LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech., IVSem., CSE-A

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : OOPS THROUGH JAVA LAB – 17CS65

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

COURSE CREDITS : 1

COURSE INSTRUCTOR : Mr.K.SUNDEEP SARADHI

COURSE COORDINATOR : Mr.A.SREE RAMA CHANDRA MURTHY

PRE-REQUISITE: C & C++

COURSE OBJECTIVE:. Concentrates on the methodological and technical aspects of software design and programming based on OOP. Acquire the basic knowledge and skills necessary to implement object oriented programming techniques in software development through java. Know about the importance of GUI based applications and the development of applications through java.

COURSE OUTCOMES (CO)

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

CO1: Implement and Test the concepts of OOP in program design with a few example exercises.

CO2: Implement and Test the performance of Exception handling, Multithreading concepts with a few examples.

CO3: Implement and Test the performance of GUI based applications using AWT, Swings.

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

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

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI60	CO1	2	3	3	1	1	-	-				-	1	3	-	-
	CO2	2	3	3	1	1	-	-				-	1	3	-	-
	CO3	2	3	3	1	1	-	-				-	1	3	3	1
	CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 = Slight (Low) 2 = Moderate (Medium) 3- Substantial(High)																

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

S.No.	Programs to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Java programming	2	28.11.2018		TLM8	
2.	Introduction to Java Compiler	2	05.12.2018		TLM4 / TLM5	
3.	Programs on Basic control structures & Loops	2	12.12.2018		TLM4 / TLM5	
4.	Programs on Basic control structures & Loops	2	19.12.2018		TLM4 / TLM5	
5.	Programs on recursion	2	26.12.2018		TLM4 / TLM5	
6.	Programs on Arrays	2	02.01.2019		TLM4 / TLM5	
7.	Programs on Constructors & Method Overloading	2	09.01.2019		TLM4 / TLM5	
8.	Programs on String & String Buffer classes	2	30.01.2019		TLM4 / TLM5	
9.	Programs on Inheritance , super and final keyword	2	06.02.2019		TLM4 / TLM5	
10.	Programs on Run-Time Polymorphism	2	13.02.2019		TLM4 / TLM5	
11.	Programs on Packages and Interfaces	2	20.02.2019		TLM4 / TLM5	
12.	Programs on Exception Handling & Multithreading	2	27.02.2019		TLM4 / TLM5	
13.	Programs on Applets & Event Handling	2	06.03.2019		TLM4 / TLM5	
14.	Programs on Applets & Event Handling	2	13.03.2019		TLM4 / TLM5	
15.	Programs on AWT Components & Layout Managers	2	20.03.2019		TLM4/ TLM5	
16.	Programs on Swings	2	27.03.2019		TLM4/ TLM5	

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-1	26-11-2018	12-01-2019	7W
I Mid Examinations	18-01-2019	25-01-2019	1W
II Phase of Instructions	28-01-2019	30-03-2019	9W
II Mid Examinations	01-04-2019	06-04-2019	1W
Preparation and Practicals	08-04-2019	20-04-2019	2W
Semester End Examinations	22-04-2019	04-05-2019	2W

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
K.Sundeep Saradhi	A.S.R.C.Murthy	Dr. D.Veeraiah	Dr.Ch.Venkata Narayana

LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech., IVSem., CSE-B

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : OOP through Java Lab – 17CS65

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

COURSE CREDITS : 1

COURSE INSTRUCTOR : Mr.K.SUNDEEP SARADHI

COURSE COORDINATOR : Mr.A.SREE RAMA CHANDRA MURTHY

PRE-REQUISITE: C & C++

COURSE OBJECTIVE:. Concentrates on the methodological and technical aspects of software design and programming based on OOP. Acquire the basic knowledge and skills necessary to implement object oriented programming techniques in software development through java. Know about the importance of GUI based applications and the development of applications through java.

COURSE OUTCOMES (CO)

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

CO1: Implement and Test the concepts of OOP in program design with a few example exercises.

CO2: Implement and Test the performance of Exception handling, Multithreading concepts with a few examples.

CO3: Implement and Test the performance of GUI based applications using AWT, Swings.

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

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

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
17CI60	CO1	2	3	3	1	1	-	-	-	-	-	-	1	3	-	-
	CO2	2	3	3	1	1	-	-	-	-	-	-	1	3	-	-
	CO3	2	3	3	1	1	-	-	-	-	-	-	1	3	3	1
	CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 = Slight (Low) 2 = Moderate (Medium) 3- Substantial(High)																

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

S.No.	Programs to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Java programming	2	30.11.2018		TLM8	
2.	Introduction to Java Compiler	2	07.12.2018		TLM4 / TLM5	
3.	Programs on Basic control structures & Loops	2	14.12.2018		TLM4 / TLM5	
4.	Programs on Basic control structures & Loops	2	21.12.2018		TLM4 / TLM5	
5.	Programs on recursion	2	28.12.2018		TLM4 / TLM5	
6.	Programs on Arrays	2	04.01.2019		TLM4 / TLM5	
7.	Programs on Constructors & Method Overloading	2	11.01.2019		TLM4 / TLM5	
8.	Programs on String & String Buffer classes	2	01.02.2019		TLM4 / TLM5	
9.	Programs on Inheritance , super and final keyword	2	08.02.2019		TLM4 / TLM5	
10.	Programs on Run-Time Polymorphism	2	15.02.2019		TLM4 / TLM5	
11.	Programs on Packages and Interfaces	2	22.02.2019		TLM4 / TLM5	
12.	Programs on Exception Handling & Multithreading	2	01.03.2019		TLM4 / TLM5	
13.	Programs on Applets & Event Handling	2	06.03.2019		TLM4 / TLM5	
14.	Programs on Applets & Event Handling	2	08.03.2019		TLM4 / TLM5	
15.	Programs on AWT Components & Layout Managers	2	15.03.2019		TLM4/ TLM5	
16.	Programs on Swings	2	22.03.2019		TLM4/ TLM5	
17.	Lab Internal	2	29.03.2019			

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-1	26-11-2018	12-01-2019	7W
I Mid Examinations	18-01-2019	25-01-2019	1W
II Phase of Instructions	28-01-2019	30-03-2019	9W
II Mid Examinations	01-04-2019	06-04-2019	1W

Preparation and Practicals	08-04-2019	20-04-2019	2W
Semester End Examinations	22-04-2019	04-05-2019	2W

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
A.S.R.C.Murthy	A.S.R.C.Murthy	Dr. D.Veeraiah	Dr.Ch.Venkata Narayana

LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,
NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech. IV-Sem., CSE-Asec

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : **SOFTWARE ENGINEERING & 17CI10**

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

COURSE CREDITS : 3

COURSE INSTRUCTOR : **G BALU NARASIMHA RAO**

COURSE COORDINATOR : **Dr. Ch. V. Narayana Reddy**

1. **Pre-requisites:** Concepts of programming and Database Management Systems.
2. **Course Educational Objectives (CEOs):**

   An understanding of different software processes and how to choose between them. How to understand requirements from a client and specify them. Design in the large, including principled choice of software architecture, the use of modules and interfaces to enable separate development, and design patterns. Knowing various quality assurance techniques, including unit testing, integration testing and functional testing.
3. **Course Outcomes (COs):** At the end of the course, the student will be able to:

   S381.1: Understand the fundamentals of software engineering concepts and software process standards

   S381.2: Demonstrate appropriate process models and software engineering practices

   S381.3: Analyze requirements of software system and explore all requirements gathering approaches

   S381.4: Create an architectural design using standard design processes

   S381.5: Apply software testing strategies and tactics for testing real time projects effective

4. Course Articulation Matrix:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
S381.1	1	3	1	-	-	1	-	-	-	-	1	1	-	-	3
S381.2	1	3	2	-	-	1	-	1	-	-	-	-	-	-	3
S381.3	1	3	2	-	1	1	1	1	1	1	-	-	-	1	3
S381.4	2	3	3	-	1	1	1	1	-	-	-	1	-	-	3
S381.5	1	3	3	-	1	1	-	1	-	-	1	1	2	-	3

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

TEXT BOOK:

- Roger S. Pressman, Software Engineering – A Practitioner's Approach, Mc. Graw-Hill International Edition, 6th Edition, 2005.

