managerial decision making.

COURSE OUTCOMES (CO)
Upon The Successful Completion of This Course Students Will Able To:
CO1: Capable of analyzing fundamentals of economics concepts which helps in effectivebusiness administration.
CO2: Discuss cost- output relationship in business operations.
CO3: Analyze the features of market structures and present the pricing policies.
CO4: Identify the types of Business organization of the company and the implementation Requirements of each one.
CO5: Financial position of the company can be analyzing with the help of financial statements.

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

Cos	a	b	c	d	e	f	G	H	I	J	k	l	PSOa	PSOb	PSOc	PSOd
CO1	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO2	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-

CO3	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO4	-	-	-	2	3	2	-	-	2	-	3	3	-	-	-	-
CO5	-	-	-	2	3	2	-	-	2	-	3	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).

BOS APPROVED TEXT BOOKS:

T1 Aryasri: Managerial Economics and Financial Analysis, MHE, 2014

BOS APPROVED REFERENCE BOOKS:

R1 Varshney & Maheswari : Managerial Economics, Sultan Chand, 2003.

R2 Ambrish Guptha, Financial Accounting for Management, Pearson Education, New delhi.

R3 Lipey & Chrystal, Economics, Oxford University press.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-B
UNIT – I: introduction to Engineering Economics

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
91.	Introduction to Subject, Course Outcomes	01	17.08.2020		**TLM2**	CO1	T1	
92.	Economics- definations, nature & scope	01	19.08.2020		**TLM2**	CO1	T1	
93.	Branches of economics, engineering economics –	01	21.08.2020		**TLM2**	CO1	T1	
94.	features and scope.	01	24.08.2020		**TLM2**	CO1	T1	
95.	Demand- types, determinants, law of demand	01	26.08.2020		**TLM2**	CO1	T1	
96.	Exemption of law damand and Elasticity of demand	01	28.08.2020		**TLM2**	CO1	T1	
97.	Elasticity of demand significance-	01	31.08.2020		**TLM2**	CO1	T1	
98.	Types of elasticity of demand	01	02.09.2020		**TLM2**	CO1	T1	
99.	Demand forecasting types- factor governing-	01	04.09.2020		**TLM2**	CO1	T1	
100.	Methods of demand forecasting.	01	07.09.2020		**TLM2**	CO1	T1	
No. of classes required to complete UNIT-I		10			No. of classes taken:			

UNIT – II Theory of Production & Cost Analysis

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 UNIT-II	01	09.09.2020		**TLM2**	CO2	T1	
2.	Production function and ISO Quant and ISO Cost	01	11.09.2019		**TLM2**	CO2	T1	
3.	MRTS, least cost combination of inputs ,	01	14.09.2020		**TLM2**	CO2	T1	
4.	law of returns	01	16.09.2020		**TLM2**	CO2	T1	
5.	Internal and external economies of scale	01	18.09.2020		**TLM2**	CO2	T1	
6.	Cost analysis: cost concepts, cost & output relationship in short run & long run,	01	21.09.2020		**TLM2**	CO2	T1	
7.	Break even analysis, determination of BEP, Significance & limitation of BEA.	01	23.09.2020		**TLM2**	CO2	T1	
8.	BEP Problems	01	25.09.2020					
	I MID EXAM		28.09.2020					
	I MID EXAM		30.09.2020					
No. of classes required to complete UNIT-II		08			No. of classes taken:			

UNIT-III:Market Pricing Policies- Market 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 UNIT-III	01	05.10.2020		**TLM2**	CO3	T1	
2.	Types of markets, features & price output determinations under perfect competitions.	01	07.10.2020		**TLM2**	CO3	T1	
3.	Monopoly, monopolistic competitions, oligopoly markets.	01	09.10.2020		**TLM2**	CO3	T1	
4.	Pricing policies- Pricing objectives-methodes	01	12.10.2020		**TLM2**	CO3	T1	
5.	Applications in business	01	14.10.2020		**TLM2**	CO3	T1	
No. of classes required to complete UNIT-III		05			No. of classes taken:			

UNIT IV–Capital & Capital Budgeting

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 UNIT-IV Capital & its significance-types of capital Estimation of fixed cost and working capital	01	16.10.2020		**TLM2**	CO4	T1	
2.	Components of working capital & factors determining the need of working capital	01	19.10.2020		**TLM2**	CO4	T1	
3.	Sources of raising working capital.	01	21.10.2020		**TLM2**	CO4	T1	
4.	Capital budgeting significance-process	01	23.10.2020		**TLM2**	CO4	T1	
5.	Techniques of capital budgeting : Non discounted cash flow techniques	01	26.10.2020		**TLM2**	CO4	T1	
6.	Discounted cash flow techniques.	01	28.10.2020		**TLM2**	CO4	T1	
No. of classes required to complete UNIT-IV		06			No. of classes taken:			

UNIT-V-Financial Accounting & Analysis

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 UNIT-V	01	30.10.2020		**TLM2**	CO5	T1	
2.	Accounting significance- book keeping- double entry system	01	02.11.2020		**TLM2**	CO5	T1	
3.	Journal- ledger- trail balance	01	04.11.2020		**TLM2**	CO5	T1	
4.	Final accounts with simple adjustments.	01	06.11.2020		**TLM2**	CO5	T1	
5.	Final accounts with simple adjustments.	01	09.11.2020		**TLM2**	CO5	T1	
6.	Financial statement analysis through ratios.	01	11.11.2020		**TLM2**	CO5	T1	
7.	Financial statement analysis through ratios.	01	13.11.2020		**TLM2**	CO5	T1	
	II MID EXAM		16.11.2020					
	II MID EXAM		18.11.2020					
	II MID EXAM		20.11.2020					
No. of classes required to complete UNIT-V		07			No. of classes taken:			

Teaching Learning Methods

TLM1	Chalk and Talk	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM2	PPT	**TLM6**	Assignment or Quiz
TLM3	Tutorial	**TLM7**	Group Discussion/Project
TLM4	Demonstration (Lab/Field Visit)		

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	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

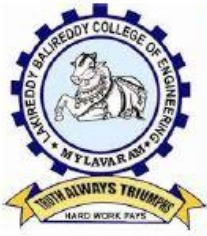**PROGRAMME OUTCOMES (POs):**

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**: 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.

B.Kalyan Kumar	Dr. A ADISESHA REDDY	Dr. A ADISESHA REDDY	Dr. A ADISESHA REDDY
Course Instructor	**Course Coordinator**	**Module Coordinator**	**HOD**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM	: B.Tech., V-Sem., CSE-B/S
ACADEMIC YEAR	: 2020-21
COURSE NAME & CODE	: HUMAN COMPUTER INTERACTION-17CI12
L-T-P STRUCTURE	: 3
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: Mr. J NAGESWARA RAO
COURSE COORDINATOR	: Mr. J NAGESWARA RAO
PRE-REQUISITE	: Knowledge of Computer and Its Architecture.

Course Educational Objective (CEO):

To provide basic methodologies and processes for designing interfaces.

To improve the interaction between users and computers by making computers more usable and receptive to the user 's needs.

To provide relevant principles of behaviour, mostly derived from cognitive science and psychology and other sources that describe human ethologic in particular environment, especially technological ones.

To make the students familiar with developing new interfaces and interaction techniques.

Course Outcomes (COs): After the completion of this course, student will be able to:

CO1: Identify the elements of good user interface design through effective GUI.

CO2: Identify the importance of human characteristics and understanding business functions.

CO3: Analyze screen design principles for making good decisions based on technological considerations in interface design.

CO4: Select the window, device and screen based controls through navigation schemes.

CO5: Identify the basic components and interaction devices to interact with the computers.

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

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

TEXT BOOK:

Wilbert O Galitz, ‖The Essential Guide to User Interface Design‖, Wiley DreamaTech, Third Edition, 2007.

REFERENCES:

1.Ben Shneiderman, CatherinePlaisant, ─Designing the User Interface, Fourth Edition, Pearson Education ,2008.

2. ALAN DIX, JANET FINLAY, GREGORYD. ABOWD, RUSSELL BEALE, ─Human Computer Interaction, Third Edition, PEARSON,2009.

3. http://ps.fragnel.edu.in/~dipalis/prgdwnl/eguid.pdf

4. https://www.alljntuworld.in/download/human-computer-interaction-materials-notes/

5. http://www.crectirupati.com/sites/default/files/lecture_notes/HCI-notes.pdf

COURSE DELIVERY PLAN (LESSON PLAN): Section-B
UNIT –I: Introduction to Graphical User Interface

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
101.	**Introduction :** Importance of user Interface	1	18-08-2020		**TLM1**	CO1	T1	
102.	Overview of user Interface	1	20-08-2020		**TLM1 /TLM4**	CO1	T1	
103.	Importance of good design	1	22-08-2020		**TLM1 /TLM4**	CO1	T1	
104.	Benefits of good design.	1	25-08-2020		**TLM1 /TLM4**	CO1	T1	
105.	A brief history of Screen design	1	27-08-2020		**TLM1 /TLM4**	CO1	T1,R1	
106.	**The graphical user interface** – popularity of graphics	1	29-08-2020		**TLM1 /TLM4**	CO1	T1,R2	
107.	the concept of direct manipulation	1	1-09-2020		**TLM1 /TLM4**	CO1	T1,R2	
108.	graphical system Characteristics	1	03-09-2020		**TLM1 /TLM4**	CO1	T1,R2	
109.	Web user – Interface popularity	1	05-09-2020		**TLM1 /TLM4**	CO1	T1	
110.	Characteristics-Principles of user interface.	1	08-09-2020		**TLM1 /TLM4**	CO1	T1	
111.	Tutorial	1	10-09-2020		**TLM 3**	CO1	T1,R1,R2	
No. of classes required to complete UNIT-I		11			No. of classes taken: 11			

UNIT –II: Design process

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion (DD-MM-YY)	Actual Date of Completion (DD-MM-YY)	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
112.	**Design process** – Human interaction with computers	2	12-09-2020, 15-09-2020		**TLM1**	CO2	T1	
113.	importance of human characteristics	2	17-09-2020,		**TLM1 /TLM4**	CO2	T1,R2	
114.	human consideration	1	19-09-2020		**TLM1 /TLM4**	CO2	T1,R2	