REFERENCES:

1. Ian Sommerville, "Software Engineering", Pearson Education, 8th Edition, 2008.
2. Ali Behforooz and Frederick J. Hudson, "Software Engineering Fundamentals", Oxford University Press, New Delhi, 1996.
3. Stephan Schach," Software Engineering", Tata Mc. Graw-Hill, 2007.
4. Pfleeger and Lawrence, "Software Engineering: Theory and Practice", Pearson Education, Second Edition, 2001, 1995, PHI.

Web link:

http://www.resource.mitfiles.com/IT/II%20year/IV%20sem/Software%20Engineering/books/Pressman__Software_Engineering.pdf

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT –I:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Software Engineering & Evolving role of Software	1	26-11-18		**TLM2**	CO1	T1	
2.	Software Definition and Characteristics & Changing nature of Software	1	27-11-18		**TLM2**	CO1	T1	
3.	Legacy Software and Its Quality	1	01-12-18		**TLM2**	CO1	T1	
4.	Software Myths	1	04-12-18		**TLM2**	CO1	T1	
5.	Software Process: Definition and Differences & Software Engineering – A layered technology	1	05-12-18		**TLM2**	CO1	T1,R1	
6.	Process Framework – Generic Framework Activities & Umbrella Activities	1	11-12-18		**TLM2**	CO1	T1,R1	
7.	CMMI Model	1	12-12-18		**TLM2**	CO1	T1,R1	
8.	Process Patterns & Process Assessment and Approaches	1	15-12-18		**TLM2**	CO1	T1,R1	
9.	Software Process Models, Process Technology & Product and Process	1	18-12-18		**TLM2**	CO1	T1	
10.	**TUTORIAL-1**	1	19-12-18		**TLM3**	CO1	T1	
No. of classes required to complete UNIT-I		**10**			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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
11.	Process Models: Prescriptive Models & Waterfall Model	1	22-12-18		**TLM2**	CO2	T1	T1
12.	Incremental Model & RAD Model	1	26-12-18		**TLM2**	CO2	T1	

13.	Evolutionary Process Models	1	29-12-18		**TLM2**	CO2	T1	
14.	Specialized Process Models & Unified Process	1	02-01-19		**TLM2**	CO2	T1	
15.	Software Engineering Practices: Communication Practices	1	05-01-19		**TLM2**		T1	
16.	Planning Practices, Modeling Practice & Construction Practice	1	08-01-19		**TLM2**	CO2	T1,R1	
17.	Deployment & **TUTORIAL-2**	1	09-01-19		**TLM2 & TLM3**	CO2	T1	
No. of classes required to complete **UNIT-2**		**7**			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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
18.	Requirements Engineering: Description, RE Tasks	1	29-01-19		**TLM2**	CO3	T1	
19.	Initiating the RE Process	1	30-01-19		**TLM2**	CO3	T1	
20.	Eliciting Requirements , Developing Use-Cases	1	02-02-19		**TLM2**	CO3	T1	
21.	Building the Analysis Models	1	05-02-19		**TLM2**	CO3	T1,R1	
22.	Negotiating and Validating Requirements	1	06-02-19		**TLM2**	CO3	T1,R1	
23.	Building the Analysis Model: Requirements Analysis	1	12-02-19		**TLM2**		T1,R1	
24.	Analysis Modeling Approaches & Data Modeling Concepts	1	13-02-19		**TLM2**	CO3	T1	
25.	Object Oriented Analysis, Scenario Based Modeling	1	16-02-19		**TLM2**	CO3	T1	
26.	Flow Oriented Modeling, Class Based Modeling,	1	19-02-19		**TLM2**	CO3	T1	
27.	Creating a Behavioral Model & **TUTORIAL** -3	1	20-02-19		**TLM2 & TLM3**	CO3	T1	
No. of classes required to complete **UNIT-3**		**10**			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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
28.	Design Engineering: Design within context of Software Engineering	1	23-02-19		**TLM2**	CO4	T1	
29.	Design Process and Design Quality	1	26-02-19		**TLM2**	CO4	T1	
30.	Design Concepts	1	27-02-19		**TLM2**	CO4	T1	
31.	Design Model	1	02-03-19		**TLM2**	CO4	T1,R1	

32.	Pattern Based Software Design	1	05-03-19		**TLM2**	CO4	T1,R1	
33.	Software Architecture and Data Design	1	06-03-19		**TLM2**	CO4	T1	
34.	Architectural Styles and Patterns	1	12-03-19		**TLM2**		T1	
35.	Architectural Design & **TUTORIAL -4**	1	13-03-19		**TLM2 & TLM3**	CO4	T1,R1	
No. of classes required to complete **UNIT-4**		**8**			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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
36.	A Strategic Approach to Software Testing & Strategic Issues	1	16-03-19		**TLM2**	CO5	T1	T1
37.	Test Strategies for Conventional Software	1	19-03-19		**TLM2**	CO5	T1	
38.	Test Strategies for Object Oriented Software	1	20-03-19		**TLM2**	CO5	T1,R1,R2	
39.	Validation Testing & System Testing, The art of Debugging	1	23-03-19		**TLM2**	CO5	T1,R1,R2	
40.	Software Testing Fundamentals	1	26-03-19		**TLM2**	CO5	T1	
41.	White Box Testing & Basis Path Testing	1	27-03-19		**TLM2**	CO5	T1	
42.	Control Structure and Black Box Testing	1	30-03-19		**TLM2**	CO5	T1,R1,R2	
43.	OO- Testing Methods	1	30-03-19		**TLM2**	CO5	T1,R1,R2	
No. of classes required to complete **UNIT-5**		**8**			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

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

LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,
NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech. IV-Sem., CSE-B/s

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : **SOFTWARE ENGINEERING & 17CI10**

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

COURSE CREDITS : 3

COURSE INSTRUCTOR : **Dr. Ch. V. Narayana Reddy**

COURSE COORDINATOR : **Dr. Ch. V. Narayana Reddy**

1. Pre-requisites: Concepts of programming and Database Management Systems.

2. Course Educational Objectives (CEOs):

An understanding of different software processes and how to choose between them. How to understand requirements from a client and specify them. Design in the large, including principled choice of software architecture, the use of modules and interfaces to enable separate development, and design patterns. Knowing various quality assurance techniques, including unit testing, integration testing and functional testing.

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

S381.1:Understand the fundamentals of software engineering concepts and software process standards

S381.2:Demonstrate appropriate process models and software engineering practices

S381.3:Analyse requirements of software system and explore all requirements gathering approaches

S381.4:Create an architectural design using standard design processes

S381.5:Apply software testing strategies and tactics for testing real time projects effectivel

4.Course Articulation Matrix:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
S381.1	1	3	1	-	-	1	-	-	-	-	1	1	-	-	3
S381.2	1	3	2	-	-	1	-	1	-	-	-	-	-	-	3
S381.3	1	3	2	-	1	1	1	1	1	1	-	-	-	1	3
S381.4	2	3	3	-	1	1	1	1	-	-	-	1	-	-	3
S381.5	1	3	3	-	1	1	-	1	-	-	1	1	2	-	3

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

TEXT BOOK:

- Roger S. Pressman, Software Engineering – A Practitioner's Approach, Mc. Graw-Hill International Edition, 6th Edition, 2005.

REFERENCES:

1. Ian Sommerville, "Software Engineering", Pearson Education, 8th Edition, 2008.
2. Ali Behforooz and Frederick J. Hudson, "Software Engineering Fundamentals", Oxford University Press, New Delhi, 1996.
3. Stephan Schach," Software Engineering", Tata Mc. Graw-Hill, 2007.
4. Pfleeger and Lawrence, "Software Engineering: Theory and Practice", Pearson Education, Second Edition, 2001, 1995, PHI.