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
115.	Human interaction speeds	1	22-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
116.	Understanding business junctions.	2	24-09-2020		**TLM1 /TLM4**	CO2	T1,R1	
117.	Revision	1	26-09-2020		**TLM1 /TLM4**	CO2	T1,R2	
No. of classes required to complete **UNIT-2**	09				No. of classes taken:			

UNIT –III: Screen Designing

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
118.	**Screen Designing :** Design goals	1	29-09-2020		**TLM1**	CO3	T1	
119.	Screen planning and purpose	1	01-10-2020		**TLM1 /TLM4**	CO3	T1,R1	
120.	organizing screen elements	1	03-10-2020		**TLM1 /TLM4**	CO3	T1,R1	
121.	ordering of screen data and content ,	1	06-10-2020		**TLM1 /TLM4**	CO3	T1,R1	
122.	screen navigation and flow	1	08-10-2020		**TLM1 /TLM4**	CO3	T1,R1	
123.	Visually pleasing composition , amount of information	1	10-10-2020		**TLM1**	CO3	T1,R1	
124.	Distinctiveness, focus and emphasis	1	13-10-2020		**TLM1**	CO3	T1,R2	
125.	revision	1	15-10-2020		**TLM1**	CO3	T1,R2	
No. of classes required to complete **UNIT-3**	08				No. of classes taken:			

UNIT –IV: Windows

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
126.	**Windows** – New and Navigation schemes	1	17-10-2020		**TLM1**	CO4	T1	
127.	Structure of Menus, Functions of Menus	1	20-10-2020		**TLM1 /TLM4**	CO4	T1,R1,R2	
128.	Phrasing the Menu, Selecting Menu Choices	1	22-10-2020		**TLM1 /TLM4**	CO4	T1,R1,R2	

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
129.	Navigating Menus, Kinds of Graphical Menus	1	27-10-2020		**TLM1 /TLM4**	CO4	T1,R1	
130.	selection of window, Components of Window	1	29-10-2020		**TLM1 /TLM4**	CO4	T1,R1	
131.	Window Presentation Styles, Types of Windows, Selection of devices based controls	1	31-10-2020		**TLM1 /TLM4**	CO4	T1,R1	
132.	REVISION	1	03-11-2020		**TLM 3 /TLM 6**	CO4	T1,R1,R2	
No. of classes required to complete **UNIT-4**		09			No. of classes taken:			

UNIT-V: Components

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
133.	**Components** – text and messages, **Text for web pages**	1	05-11-2020		**TLM1**	CO5	T1	
134.	Icons and increases , Kinds of Icons, characteristics of Icons	1	07-11-2020		**TLM1 /TLM4**	CO5	T1,R1,R2	
135.	Multimedia, Colors uses. problems with choosing colors	1	10-11-2020		**TLM1 /TLM4**	CO5	T1,R1,R2	
136.	Keyboard and function keys, pointing devices,	1	12-11-2020		**TLM1 /TLM4**	CO5	T1,R2	
137.	digitization and generation, Drivers.	1	16-11-2020		**TLM1 /TLM4**	CO5	T1,R2	
138.	Revision	1	18-11-2020		**TLM 3 /TLM 6**	CO5	T1,R1,R2	
No. of classes required to complete **UNIT-5**		06			No. of classes taken:			

Contents beyond the Syllabus

Sno.	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
139.	speech recognition	1	20-11-2020		**TLM1 /TLM4**	CO1	T1	
140.	image and video displays	1	20-11-2020		**TLM1 /TLM4**	CO2	T1	

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	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Descriptive Examination	1, 2	B1=20
I-Mid Online Quiz Examination	1, 2	C1 = 10
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Descriptive Examination	3, 4, 5	B2=20
II-Mid Online Quiz Examination	3, 4, 5	C2 = 10
Evaluation of Assignment/Quiz Marks: A = (A1+A2+A3+A4+A5)/5	**1,2,3,4,5**	**A=5**
Evaluation of Mid Descriptive Marks: B = 75% of Max(B1,B2)+25% of Min(	**1,2,3,4,5**	**B=20**
Evaluation of Mid Online Quiz Marks: C = Average(C1, C2)	**1,2,3,4,5**	**C=10**
Cumulative Internal Examination : A+B+C	**1,2,3,4,5**	**A+B+C=35**
Attendance	**-**	**D = 0 to 5**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

PROGRAMME 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.

PROGRAMME OUTCOMES (POs):
Engineering Graduates will be able to:

37. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
38. **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.

39. **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.
40. **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.
41. **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.
42. **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.
43. **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.
44. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
45. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
46. **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.
47. **Project management and finance**: Demonstrate knowledge and understanding of the enginee**ring 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.
48. 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.

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

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr CH V NARAYANA
Course Name & Code : OPERATING SYSTEEMS & 17CS04
L-T-P Structure : 4-0-0   Credits : 3
Program/Sem/Sec : B.Tech., CSE., V-Sem., B Sec.   A.Y.   : 2020-21

PRE-REQUISITE: C, JAVA & DBMS, CO

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of the course is to provide basic knowledge of computer operating system structure and functioning. Students able to understand how Operating Systems evolved with advent of computer architecture. Comprehend the different CPU scheduling algorithms, page replacement algorithms and identify best one.

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

CO 1	Identify the functional aspects and implementation methods (system call And System programs of different modules in a general-purpose operating System).
CO 2	Evaluate scheduling and communication methods of **processes** handled by Operating systems through examples.
CO 3	Analyze the **process synchronization** methods and deadlock handling Approaches employed in operating systems.
CO 4	Evaluate **memory management** strategies such as paging and segmentation, Virtual Memory, swapping, and page replacement algorithms.
CO 5	Analyze the implementation strategies of **file systems** regarding directory, Allocation, free space management and file recovery.

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

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

1. Silberschatz& Galvin, ―Operating System Concepts‖, Wiley, 7th edition, 2007.

REFERENCES:

1. William Stallings, ―Operating Systems‖, PHI, 5th Edition, 2004.

2. Charles Crowley, ―Operating Systems: A Design-Oriented Approach‖, TMH Publications, 1998.

3. Andrew S.Tanenbaum, ―Modern Operating Systems‖, PHI, 2nd edition, 1995.

4. http://codex.cs.yale.edu/avi/os-book/OS9/slide-dir/index.html

5. https://www.youtube.com/watch

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
141.	Introduction, COs.	1	18/08/20		**TLM2**	
142.	Computer-System Organization, Computer-System Architecture	1	18/08/20		**TLM2**	
143.	Operating System Structure, Operating-System Operations.	1	20/08/20		**TLM2**	
144.	Operating System Operations	1	25/08/20		**TLM2**	
145.	Distributed Systems, Special-Purpose Systems	1	25/08/20		**TLM2**	
146.	Operating-System Structures (User Operating-System Interface)	1	27/08/20		**TLM2**	
147.	System Calls, Types of System Calls	1	29/08/20		**TLM2**	
148.	System Programs	1	01/09/20		**TLM2**	
149.	Operating-System Design and Implementation	1	01/09/20		**TLM2**	
150.	Virtual Machines	1	03/09/20		**TLM2**	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
151.	Operating-System Generation, System Boot.	1	08/09/20		**TLM2**	

No. of classes required to complete UNIT-I : 11			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
152.	Processes: Concept, Process Scheduling	1	08/09/20		**TLM2**	
153.	Operations on Processes, Inter-process comm.	1	10/09/20		**TLM2**	
154.	Examples of IPC Systems, Communication in Client-Server Systems	1	12/09/20		**TLM2**	
155.	Multithreaded Programming	1	15/09/20		**TLM2**	
156.	Multithreaded Programming	1	15/09/20		**TLM2**	
157.	Scheduling Criteria, Scheduling Algorithms	1	17/09/20		**TLM2**	
158.	Scheduling Algorithms	1	22/09/20		**TLM2**	
159.	Scheduling Algorithms	1	22/09/20		**TLM2**	
160.	Multiple-Processor Scheduling.	1	24/09/20		**TLM2**	

No. of classes required to complete UNIT-II : 09			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
161.	Synchronization-The Critical-Section Problem	1	26/09/20		**TLM2**	
162.	Synchronization-The Critical-Section Problem	1	29/09/20		**TLM2**	
163.	Synchronization-The Critical-Section Problem	1	29/09/20			
164.	Peterson's solution	1	01/10/20		**TLM2**	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
165.	Synchronization Hardware	1	03/10/20		**TLM2**	
166.	Semaphores	1	06/10/20		**TLM2**	
167.	Classic Problems of Synchronization, Monitors	1	06/10/20		**TLM2**	
168.	Deadlocks- System Model, Deadlock Characterization	1	08/10/20		**TLM2**	
169.	Methods for Handling Deadlocks, Deadlock Prevention. Deadlock Avoidance	1	10/10/20		**TLM2**	
170.	Deadlock Detection, Recovery from deadlock		13/10/20			

No. of classes required to complete UNIT-III : 09		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
171.	Memory Management Strategies: Swapping, Contiguous Memory Allocation	1	13/10/20		**TLM2**	
172.	Paging	1	16/10/20		**TLM2**	
173.	Structure of the Page Table	1	15/10/20		**TLM2**	
174.	Segmentation	1	17/10/20		**TLM2**	
175.	Virtual Memory Management: Demand Paging	1	20/10/20		**TLM2**	
176.	Page Replacement	1	20/10/20		**TLM2**	
177.	Page replacement	1	22/10/20		**TLM2**	
178.	Allocation of frames.	1	27/10/20		**TLM2**	
179.	Thrashing, Memory-	1	27/10/20		**TLM2**	

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	Mapped Files					
180.	Allocating Kernel Memory.	1	29/10/20		TLM2	
181.	Revision	1	31/10/20		TLM2	

No. of classes required to complete UNIT-IV : 11		No. of classes taken:	

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
182.	File-System- The Concept of a File	1	03/11/20		TLM2	
183.	Access Methods.	1	03/11/20		TLM2	
184.	Access Methods	1	05/11/20		TLM2	
185.	Directory Structure	1	07/11/20		TLM2	
186.	File-System Mounting	1	10/11/20		TLM2	
187.	File Sharing, Protection	1	10/11/20		TLM2	
188.	Implementing File System: File-System Structure	1	12/11/20		TLM2	
189.	File-System Implementation, Directory Implementation	1	17/11/20		TLM2	
190.	Allocation Methods, Free-Space Management.	1	17/11/20		TLM2	
191.	Controller components	1	21/11/20		TLM2	

No. of classes required to complete UNIT-V : 10		No. of classes taken:	

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

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	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 = 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)	Q=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	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	**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.