Web link:
http://www.resource.mitfiles.com/IT/II%20year/IV%20sem/Software%20Engineering/books/Pressman__Software_Engineering.pdf

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT –I:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Introduction to Software Engineering & Evolving role of Software	1	27-11-18		**TLM2**	CO1	T1	
2.	Software Definition and Characteristics & Changing nature of Software	1	28-11-18		**TLM2**	CO1	T1	
3.	Legacy Software and Its Quality	1	30-11-18		**TLM2**	CO1	T1	
4.	Software Myths	1	04-12-18		**TLM2**	CO1	T1	
5.	Software Process: Definition and		05-12-18				T1,R1	

	Differences & Software Engineering – A layered technology	1			**TLM2**	CO1		
6.	Process Framework – Generic Framework Activities & Umbrella Activities	1	7-12-18		**TLM2**	CO1	T1,R1	
7.	CMMI Model	1	11-12-18		**TLM2**	CO1	T1,R1	
8.	Process Patterns & Process Assessment and Approaches	1	12-12-18		**TLM2**	CO1	T1,R1	
9.	Software Process Models, Process Technology & Product and Process	1	14-12-18		**TLM2**	CO1	T1	
10.	**TUTORIAL-1**	1	18-12-18		**TLM3**	CO1	T1	
No. of classes required to complete UNIT-I		**10**			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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
11.	Process Models: Prescriptive Models & Waterfall Model	1	19-12-18		**TLM2**	CO2	T1	T1
12.	Incremental Model & RAD Model	1	21-12-18		**TLM2**	CO2	T1	
13.	Evolutionary Process Models	1	26-12-18		**TLM2**	CO2	T1	
14.	Specialized Process Models & Unified Process	1	28-12-18		**TLM2**	CO2	T1	
15.	Software Engineering Practices: Communication Practices	1	02-01-19		**TLM2**		T1	
16.	Planning Practices, Modeling Practice	1	04-01-19		**TLM2**	CO2	T1,R1	
17.	Construction Practice	1	08-01-19		**TLM2**	CO2	T1,R1	
18.	Deployment	1	09-01-19		**TLM2**	CO2	T1	
19.	**TUTORIAL-2**	1	11-01-19		**TLM2**	CO1	T1	
No. of classes required to complete **UNIT-2**		**9**			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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20.	Requirements Engineering: Description, RE Tasks	1	29-01-19		**TLM2**	CO3	T1	

21.	Initiating the RE Process	1	30-01-19		**TLM2**	CO3	T1	
22.	Eliciting Requirements , Developing Use-Cases	1	01-02-19		**TLM2**	CO3	T1	
23.	Building the Analysis Models	1	05-02-19		**TLM2**	CO3	T1,R1	
24.	Negotiating and Validating Requirements	1	06-02-19		**TLM2**	CO3	T1,R1	
25.	Building the Analysis Model: Requirements Analysis	1	08-02-19		**TLM2**	CO3	T1,R1	
26.	Analysis Modeling Approaches	1	12-02-19		**TLM2**	CO3	T1	
27.	Data Modeling Concepts	1	13-02-19		**TLM2**	CO3	T1	
28.	Object Oriented Analysis, Scenario Based Modeling	1	15-02-19		**TLM2**	CO3	T1	
29.	Flow Oriented Modeling, Class Based Modeling,	1	19-02-19		**TLM2**	CO3	T1	
30.	Creating a Behavioral Model & **TUTORIAL -3**	1	20-02-19		**TLM2 & TLM3**	CO3	T1	
No. of classes required to complete **UNIT-3**		**11**			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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
31.	Design Engineering: Design within context of Software Engineering	1	26-02-19		**TLM2**	CO4	T1	
32.	Design Process and Design Quality	1	27-02-19		**TLM2**	CO4	T1	
33.	Design Concepts	1	01-03-19		**TLM2**	CO4	T1	
34.	Design Model	1	05-03-19		**TLM2**	CO4	T1,R1	
35.	Pattern Based Software Design	1	06-03-19		**TLM2**	CO4	T1,R1	
36.	Software Architecture and Data Design	1	08-03-19		**TLM2**	CO4	T1	
37.	Architectural Styles and Patterns	1	12-03-19		**TLM2**		T1	
38.	Architectural Design & **TUTORIAL -4**	1	13-03-19		**TLM2 & TLM3**	CO4	T1,R1	
No. of classes required to complete **UNIT-4**		**8**			No. of classes taken:			

UNIT-V:

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

		Required	Completion	Completion	Methods	COs		Weekly
39.	A Strategic Approach to Software Testing & Strategic Issues	1	20-02-19		**TLM2**	CO5	T1	T1
40.	Test Strategies for Conventional Software	1	15-03-19		**TLM2**	CO5	T1	
41.	Test Strategies for Object Oriented Software	1	19-03-19		**TLM2**	CO5	T1,R1,R2	
42.	Validation Testing & System Testing, The art of Debugging	1	20-03-19		**TLM2**	CO5	T1,R1,R2	
43.	Software Testing Fundamentals	1	22-03-19		**TLM2**	CO5	T1	
44.	White Box Testing & Basis Path Testing	1	26-03-19		**TLM2**	CO5	T1	
45.	Control Structure and Black Box Testing	1	27-03-19		**TLM2**	CO5	T1,R1,R2	
46.	OO- Testing Methods & **TUTORIAL -5**	1	29-03-19		**TLM2 & TLM3**	CO5	T1,R1,R2	
No. of classes required to complete **UNIT-5**		**8**			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

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC with 'A' Grade, ISO 9001:2015 Certified Institution
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

17PD02: Linux Programming

Spring 2018

Program & Section : B. Tech. IV-Sem.; CSE – A & B-Sections
L-T-P Structure : 0-0-1
Course Instructor : Dr. JAGAN MOHAN REDDY, Assoc. Prof.
Email : jmreddy.lbrce@gmail.com
Mobile : 9160738986
Office Location : IPC / 2nd floor Staff room (1S03)

Pre-Requisite: Knowledge Mathematics & Problem Solving Skills

Objectives:

A student is required to undertake a comprehensive study on an assignment problem area in his/her technical domain and submit a report for assessment.

The problem assisted /based learning course are learning activities based on theoretical concepts which are verified through experimentation / product (algorithm / code) development. The performance of the student is evaluated by a three-member committee constituted by the HOD as per the following parameters.

Evolution criteria

Parameter	Marks
Problem Definition	10%
Quality of Work	20%
Report Writing	30%
Presentation	20%
Interaction	20%
Total	**100%**

The performance of a student in problem- assisted learning and problem-based learning shall be evaluated based on two reviews, each carrying 100 marks. The average marks of these to reviews will be consider. A student shall secure minimum 40% of marks to obtain a satisfactory grade, otherwise unsatisfactory grade. However, a student who secures 'US' grade/abstains shall reappear in the subsequent semester(s).

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,
NAAC Accredited with 'A' grade, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

PROGRAM : B.Tech., IV-Sem., CSE-A

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Linear Algebra And Numerical Applications– 17FE11

L-T-P STRUCTURE : 4-1-0

COURSE CREDITS : 4

COURSE INSTRUCTOR : G.VIJAYA LAKSHMI.

COURSE COORDINATOR : Dr. A. Rami Reddy

PRE-REQUISITES: Basics of Matrix Algebra.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this course is to introduce the Matrix Algebra. The students will also gain the knowledge of numerical techniques for solving the equations and fitting of various curves.

COURSE OUTCOMES (COs)

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

CO1	Distinguish among the pros and cons between the Row operation methods and Iterative methods in solving system of linear equations.
CO2	Compute the Eigen values and Eigen vectors and powers, Inverse of a square matrix through Cayley – Hamilton theorem
CO3	Reducing the given Matrix into Diagonal form using various transformations and Transforming the Quadratic form into canonical form and identity its nature.
CO4	Application of numerical techniques fir Algebraic and Transcendental equations.
CO5	Use numerical methods for the solution of the liner system of equations and estimate the unknown dependent variables using curve fitting methods.

COURSE ARTICULATION MATRIX (Correlation between COs&POs):

CO N0.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO2	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO3	**2**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO4	**2**	**3**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO5	**2**	**3**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**

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

BOS APPROVED TEXT BOOKS:

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

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

BOS APPROVED REFERENCE BOOKS:

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

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

R3 W.E. Boyce, R.C.Diprima, "Elementary Differential Equations", 7th Edition, John Wiley and sons, New Delhi, 2001.

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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
UNIT-I : System of Linear Equations								
1.	Introduction to UNIT-I	1	26/11/18		TLM1	CO1	T1,T2	
2.	Matrices - Rank	1	27/11/18		TLM1	CO1	T1,T2	
3.	Echelon form	1	28/11/18		TLM1	CO1	T1,T2	
4.	Echelon form	1	29/11/18		TLM1	CO1	T1,T2	
5.	TUTORIAL-1	1	01/12/18		TLM3	CO1	T1,T2	
6.	Normal form	1	03/12/18		TLM1	CO1	T1,T2	
7.	Normal form through PAQ	1	04/12/18		TLM1	CO1	T1,T2	
8.	Normal form through PAQ	1	05/12/18		TLM1	CO1	T1,T2	
9.	Solution of Linear Systems	1	06/12/18		TLM1	CO1	T1,T2	
10.	Non Homogeneous system of equations	1	08/12/18		TLM1	CO1	T1,T2	
11.	Non Homogeneous system of equations	1	10/12/18		TLM1	CO1	T1,T2	
12.	Non Homogeneous system of equations	1	11/12/18		TLM1	CO1	T1,T2	
13.	Homogeneous system of equations	1	12/12/18		TLM1	CO1	T1,T2	
14.	TUTORIAL-2	1	13/12/18		TLM3	CO1	T1,T2	

15.	Homogeneous system of equations	1	15/12/18		TLM1	CO1	T1,T2	
16.	Homogeneous system of equations	1	17/12/18		TLM1	CO1	T1,T2	
17.	Assignment UNIT-I	1	18/12/18		TLM6	CO1	T1,T2	
18.	QUIZ UNIT-I	1	19/12/18		TLM6	CO1	T1,T2	
No. of classes required to complete UNIT-I		18			No. of classes taken:			

UNIT-II : Eigen Values and Eigen Vectors								
S.No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
19.	Introduction to UNIT II	1	20/12/18		TLM1	CO2	T1,T2	
20.	Eigen values – Eigen Vectors	1	22/12/18		TLM1	CO2	T1,T2	
21.	Properties	1	24/12/18		TLM1	CO2	T1,T2	
22.	Properties	1	26/12/18		TLM1	CO2	T1,T2	
23.	Finding Eigen values – Eigen Vectors	1	27/12/18		TLM1	CO2	T1,T2	
24.	TUTORIAL-3	1	29/12/18		TLM3	CO2	T1,T2	
25.	Finding Eigen values – Eigen Vectors	1	31/12/19		TLM1	CO2	T1,T2	
26.	Finding Eigen values – Eigen Vectors	1	02/01/19		TLM1	CO2	T1,T2	
27.	Cayley Hamilton Theorem	1	03/01/19		TLM1	CO2	T1,T2	
28.	TUTORIAL-4	1	05/01/19		TLM3	CO2	T1,T2	
29.	Cayley Hamilton Theorem	1	07/01/19		TLM1	CO2	T1,T2	
30.	Inverse and Powers of a matrix by using Cayley Hamilton Theorem.	1	08/01/19		TLM1	CO2	T1,T2	
31.	Inverse and Powers of a matrix by using	1	09/01/19		TLM1	CO2	T1,T2	

	Cayley Hamilton Theorem.							
32.	AssignmentUNIT-II	1	10/01/19		TLM6	CO2	T1,T2	
33.	Quiz UNIT-II	1	12/01/19		TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II		15			No. of classes taken:			

UNIT-III Linear Transformation And Diagonalization								
S.No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
34.	Introduction to UNIT III	1	28/01/19		TLM1	CO3	T1,T2	
35.	Linear transformation of Matrices	1	29/01/19		TLM1	CO3	T1,T2	
36.	Orthogonal transformation of Matrices	1	30/01/19		TLM1	CO3	T1,T2	
37.	TUTORIAL-5	1	31/01/19		TLM3	CO3	T1,T2	
38.	Similarity of Matrices	1	02/02/19		TLM1	CO3	T1,T2	
39.	Diagonalization of a Matrix	1	04/02/19		TLM1	CO3	T1,T2	
40.	Orthogonal reduction of real symmetric matrices	1	05/02/19		TLM1	CO3	T1,T2	
41.	Reduction of quadratic form to canonical form	1	06/02/19		TLM1	CO3	T1,T2	
42.	TUTORIAL-6	1	07/02/19		TLM3	CO3	T1,T2	
43.	Reduction of quadratic form to canonical form-Rank-Positive, Negative	1	09/02/19		TLM1	CO3	T1,T2	
44.	Definite-Semi definite-Index, Signature	1	11/02/19		TLM1	CO3	T1,T2	
45.	Definite-Semi definite-Index, Signature	1	12/02/19		TLM1	CO3	T1,T2	
46.	Assignment UNIT-III	1	13/02/19		TLM6	CO3	T1,T2	
47.	Quiz UNIT-III	1	14/02/19		TLM6	CO3	T1,T2	
No. of classes required to complete UNIT-III		14			No. of classes taken:			

UNIT-IV : Solution of Algebraic and Transcendental equations & Interpolation and finite Differences								
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**
48.	Introduction to UNIT IV	1	16/02/19		TLM1	CO4	T1,T2	
49.	Algebraic and Transcendental Equation	1	18/02/19		TLM1	CO4	T1,T2	
50.	False Position method	1	19/02/19		TLM1	CO4	T1,T2	
51.	Newton-Raphson Method in one variable	1	20/02/19		TLM1	CO4	T1,T2	
52.	Related problems	1	21/02/19		TLM1	CO4	T1,T2	
53.	TUTORIAL-7	1	23/02/19		TLM3	CO4	T1,T2	
54.	Introduction – Finite differences	1	25/02/19		TLM1	CO4	T1,T2	
55.	Forward Differences-Backward differences – Central differences	1	26/02/19		TLM1	CO4	T1,T2	
56.	Forward Differences-Backward differences – Central differences	1	27/02/19		TLM1	CO4	T1,T2	
57.	TUTORIAL-8	1	28/02/19		TLM3	CO4	T1,T2	
58.	Symbolic relations and separation of symbols	1	02/03/19		TLM1	CO4	T1,T2	
59.	Newton's formulae for interpolation	1	06/03/19		TLM1	CO4	T1,T2	
60.	Lagrange's Interpolation	1	07/03/19		TLM1	CO4	T1,T2	
61.	Assignment/Quiz UNIT-IV	1	09/03/19		TLM6	CO4	T1,T2	
No. of classes required to complete UNIT-IV		14			No. of classes taken:			

UNIT-V :NUMERICAL SOLUTION OF LINEAR SYSTEM OF EQUATIONS& CURVE FITTING

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
62.	Introduction to UNIT V	1	11/03/19		TLM1	CO5	T1,T2	
63.	Gauss –Seidal method	1	12/03/19		TLM1	CO5	T1,T2	
64.	Gauss –Seidal method	1	13/03/19		TLM1	CO5	T1,T2	
65.	Gauss Jacobi Method	1	14/03/19		TLM1	CO5	T1,T2	
66.	TUTORIAL-9	1	16/03/19		TLM3	CO5	T1,T2	
67.	Gauss Jacobi Method	1	18/03/19		TLM1	CO5	T1,T2	
68.	Determination of EIGEN values by iteration.	1	19/03/19		TLM1	CO5	T1,T2	
69.	Fitting of a Straight line	1	20/03/19		TLM1	CO5	T1,T2	
70.	TUTORIAL-10	1	23/03/19		TLM3	CO5	T1,T2	
71.	Fitting of a second degree polynomial	1	25/03/19		TLM1	CO5	T1,T2	
72.	Fitting of exponential curves	1	26/03/19		TLM1	CO5	T1,T2	
73.	Fitting of a power curve	1	27/03/19		TLM1	CO5	T1,T2	
74.	Assignment/Quiz UNIT-V	1	28/03/19		TLM6	CO5	T1,T2	
No. of classes required to complete UNIT-V		13			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
75.	Solving System of Equations using other methods	1	30/03/19		TLM1	CO4	T1,T2	

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:

Evaluation Task	**Units**	**Marks**
Assignment– 1	1	A1=5
Assignment– 2	2	A2=5
I-Mid Examination	1,2	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	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
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAMME OUTCOMES (POs)

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

G.Vijaya Lakshmi	Dr. A. Rami Reddy	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,
NAAC Accredited with 'A' grade, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

Part-A

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

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Linear Algebra And Numerical Applications– 17FE11

L-T-P STRUCTURE : 4-1-0

COURSE CREDITS : 4

COURSE INSTRUCTOR : Dr.A.Rami Reddy

COURSE COORDINATOR : Dr. A. Rami Reddy

PRE-REQUISITES: Basics of Matrix Algebra.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this course is to introduce the Matrix Algebra. The students will also gain the knowledge of numerical techniques for solving the equations and fitting of various curves.