Course Instructor   Course Coordinator   Module Coordinator   HOD
(Dr Ch V Narayana)   (Dr Ch V Narayana)   (Dr. D veeraiah)   (Dr. D. Veeraiah)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PROGRAM   : B.Tech., V-Sem., CSE

ACADEMIC YEAR   : 2020-21

COURSE NAME & CODE : UML Design - S 415

L-T-P STRUCTURE   : 3-0-0

COURSE CREDITS   : 3

COURSE INSTRUCTOR   : Dr .O.Rama Devi

COURSE COORDINATOR : Dr. O.Rama Devi

PRE-REQUISITE: Knowledge of Object Oriented Methods

COURSE OBJECTIVE:

The main objective of this course is that the students become familiar with all phases of OOAD and master the main features of the UML. They come to know about the main concepts of Object Technologies and how to apply them at work and develop the ability to analyze and solve challenging problem in various domains. And Learn the Object Design Principles and understand how to apply them towards implementation.

COURSE OUTCOMES (CO):

CO1: Select the basic elements of modeling such as Things, Relationships and Diagrams depending on the views of UML Architecture and SDLC.

CO2: Apply Basic and Advanced Structural Modeling Concepts for designing real time applications.

CO3: Analyze Dynamic Aspects of a system using Behavioral Diagrams and Runtime environment of Software Systems.

CO4: Identify the Design Patterns to solve Object Oriented Design Problems.

CO5: Implement Creational Patterns, Structural Patterns and Behavioral Patterns for given applications.

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

CO4	2	3	3	-	-	-	-	-	-	-	-	1	1	-	3
CO5	2	3	3	-	-	-	-	-	-	-	-	1	1	-	3

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

BOS APPROVED TEXT BOOKS:

T1 Grady Booch, James Rumbaugh, Ivar Jacobson, —The Unified Modeling Language UserGuidel, Pearson Education, 2nd Edition, ISBN: 0-201-57168-4,1998 (Unit-1 to Unit-3).

T2 Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, —Design Patterns: Elements of Reusable Object-Oriented Softwarel, Addison-Wesley Professional, 1st Edition, ASIN: B000SEIBB8, 1994 (Unit-4 to Unit-5).

BOS APPROVED REFERENCE BOOKS:

R1 Meilir Page-Jones, —Fundamentals of Object-Oriented Design in UMLl, Pearson Education, 1st Edition, ISBN: 9788177586770, 8177586777, and 2007.

R2 Eric Freeman, Elisabeth Robson, Bert Bates, Kathy Sierra, —Head First Design Patterns: A Brain-Friendly Guidel, O'Reily – SPD, 1st Edition, ISBN: 9789352132775, 9352132777, 2014.

R3 https://www.tutorialspoint.com/uml/
R4 https://sourcemaking.com/design_patterns

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT – 1: INTRODUCTION TO UML

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
192.	Why Modeling? and Importance of Modeling	1	18-08-2020		TLM2	CO1	T1	
193.	Principles of Modeling and Object Oriented Modeling	1	21-08-2020		TLM2	CO1	T1	
194.	Overview of the UML	1	25-08-2020		TLM2	CO1	T1	
195.	Conceptual Model of the UML & Building Blocks: Things – Part 1	1	28-08-2020		TLM2, TLM8	CO1	T1, R1	
196.	Building Blocks: Things – Part 2	1	29-08-2020		TLM2, TLM8	CO1	T1, R1	
197.	Relationships with Examples & UML Diagrams	1	1-09-2020		TLM2, TLM8	CO1	T1, R1	
198.	Architecture	1	4-09-2020		TLM2	CO1	T1, R1	
199.	Software Develoment Life Cycle	1			TLM2, TLM8	CO1	T1	

			5-09-2020					
No. of classes required to complete UNIT-I:		**8**	**No. of classes taken:**					

UNIT – 2: STRUCTURAL MODELING

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
200	Classes	1	8-08-2020		TLM2	CO2	T1	
201	Relationships in Class Diagrams	1	11-09-20		TLM2	CO2	T1	
202	Common Mechanisms	1	12-09-20		TLM2	CO2	T1	
203	Class Diagram	1	15-09-20		TLM2	CO2	T1	
204	Advanced Classes	1	18-09-20		TLM2	CO2	T1	
205	Advanced Relationships	1	19-09-20		TLM2	CO2	T1	
206	Interfaces	1	22-09-20		TLM2	CO2	T1, R2	
207	Types & Roles	1	25-09-20		TLM2	CO2	T1, R2	
208	Packages , Object Diagarm	1	26-09-20		TLM2	CO2	T1, R2	
No. of classes required to complete UNIT-II:		**9**	**No. of classes taken:**					

UNIT – 3: Behavioral Modeling

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
209	Interactions, Interaction Diagrams	1	6-10-2020		TLM2	CO3	T1, R2	
210	Use Cases, Use Case Diagrams	1	9-10-2020		TLM2, TLM8	CO3	T1, R2	
211	Activity Diagrams	1	10-10-2020		TLM9	CO3	T1	
212	**Advanced Behavioral Modeling:** Events and Signals	1	13-10-2020		TLM2	CO3	T1, R2	
213	Time and Space	1	16-10-2020		TLM2, TLM8	CO3	T1, R2	
214	State Diagrams, Architectural Modeling: Component	1	17-10-2020		TLM2	CO3	T1	
215	Deployment	1	20-10-2020		TLM2	CO3	---	
No. of classes required to complete UNIT-III:		**7**	**No. of classes taken:**					

UNIT – 4: Introduction to Design Patterns

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
216.	What is Design pattern?, Design Patterns in Smalltalk MVC.	1	23-10-2020		TLM2	CO4	T2	
217.	Describing Design Patterns	1	27-10-2020		TLM1, TLM2	CO4	T2	
218.	The Catalog of Design Patterns	1	30-10-2020		TLM1, TLM2, TLM8	CO4	T2	
219.	Organizing the Catalog	1	31-10-2020		TLM1, TLM2	CO4	T2	
220.	How Design Patterns Solve Design Problem	1	3-11-2020		TLM1, TLM2, TLM8	CO4	T2	
221.	How to select a Design Pattern,	1	6-11-2020		TLM1, TLM2	CO4	T2	
No. of classes required to complete UNIT-IV		**6**	**No. of classes taken:**					

UNIT – V: Types of Patterns

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
222.	Creational Patterns: Abstract Factory, Builder and Factory method	1	7-11-2020		TLM2	CO5	T2	
223.	Structural Patterns: Adapter, Decorator, and Facade.	1	10-11-2020		TLM2	CO5	T2	
224.	Structural Patterns: Adapter, Decorator, and Facade.	1	13-11-2020		TLM2	CO5	T2	
225.	Structural Patterns: Adapter, Decorator, and Facade.	1	17-11-2020		TLM2	CO5	T2	
226.	Behavioral Patterns: Chain of Responsibility, State, and Strategy.	1	20-11-202		TLM2, TLM8	CO5	T2	
227.	Behavioral Patterns: Chain of Responsibility, State, and Strategy.	1	21-11-202		TLM2	CO5	T2	

No. of classes required to complete UNIT-V	6	No. of classes taken:	

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	17-08-2020	3-10-2020	6W
I Mid Examinations	28-09-2020	02-10-2020	1W
II Phase of Instructions	05-10-2020	28-11-2020	7W
II Mid Examinations	23-11-2020	28-11-2020	1W
Preparation and Practicals	30-11-2020	05-12-2020	1W
Semester End Examinations	07-12-2020	21-12-2020	2W

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment/Quiz – 1	1	A1=5
Assignment/Quiz – 2	2	A2=5
I-Mid Examination	1,2	B1=20
Assignment/Quiz – 3	3	A3=5
Assignment/Quiz – 4	4	A4=5
Assignment/Quiz – 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Evaluation of Assignment/Quiz Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Mid Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=20
Cumulative Internal Examination : A+B	**1,2,3,4,5**	**A+B=25**
Semester End Examinations	**1,2,3,4,5**	**C=75**
Total Marks: A+B+C	**1,2,3,4,5**	**100**

Course Instructor   **Course Coordinato**   **Module Coordinato**   **HOD**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor   : M.SRI BALA
Course Name & Code   : UML and DP LAB 17CS62
L-T-P Structure   : 3-0-0   Credits   : 3
Program/Sem/Sec   : B.Tech., CSE., V-Sem., Sections- B   A.Y   : 2020-21

PRE-REQUISITE: Knowledge in Basics of JAVA Programming.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to present the basic concepts in information retrieval and the significance of various indexing and searching techniques for information retrieval.

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

CO1	Analyze Software Requirements for the given Software Application.
CO2	Develop the UML Diagrams to view Software System in Static and Dynamic Aspects.
CO3	Select a Design Pattern related to their problem and draw the Class and Object Diagrams using the UML notations.
CO4	Improve individual / team work 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	2	3	1	-	3	1	-	-	-	-	-	2	-	-	3
CO2	1	3	1	-	3	-	-	-	-	-	-	2	-	-	3
CO3	1	1	3	1	3	-	-	-	-	-	-	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).

TEXT BOOKS:

T1   1. Grady Booch, James Rumbaugh, Ivar Jacobson, ―The Unified Modeling Language UserGuide‖, Pearson Education, 2nd Edition, ISBN: 0-201-57168-4, 1998.

2. Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, ―Design Patterns: Elements of Reusable Object-Oriented Software‖, Addison-Wesley Professional, 1st Edition, ASIN: B000SEIBB8, 1994.

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	Teaching Learning Methods	HOD Sign Weekly
228.	Basics of UML	2	20-08-2020		TLM2	
229.	For each case study given earlier, Construct Use Case Diagram in the following manner	2	27-08-2020		TLM2	
230.	For each case study given earlier, Construct Class and Object Diagram in the following manner	2	3-09-2020		TLM2	
231.	For each case study given earlier, Construct Interaction Diagrams in the following manner	2	10-09-2020		TLM2	
232.	For each case study given earlier, Construct Activity Diagram in the following manner	2	17-09-2020		TLM2	
233.	For each case study given earlier, Construct State Chart Diagram in the following manner	2	24-09-2020		TLM2	
234.	For each case study given earlier, Construct Component Diagram in the following manner	2	01-10-2020		TLM2	