COURSE OUTCOMES (COs)

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

CO1	Distinguish among the pros and cons between the Row operation methods and Iterative methods in solving system of linear equations.
CO2	Compute the Eigen values and Eigen vectors and powers, Inverse of a square matrix through Cayley – Hamilton theorem
CO3	Reducing the given Matrix into Diagonal form using various transformations and Transforming the Quadratic form into canonical form and identity its nature.
CO4	Application of numerical techniques fir Algebraic and Transcendental equations.
CO5	Use numerical methods for the solution of the liner system of equations and estimate the unknown dependent variables using curve fitting methods.

COURSE ARTICULATION MATRIX (Correlation between COs&POs):

CO N0.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO2	**2**	**3**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO3	**2**	**3**	**-**	**1**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO4	**2**	**3**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**
CO5	**2**	**3**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**2**

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

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

BOS APPROVED TEXT BOOKS:

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

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

BOS APPROVED REFERENCE BOOKS:

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

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

R3 W.E. Boyce, R.C.Diprima, "Elementary Differential Equations", 7th Edition, John Wiley and sons, New Delhi, 2001.

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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
UNIT-I : System of Linear Equations								
1.	Introduction to UNIT-I	1	26/11/18		TLM1	CO1	T1,T2	
2.	Matrices - Rank	1	28/11/18		TLM1	CO1	T1,T2	
3.	Echelon form	1	29/11/18		TLM1	CO1	T1,T2	
4.	Echelon form	1	30/11/18		TLM1	CO1	T1,T2	
5.	Normal form	1	01/12/18		TLM1	CO1	T1,T2	
6.	Normal form through PAQ	1	03/12/18		TLM1	CO1	T1,T2	
7.	Normal form through PAQ	1	05/12/18		TLM1	CO1	T1,T2	
8.	TUTORIAL-1	1	06/12/18		TLM3	CO1	T1,T2	
9.	Normal form through PAQ	1	07/12/18		TLM1	CO1	T1,T2	
10.	Non Homogeneous system of equations	1	08/12/18		TLM1	CO1	T1,T2	
11.	Non Homogeneous system of equations	1	10/12/18		TLM1	CO1	T1,T2	
12.	Non Homogeneous system of equations	1	12/12/18		TLM1	CO1	T1,T2	
13.	TUTORIAL-2	1	13/12/18		TLM3	CO1	T1,T2	
14.	Homogeneous system of	1	14/12/18		TLM1	CO1	T1,T2	

	equations							
15.	Homogeneous system of equations	1	15/12/18		TLM1	CO1	T1,T2	
16.	Homogeneous system of equations	1	17/12/18		TLM1	CO1	T1,T2	
17.	Assignment UNIT-I	1	19/12/18		TLM6	CO1	T1,T2	
18.	QUIZ UNIT-I	1	20/12/18		TLM6	CO1	T1,T2	
No. of classes required to complete UNIT-I		18			No. of classes taken:			

UNIT-II : Eigen Values and Eigen Vectors								
S.No.	**Topics to be covered**	**No. of Classes Required**	**Tentative Date of Completion**	**Actual Date of Completion**	**Teaching Learning Methods**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
19.	Introduction to UNIT II	1	21/12/18		TLM1	CO2	T1,T2	
20.	Eigen values – Eigen Vectors	1	22/12/18		TLM1	CO2	T1,T2	
21.	Properties	1	24/12/18		TLM1	CO2	T1,T2	
22.	Properties	1	26/12/18		TLM1	CO2	T1,T2	
23.	Finding Eigen values – Eigen Vectors	1	27/12/18		TLM1	CO2	T1,T2	
24.	Finding Eigen values – Eigen Vectors	1	28/12/18		TLM1	CO2	T1,T2	
25.	Finding Eigen values – Eigen Vectors	1	29/12/18		TLM1	CO2	T1,T2	
26.	TUTORIAL-3	1	31/12/19		TLM3	CO2	T1,T2	
27.	Cayley Hamilton Theorem	1	02/01/19		TLM1	CO2	T1,T2	
28.	Cayley Hamilton Theorem	1	03/01/19		TLM1	CO2	T1,T2	
29.	Inverse and Powers of a matrix by using Cayley Hamilton Theorem.	1	04/01/19		TLM1	CO2	T1,T2	
30.	Inverse and Powers of a matrix by using	1	05/01/19		TLM1	CO2	T1,T2	

	Cayley Hamilton Theorem.							
31.	TUTORIAL-4	1	07/01/19		TLM3	CO2	T1,T2	
32.	Inverse and Powers of a matrix by using Cayley Hamilton Theorem.	1	09/01/19		TLM1	CO2	T1,T2	
33.	Assignment UNIT-II	1	10/01/19		TLM6	CO2	T1,T2	
34.	Quiz UNIT-II	1	12/01/19		TLM6	CO2	T1,T2	
No. of classes required to complete UNIT-II		15			No. of classes taken:			

UNIT-III Linear Transformation And Diagonalization								
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**
35.	Introduction to UNIT III	1	28/01/19		TLM1	CO3	T1,T2	
36.	Linear transformation of Matrices	1	30/01/19		TLM1	CO3	T1,T2	
37.	Orthogonal transformation of Matrices	1	31/01/19		TLM1	CO3	T1,T2	
38.	Similarity of Matrices	1	01/02/19		TLM1	CO3	T1,T2	
39.	Diagonalization of a Matrix	1	02/02/19		TLM1	CO3	T1,T2	
40.	TUTORIAL-5	1	04/02/19		TLM3	CO3	T1,T2	
41.	Orthogonal reduction of real symmetric matrices	1	06/02/19		TLM1	CO3	T1,T2	
42.	Reduction of quadratic form to canonical form	1	07/02/19		TLM1	CO3	T1,T2	
43.	Reduction of quadratic form to canonical form-Rank-Positive, Negative	1	08/02/19		TLM1	CO3	T1,T2	
44.	Definite-Semi definite-Index, Signature	1	09/02/19		TLM1	CO3	T1,T2	
45.	TUTORIAL-6	1	11/02/19		TLM3	CO3	T1,T2	
46.	Definite-Semi definite-Index, Signature	1	13/02/19		TLM1	CO3	T1,T2	

47.	Assignment UNIT-III	1	14/02/19		TLM6	CO3	T1,T2	
48.	Quiz UNIT-III	1	15/02/19		TLM6	CO3	T1,T2	
No. of classes required to complete UNIT-III		14			No. of classes taken:			