235.	For each case study given earlier, Construct Deployment Diagram in the following manner	2	08-10-2020		TLM2	
236.	Construct the CLASS DIAGRAM/OBJECT DIAGRAM for: 1) Drawing Editor based on ABSTRACT FACTORY Design Pattern. 2) Converter (Text to ASCII, PDF, Doc.,etc. based on BUILDER Design Pattern.	2	15-10-2020		TLM2	
237.	Construct the CLASS DIAGRAM OBJECT DIAGRAM for: 1) Media Player based on ADAPTER Design Pattern. 2) Different Toppings on Pizza based on DECORATOR Design Pattern.	4	22-10-2020 29-10-2020		TLM2	
238.	Construct the CLASS DIAGRAM/OBJECT DIAGRAM for Conducting a Quiz Competition based on CHAIN OF RESPONSIBILITY Design Pattern.	4	05-11-2020 12-11-2020		TLM2	
No. of classes required to complete lab :26				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

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	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: 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.

Course
Instructor
(Name)

Course Coordinator
(Name)

Module Coordinator
(Name)

HOD
(Name)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : P Vamsi Naidu
Course Name & Code   : Web Technologies - 17CI14
L-T-P Structure   : 3-0-0   Credits   : 3
Program/Sem/Sec   : B.Tech., CSE., V-Sem., B Sec.   A.Y   : 2020-21

PRE-REQUISITE: C, JAVA & DBMS

COURSE EDUCATIONAL OBJECTIVES (CEOs): Students will be familiarized with the tools and web technologies necessary for business application design and development. This course covers client side and server side scripting languages to develop static and dynamic web applications.

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

CO 1	Design web pages by using HTML and DHTML.
CO 2	Develop user defined tags and transfer data between components by using XML and Java Beans.
CO 3	Create data driven web applications by applying database connectivity techniques.
CO 4	Design and implement dynamic Webpages using server side components like servlets.
CO 5	Understand concepts of JSP and struts framework and apply them in solving real world Problems.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	3	-	2	1	-	-	-	-	-	1	3	-	-
CO2	2	1	3	-	2	1	-	-	-	-	-	1	3	1	-
CO3	2	2	3	-	2	1	-	-	-	-	-	1	3	3	-
CO4	2	2	3	-	2	1	-	-	-	-	-	1	3	3	1
CO5	2	2	3	-	2	1	-	-	-	-	-	1	3	3	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 Chris Bates, Web Programming, building internet applications, WILEY Dreamtech, 2nd edition.

T2 MartyHall and Larry Brown, "Core Servlets and Java Server Pages Volume 1: Core Technologies", Pearson, 2nd Edition, 2004.

T3 Bill Siggelkow," Jakarta Struts Cookbook", O'Reilly Media, 2005.

REFERENCE BOOKS:

R1 Robert W Sebesta, "Programming the World Wide Web", Pearson Education, 8th Edition, 2015.

R2 A.A.Puntambekar, "Web Technologies", Technical Publications, 2009.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: HTML, CSS, & JAVA SCRIPT

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
239.	Introduction, COs.	1	17/08/20		**TLM2 TLM5**	
240.	Versions of HTML, Text formatting tags, lists.	1	20/08/20		**TLM2 TLM5**	
241.	Tables, images concept.	1	21/08/20		**TLM2 TLM5**	
242.	Links, marquee tag.	1	21/08/20		**TLM2 TLM5**	
243.	HTML Forms.	1	24/08/20		**TLM2 TLM5**	
244.	HTML Frames.	1	27/08/20		**TLM2 TLM5**	
245.	Types of CSS, CSS selectors. Assignment I.	1	28/08/20		**TLM2 TLM5**	
246.	Properties in CSS.	1	28/08/20		**TLM2 TLM5**	
247.	JavaScript Introduction, objects in JS.	1	31/08/20		**TLM2 TLM5**	
248.	Dynamic HTML with JS.	1	03/09/20		**TLM2 TLM5**	
249.	Form validation using JS.	1	04/09/20		**TLM2 TLM5**	
No. of classes required to complete UNIT-I : 11				No. of classes taken:		

UNIT-II: XML & JAVA BEANS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
250.	Introduction to XML.	1	04/09/20		**TLM2 TLM5**	
251.	XML DTD and its types.	1	07/09/20		**TLM2 TLM5**	
252.	XML Schema.	1	10/09/20		**TLM2 TLM5**	
253.	Presenting XML.	1	11/09/20		**TLM2 TLM5**	
254.	XML Processors: DOM & SAX.	1	11/09/20		**TLM2 TLM5**	
255.	Introduction to JavaBeans, advantages.	1	14/09/20		**TLM2 TLM5**	
256.	JavaBean Persistence.	1	17/09/20		**TLM2 TLM5**	
257.	JavaBean API. Assignment II.	1	18/09/20		**TLM2 TLM5**	
258.	EJB Introduction.	1	18/09/20		**TLM2 TLM5**	
No. of classes required to complete UNIT-II : 09				No. of classes taken:		

UNIT-III: JDBC

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
259.	JDBC Introduction, Types of JDBC Drivers.	1	21/09/20			
260.	Java.sql package.	1	24/09/20			
261.	Procedure to establish database connection	1	25/09/20			
262.	JDBC steps.	1	25/09/20			
263.	Database operations: Create, Insert.	1	05/10/20			
264.	Database operations: Delete, Update.	1	08/10/20			
265.	Types of Statements.	1	09/10/20			
266.	ResultSet Types. Assignment III.	1	09/10/20			