UNIT-IV : Solution of Algebraic and Transcendental equations & Interpolation and finite Differences								
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**
49.	Introduction to UNIT IV	1	16/02/19		TLM1	CO4	T1,T2	
50.	Algebraic and Transcendental Equation	1	18/02/19		TLM1	CO4	T1,T2	
51.	False Position method	1	20/02/19		TLM1	CO4	T1,T2	
52.	Newton-Raphson Method in one variable	1	21/02/19		TLM1	CO4	T1,T2	
53.	Related problems	1	22/02/19		TLM1	CO4	T1,T2	
54.	Introduction – Finite differences	1	23/02/19		TLM1	CO4	T1,T2	
55.	TUTORIAL-7	1	25/02/19		TLM3	CO4	T1,T2	
56.	Forward Differences-Backward differences – Central differences	1	27/02/19		TLM1	CO4	T1,T2	
57.	Forward Differences-Backward differences – Central differences	1	28/02/19		TLM1	CO4	T1,T2	
58.	Symbolic relations and separation of symbols	1	01/03/19		TLM1	CO4	T1,T2	
59.	Newton's formulae for interpolation	1	02/03/19		TLM1	CO4	T1,T2	
60.	TUTORIAL-8	1	04/03/19		TLM3	CO4	T1,T2	
61.	Lagrange's Interpolation	1	06/03/19		TLM1	CO4	T1,T2	
62.	Assignment/Quiz UNIT-IV	1	07/03/19		TLM6	CO4	T1,T2	

No. of classes required to complete UNIT-IV	14	No. of classes taken:

UNIT-V :NUMERICAL SOLUTION OF LINEAR SYSTEM OF EQUATIONS& CURVE FITTING								
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**
63.	Introduction to UNIT V	1	08/03/19		TLM1	CO5	T1,T2	
64.	Gauss –Seidal method	1	09/03/19		TLM1	CO5	T1,T2	
65.	Gauss –Seidal method	1	11/03/19		TLM1	CO5	T1,T2	
66.	Gauss Jacobi Method	1	13/03/19		TLM1	CO5	T1,T2	
67.	TUTORIAL-9	1	14/03/19		TLM3	CO5	T1,T2	
68.	Gauss Jacobi Method	1	15/03/19		TLM1	CO5	T1,T2	
69.	Determination of EIGEN values by iteration.	1	16/03/19		TLM1	CO5	T1,T2	
70.	Determination of EIGEN values by iteration.	1	18/03/19		TLM1	CO5	T1,T2	
71.	Fitting of a Straight line	1	20/03/19		TLM1	CO5	T1,T2	
72.	TUTORIAL-10	1	22/03/19		TLM3	CO5	T1,T2	
73.	Fitting of a second degree polynomial	1	23/03/19		TLM1	CO5	T1,T2	
74.	Fitting of exponential curves	1	25/03/19		TLM1	CO5	T1,T2	
75.	Fitting of exponential curves	1	27/03/19		TLM1	CO5	T1,T2	
76.	Fitting of a power curve	1	28/03/19		TLM1	CO5	T1,T2	
77.	Assignment UNIT-V	1	28/03/19		TLM6	CO5	T1,T2	
78.	Quiz UNIT-V	1	29/03/19		TLM6	CO5	T1,T2	
No. of classes		16			No. of classes taken:			

required to complete UNIT-V		

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
79.	Solving System of Equations using other methods	1	30/03/19		TLM1	CO4	T1,T2	

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:

Evaluation Task	**Units**	**Marks**
Assignment– 1	1	A1=5
Assignment– 2	2	A2=5
I-Mid Examination	1,2	B1=20
Online Quiz-1	1,2	C1=10
Assignment– 3	3	A3=5
Assignment– 4	4	A4=5
Assignment– 5	5	A5=5
II-Mid Examination	3,4,5	B2=20
Online Quiz-2	3,4,5	C2=10
Evaluation of Assignment: A=Avg(Best of Four(A1,A2,A3,A4,A5))	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
Evaluation of Online Quiz Marks: C=75% of Max(C1,C2)+25% of Min(C1,C	1,2,3,4,5	C=10
Attendance Marks based on Percentage of attendance		D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**40**
Semester End Examinations : E	**1,2,3,4,5**	**60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAMME OUTCOMES (POs)

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dr. A. Rami Reddy	Dr. A. Rami Reddy	Dr. A. Rami Reddy	Dr. A. Rami Reddy
Course Instructor	Course Coordinator	Module Coordinator	HOD

COURSE HANDOUT

Part-A

PROGRAM : B.Tech, III-Sem., CSE-A

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Prfoessional Ethics & Human Values – 17PD03

L-T-P STRUCTURE : 3-1-0

COURSE CREDITS : **0**

COURSE INSTRUCTOR : T.Chandrasekhar Yadav

COURSE COORDINATOR : T.Chandrasekhar Yadav

PRE-REQUISITES: Ethics & Values

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To create an awareness on engineering ethics and human values.
- To adumbrate the inevitability of different intellectual property rights like patents, copyrights, trademarks, and trade secret.
- To give an impetus on achieving higher positions in profession, with ethical and human values as a base and support for the growth.
- To explicate the professional and societal responsibilities of the engineers.
- To make the student realize the sensitiveness associated with experimentation process

COURSE OUTCOMES (COs)

After completion of the course, the student will be able to

- Implements the basic concepts of Professional ethics in real time decision making process.
- Absorbs the basic concepts of Human values to gain the connotations of ethical theories.
- Recognizes the duties and responsibilities towards the society in an engineering profession.

CO's / PO's	R17-Professional Ethics & Human Values-S355											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1								3				
CO2			1					3				
CO3		1	2					3	2			
CO4				1		2		3	1			
CO5						1	2	3				1
3 = High (100%) 2= Moderate (70%) 1= Slight (Low) (40%)												

- Undertakes necessary precautions while conducting the experiments, which may reduce the risk.
- Realizes the importance of ethical aspects in globalization.

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

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 R.S.Nagarajan, a Textbook on "Professional Ethics and Human Values", New Age Publishers – 2006.

T2 Mike Martin and Roland Schinzinger, "Ethics in engineering", McGraw Hill, New York 1996.

BOS APPROVED REFERENCE BOOKS:

R1 Govindarajan M, Natarajan S, Senthil Kumar V. S, " Engineering Ethics", Prentice Hall of India, New Delhi, 2004.
R2 Charles D. Fleddermann, "Engineering Ethics", Pearson Education/ Prentice Hall, New Jersey,2004 (Indian Reprint now available)

Part-B
COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Engineering Ethics

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	1	27-11-18		**TLM1**	CO1	**T1**	
2.	Course Outcomes	1	28-11-18		**TLM1**		**T1**	
3.	UNIT-I Introduction about engineering ethics	1	01-12-18		**TLM1**		**T1**	
4.	Senses of engineering ethics, Variety of moral issues	1	04-12-18		**TLM1**		**T1**	
5.	Moral dilemmas moral autonomy	1	05-12-18		**TLM1**		**T1**	
6.	Kohlberg's theory	1	11-12-18		**TLM1**		**T1**	
7.	Gilligan theory, Consensus and controversy	1	12-12-18		**TLM1**		**T1**	
8.	Models of professional roles about right action, self interest	1	15-12-18		**TLM1**		**T1**	
9.	Customs and religion, uses of ethical theories	1	18-12-18		**TLM1**		**T1**	
10.	Uses of ethical theories	1	19-12-18		**TLM1**		**T1**	
11.	TUTORIAL-1	1	22-12-18		**TLM3**			
No. of classes required to complete UNIT-I		11			No. of classes taken:			

UNIT-II: Human Values

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 about values	1	26-12-18		**TLM1**	CO2	**T1**	
13.	Morals ethics and values, Integrity	1	29-12-18		**TLM1**		**T1**	
14.	Work ethic, Service learning, Civic virtue	1	02-01-19		**TLM1**		**T1**	
15.	Respect for others, living peacefully, Caring, sharing,	1	05-01-19		**TLM1**		**T1**	
16.	Honesty, courage, Valuing time, cooperation	1	08-01-19		**TLM1**		**T1**	
17.	Commitment, Empathy, self confidence	1	09-01-19		**TLM1**		**T1**	
18.	Character, spirituality	1	09-01-19		**TLM1**		**T1**	
19.	TUTORIAL-2	1	12-01-19		**TLM3**			
No. of classes required to complete UNIT-II		07			No. of classes taken:			

I-MID EXAMS:18-01-2019 to 25-01-2019

Unit-III: Engineering as Social Experimentation

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20.	Engineering as experimentation introduction	1	29-01-19		**TLM1**	CO3	**T1**	
21.	Engineering Projects VS. Standard Experiments	1	30-01-19		**TLM1**		**T1**	
22.	Engineers as responsible experimenters	1	02-02-19		**TLM1**		**T1**	
23.	Codes of ethics, Industrial Standards	1	05-02-19		**TLM1**		**T1**	
24.	A balanced outlook on law	1	06-02-19		**TLM1**		**T1**	
25.	The challenger case study	1	12-02-19		**TLM1**		**T1**	
26.	Tutorial-3	1	13-02-19		**TLM3**			
No. of classes required to complete UNIT-III		07			No. of classes taken:			

Unit – IV Safety, Responsibilities and Rights

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
27.	Introduction about Safety, and rights	1	16-02-19		**TLM1**	CO4	**T1**	
28.	Assessment of safety and risk	1	19-02-19		**TLM1**		**T1**	
29.	Risk benefit analysis and reducing risk ,Three Mile Island and Chernobyl case study	1	20-02-19		**TLM1**		**T1**	
30.	Collegiality and loyalty, Respect for authority,	1	23-02-19		**TLM1**		**T1**	
31.	Collective bargaining-Confidentiality	1	26-02-19		**TLM1**		**T1**	
32.	Conflicts of interest, Occupational crime	1	27-02-19		**TLM1**		**T1**	
33.	Professional Rights, Employee rights	1	02-03-19		**TLM1**		**T1**	
34.	Intellectual Property Rights (IPR)	1	05-03-19		**TLM1**		**T1**	
35.	TUTORIAL-4	1	06-03-19		**TLM3**			
No. of classes required to		09			No. of classes taken:			

complete UNIT-IV		

Unit: V GLOBAL ISSUES

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
36.	MNC's, Environmental ethics,	1	12-03-19		**TLM1**	CO5	**T1**	
37.	Computer ethics.	1	13-03-19		**TLM1**		**T1**	
	Weapons development	1	16-03-19		**TLM1**		**T1**	
38.	Engineers as managers, consulting engineers	1	19-03-19		**TLM1**		**T1**	
39.	Engineers as expert witnesses	1	20-03-19		**TLM1**		**T1**	
	Engineers as advisors	1	23-03-19		**TLM1**		**T1**	
40.	Moral leadership	1	26-03-19		**TLM1**		**T1**	
41.	TUTORIAL-5	1	27-03-19		**TLM3**			
42.	sample code of Ethics	1	30-03-19		**TLM1**		**T1**	
No. of classes required to complete UNIT-V		09			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
43.								
44.								
45.								

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:

Evaluation Task	**COs**	**Marks**
I-Mid Examination (Descriptive) =**A**	1,2	A=20
II-Mid Examination (Descriptive) =**B**	3,4,5	B=20

Evaluation of Mid Marks: **A+B** =75% of Max(A,B)+25% of Min(A,B)	1,2,3,4,5	A+B=20
Evaluation of Report Writing and Seminar Presentation =**C**	1,2,3,4,5	C=5
Cumulative Internal Examination : A+B+C	**1,2,3,4,5**	**A+B+C=25**
Semester End Examinations =D	**1,2,3,4,5**	**D=75**
Total Marks: A+B+C+D	**1,2,3,4,5**	**100**

Course Instructor	Course Coordinator	Module Coordinator	HOD

COURSE HANDOUT

Part-A

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

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : Prfoessional Ethics & Human Values – 17PD03

L-T-P STRUCTURE : 3-1-0

COURSE CREDITS : **0**

COURSE INSTRUCTOR : T.Chandrasekhar Yadav

COURSE COORDINATOR : T.Chandrasekhar Yadav

PRE-REQUISITES: Ethics & Values

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To create an awareness on engineering ethics and human values.
- To adumbrate the inevitability of different intellectual property rights like patents, copyrights, trademarks, and trade secret.
- To give an impetus on achieving higher positions in profession, with ethical and human values as a base and support for the growth.
- To explicate the professional and societal responsibilities of the engineers.
- To make the student realize the sensitiveness associated with experimentation process

COURSE OUTCOMES (COs)

After completion of the course, the student will be able to

- Implements the basic concepts of Professional ethics in real time decision making process.
- Absorbs the basic concepts of Human values to gain the connotations of ethical theories.
- Recognizes the duties and responsibilities towards the society in an engineering profession.

CO's / PO's	R17-Professional Ethics & Human Values-S355											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1								3				
CO2			1					3				
CO3		1	2					3	2			
CO4				1		2		3	1			
CO5						1	2	3				1
3 = High (100%) 2= Moderate (70%) 1= Slight (Low) (40%)												

- Undertakes necessary precautions while conducting the experiments, which may reduce the risk.
- Realizes the importance of ethical aspects in globalization.

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

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 R.S.Nagarajan, a Textbook on "Professional Ethics and Human Values", New Age Publishers – 2006.

T2 Mike Martin and Roland Schinzinger, "Ethics in engineering", McGraw Hill, New York 1996.

BOS APPROVED REFERENCE BOOKS:

R1 Govindarajan M, Natarajan S, Senthil Kumar V. S, " Engineering Ethics", Prentice Hall of India, New Delhi, 2004.

R2 Charles D. Fleddermann, "Engineering Ethics", Pearson Education/ Prentice Hall, New Jersey,2004 (Indian Reprint now available)

Part-B
COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Engineering Ethics

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	1	28-11-18		**TLM1**	CO1	**T1**	
2.	Course Outcomes	1	29-11-18		**TLM1**		**T1**	
3.	UNIT-I Introduction about engineering ethics	1	01-12-18		**TLM1**		**T1**	
4.	Senses of engineering ethics, Variety of moral issues	1	05-12-18		**TLM1**		**T1**	
5.	Moral dilemmas moral autonomy	1	06-12-18		**TLM1**		**T1**	
6.	Kohlberg's theory	1	12-12-18		**TLM1**		**T1**	
7.	Gilligan theory, Consensus and controversy	1	13-12-18		**TLM1**		**T1**	
8.	Models of professional roles about right action, self interest	1	15-12-18		**TLM1**		**T1**	
9.	Customs and religion, uses of ethical theories	1	19-12-18		**TLM1**		**T1**	
10.	Uses of ethical theories	1	20-12-18		**TLM1**		**T1**	
11.	TUTORIAL-1	1	22-12-18		**TLM3**			
No. of classes required to complete UNIT-I		11			No. of classes taken:			

UNIT-II: Human Values

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 about values	1	26-12-18		**TLM1**	CO2	**T1**	
13.	Morals ethics and values, Integrity	1	27-12-18		**TLM1**		**T1**	
14.	Work ethic, Service learning, Civic virtue	1	29-12-18		**TLM1**		**T1**	
15.	Respect for others, living peacefully, Caring, sharing,	1	02-01-19		**TLM1**		**T1**	
16.	Honesty, courage, Valuing time, cooperation	1	03-01-19		**TLM1**		**T1**	
17.	Commitment, Empathy, self confidence	1	05-01-19		**TLM1**		**T1**	
18.	Character, spirituality	1	09-01-19		**TLM1**		**T1**	
19.	TUTORIAL-2	1	10-01-19		**TLM3**			
No. of classes required to complete UNIT-II		08			No. of classes taken:			

I-MID EXAMS:18-01-2019 to 25-01-2019

Unit-III: Engineering as Social Experimentation

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20.	Engineering as experimentation introduction	1	30-01-19		**TLM1**	CO3	**T1**	
21.	Engineering Projects VS. Standard Experiments	1	31-01-19		**TLM1**		**T1**	
22.	Engineers as responsible experimenters	1	02-02-19		**TLM1**		**T1**	
23.	Codes of ethics, Industrial Standards	1	06-02-19		**TLM1**		**T1**	
24.	A balanced outlook on law	1	07-02-19		**TLM1**		**T1**	
25.	The challenger case study	1	13-02-19		**TLM1**		**T1**	
26.	Tutorial-3	1	14-02-19		**TLM3**			
No. of classes required to complete UNIT-III		07			No. of classes taken:			