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
267.	Example Programs using JDBC.	1	12/10/20		**TLM2** **TLM5**	
No. of classes required to complete UNIT-III : 09				No. of classes taken:		

UNIT-IV: SERVLETS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
268.	Introduction to Servlets.	1	15/10/20		**TLM2** **TLM5**	
269.	Servlet Lifecycle.	1	16/10/20		**TLM2** **TLM5**	
270.	Servlet API: javax.servlet.*, .http.*.	1	16/10/20		**TLM2** **TLM5**	
271.	Servlet Request, Response.	1	19/10/20		**TLM2** **TLM5**	
272.	GenericServlet, ServletConfig.	1	22/10/20		**TLM2** **TLM5**	
273.	ServletContext, RequestDispatcher.	1	23/10/20		**TLM2** **TLM5**	
274.	HTTPServlet, Request, Response.	1	23/10/20		**TLM2** **TLM5**	
275.	HTTPSession, Assignment IV.	1	26/10/20		**TLM2** **TLM5**	
276.	Cookie concept.	1	29/10/20		**TLM2** **TLM5**	
277.	Database access by using Servlets	1	02/11/20		**TLM2** **TLM5**	
278.	Example Programs.	1	05/11/20		**TLM2** **TLM5**	
No. of classes required to complete UNIT-IV : 11				No. of classes taken:		

UNIT-V: JSP & STRUTS

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
279.	Intro., Lifecycle of JSP.	1	06/11/20		**TLM2** **TLM5**	
280.	Scripting elements.	1	06/11/20		**TLM2** **TLM5**	
281.	Implicit objects.	1	09/11/20		**TLM2** **TLM5**	
282.	Directive elements, Action elements.	1	12/11/20		**TLM2** **TLM5**	
283.	Error handling,	1	13/11/20		**TLM2**	

	debugging.				**TLM5**	
284.	Access database from JSP pages.	1	13/11/20		**TLM2** **TLM5**	
285.	Strut Framework.	1	16/11/20		**TLM2** **TLM5**	
286.	MVC design pattern.	1	19/11/20		**TLM2** **TLM5**	
287.	Strut main components.	1	20/11/20		**TLM2** **TLM5**	
288.	Controller components	1	20/11/20		**TLM2** **TLM5**	
No. of classes required to complete UNIT-V : 10				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	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 = 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)	Q=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:** 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.

Course Instructor   Course Coordinator   Module Coordinator   HOD
(Mr. P Vamsi Naidu)   (Mr. N. SrinivasaRao)   (Dr. M.SrinivasaRao)   (Dr. D. Veeraiah)

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
http://cse.lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : P Vamsi Naidu
Course Name & Code   : Web Technologies Lab - 17CI66
L-T-P Structure   : 0-0-2   Credits   : 1
Program/Sem/Sec   : B.Tech., CSE., V-Sem., B Sec.   A.Y   : 2020-21

PRE-REQUISITE: C, JAVA & DBMS

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of the course is, student will be familiar with client server architecture and able to develop interactive, dynamic web applications by using java technologies.

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

CO 1	Design and implement static & dynamic websites.
CO 2	Create reusable components by using Java Beans.
CO 3	Design and implement data driven web applications.
CO 4	Improve individual / team work 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	3	-	3	-	-	-	-	-	-	2	3	3	-
CO2	3	2	3	-	3	-	-	-	-	-	-	2	3	3	-
CO3	3	2	3	-	3	-	-	-	-	-	-	2	3	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).

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REFERENCE BOOKS:
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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	Teaching Learning Methods	HOD Sign Weekly
289.	Introduction to Web Technologies Lab, COs.	1	19/08/20		TLM5 TLM8	
290.	Lab Cycle-1	1	26/08/20		TLM5 TLM8	
291.	Lab Cycle-2	1	02/09/20		TLM5 TLM8	
292.	Lab Cycle-3	1	02/09/20		TLM5 TLM8	
293.	Lab Cycle-4	1	09/09/20		TLM5 TLM8	
294.	Lab Cycle-5	1	09/09/20		TLM5 TLM8	
295.	Lab Cycle-6	1	16/09/20		TLM5 TLM8	
296.	Lab Cycle-7	1	23/09/20		TLM5 TLM8	
297.	Lab Cycle-8	1	23/09/20		TLM5 TLM8	
298.	Lab Cycle-9	1	07/10/20		TLM5 TLM8	
299.	Lab Cycle-10	1	14/10/20		TLM5 TLM8	
300.	Lab Cycle-11	1	21/10/20		TLM5 TLM8	
301.	Lab Cycle-12	1	28/10/20		TLM5 TLM8	
302.	Lab Cycle-13	1	04/11/20		TLM5 TLM8	
303.	Lab Cycle-14	1	11/11/20		TLM5 TLM8	
304.	Internal Exam	1	18/11/20		TLM6 TLM9	

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

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Day-Day Performance	I1=20
Viva	I2=5
Internal Test	I3=10
Attendance	I4=5
Internal Exam (A = I1+I2+I3+I4)	A=40
End Exam (B)	B=60
Total Marks = A+B	100

PART-D

PROGRAMME OUTCOMES (POs):

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