Unit – IV Safety, Responsibilities and Rights

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
27.	Introduction about Safety, and rights	1	16-02-19		**TLM1**	CO4	**T1**	
28.	Assessment of safety and risk	1	20-02-19		**TLM1**		**T1**	
29.	Risk benefit analysis and reducing risk ,Three Mile Island and Chernobyl case study	1	21-02-19		**TLM1**		**T1**	
30.	Collegiality and loyalty, Respect for authority,	1	23-02-19		**TLM1**		**T1**	
31.	Collective bargaining-Confidentiality	1	27-02-19		**TLM1**		**T1**	
32.	Conflicts of interest, Occupational crime	1	28-02-19		**TLM1**		**T1**	
33.	Professional Rights, Employee rights	1	02-03-19		**TLM1**		**T1**	
34.	Intellectual Property Rights (IPR)	1	06-03-19		**TLM1**		**T1**	
35.	TUTORIAL-4	1	07-03-19		**TLM3**			
No. of classes required to		09			No. of classes taken:			

complete UNIT-IV		

Unit: V GLOBAL ISSUES

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
36.	MNC's, Environmental ethics,	1	13-03-19		**TLM1**	CO5	**T1**	
37.	Computer ethics.	1	14-03-19		**TLM1**		**T1**	
	Weapons development	1	16-03-19		**TLM1**		**T1**	
38.	Engineers as managers, consulting engineers	1	20-03-19		**TLM1**		**T1**	
39.	Engineers as expert witnesses	1	21-03-19		**TLM1**		**T1**	
	Engineers as advisors	1	23-03-19		**TLM1**		**T1**	
40.	Moral leadership	1	27-03-19		**TLM1**		**T1**	
41.	TUTORIAL-5	1	28-03-19		**TLM3**			
42.	sample code of Ethics	1	30-03-19		**TLM1**		**T1**	
No. of classes required to complete UNIT-V		09			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
43.								
44.								
45.								

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:

Evaluation Task	**COs**	**Marks**
I-Mid Examination (Descriptive) =**A**	1,2	A=20
II-Mid Examination (Descriptive) =**B**	3,4,5	B=20

Evaluation of Mid Marks: **A+B** =75% of Max(A,B)+25% of Min(A,B)	1,2,3,4,5	A+B=20
Evaluation of Report Writing and Seminar Presentation =**C**	1,2,3,4,5	C=5
Cumulative Internal Examination : A+B+C	**1,2,3,4,5**	**A+B+C=25**
Semester End Examinations =D	**1,2,3,4,5**	**D=75**
Total Marks: A+B+C+D	**1,2,3,4,5**	**100**

Course Instructor	Course Coordinator	Module Coordinator	HOD

COURSE HANDOUT

PROGRAM : B.Tech. IV-Sem., CSE-A-sec

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : DESIGN ANALYSIS OF ALGORITHMS

L-T-P STRUCTURE : 3

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr. L V Krishna Rao

COURSE COORDINATOR : Mr. D. Srinivasa Rao

Pre-requisites: Basic mathematical knowledge, Data structures basics

Course Educational Objectives (CEOs):
Students undergoing this course are expected to:
Explain the fundamental concepts of various algorithm design techniques. Make the students familiar to conduct performance evaluation of algorithms. Expertise the students with the various existing algorithm design techniques .Motivate the students to design a new algorithms for various problems. Introduce the concepts of P&NP-class problems.

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

CO1: Identify the basic properties and analysis methods of algorithms and design divide and conquer paradigm for solving a few example problems and analyze them.

CO2:Design Greedy algorithms for knapsack problem, minimum cost spanning tree,single source shortest path problem and analyze them.

CO3:Apply dynamic programming paradigm to solve travelling sales person problem,0/1 knapsack problem,Optimal binary search tree.

CO4: Apply Backtracking search methods on state space trees for few example problems

CO5: Analyze branch and bound search methods through problems such as 0/1 knapsack problem, Travelling salesperson problem.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3

S197	**CO1**	3	3	2	-	-	-	-	-	-	-	-	-	3		
	CO2	2	3	1	-	-	-	-	-	-	-	-	-	3		
	CO3	2	3	1	-	-	-	-	-	-	-	-	-	3		
	CO4	2	3	1	-	-	-	-	-	-	-	-	-	1		
	CO5	2	3	1	-	-	-	-	-	-	-	-	-	1		

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

BOS APPROVED TEXT BOOKS:

T1: Ellis Horowitz, SartajSahni, 'Fundamentals of Computer Algorithms', Galgotia Publications.

T2: **Data Structures and Algorithm Analysis in C++, 3/e, Mark Allen Weiss, Pearson , 2007.**

BOS APPROVED REFERENCE BOOKS:

R1: Aho, Hopcroft& Ullman, 'The Design and Analysis of Computer Algorithms',
Addison Wesley publications

R2: Thomas H. Cormen et al, 'Introduction to Algorithms', PHI.

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT –I: INTRODUCTION

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 course	1	27-11-18		**TLM1**	CO1	T1	
2.	Algorithm definition and Specifications	1	29-11-18		**TLM1 /TLM4**	CO1	T1	
3.	Performance Analysis	1	30-11-18		**TLM1 /TLM4**	CO1	T1	
4.	Time Complexity and space complexity	1	04-12-18		**TLM1 /TLM4**	CO1	T1	
5.	Asymptotic Notations- Big-	1	06-12-18		**TLM1 /TLM4**	CO1	T1,R1	

	Oh, Omega and Theta							
6.	Divide & Conquer Technique: General Method	1	07-12-18		**TLM1 /TLM4**	CO1	T1,R2	
7.	Binary Search and its analysis	1	11-12-18		**TLM1 /TLM4**	CO1	T1,R2	
8.	Finding Maximum and Minimum and its Analysis	1	13-12-18		**TLM1 /TLM4**	CO1	T1,R2	
9.	Merge sort and its Analysis	1	14-12-18		**TLM1 /TLM4**	CO1	T1	
10.	Quick Sort algorithm and its analysis	1	18-12-18		**TLM1 /TLM4**	CO1	T1	
11.	Assignment-1/Tutorial-1	1	20-12-18		**TLM 3 /TLM 6**	CO1	T1,R1,R2	
No. of classes required to complete UNIT-I		12			No. of classes taken:			

UNIT –II: Greedy Method

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.	Greedy Method – Introduction, General method	1	21-12-18		**TLM1**	CO2	T1	
13.	Knapsack problem , Example problem	1	27-12-18		**TLM1 /TLM4**	CO2	T1,R2	
14.	Job sequencing with deadlines, Example problem	1	28-12-18		**TLM1 /TLM4**	CO2	T1,R2	
15.	Minimum cost spanning trees, example problem	1	03-01-19		**TLM1 /TLM4**	CO2	T1,R2	
16.	Optimal storage on tapes, Example problem	1	04-01-19		**TLM1 /TLM4**	CO2	T1,R1	
17.	Optimal Merge patterns, Example problem	1	08-01-19		**TLM1 /TLM4**	CO2	T1,R2	
18.	Single source Shortest path problem	1	10-01-19		**TLM1 /TLM4**	CO2	T1,R2	
19.	Assignment-2/Tutorial-2	1	11-01-19		**TLM 3 /TLM 6**	CO2	T1,R1,R2	
No. of classes required to complete **UNIT-2**		08			No. of classes taken:			

UNIT –III: DYNAMIC PROGRAMMING

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20.	Dynamic Programming-General method	1	29-01-19		**TLM1**	CO3	T1	
21.	Multistage Graph, Example problem	1	31-01-19		**TLM1 /TLM4**	CO3	T1,R1	
22.	All pairs Shortest path, Example problem	1	01-02-19		**TLM1 /TLM4**	CO3	T1,R1	
23.	Optimal Binary Search Tree , Example problem	1	05-02-19		**TLM1 /TLM4**	CO3	T1,R1	
24.	0/1 Knapsack Problem	1	07-02-19		**TLM1 /TLM4**	CO3	T1,R1	
25.	Travelling Sales Person Problem	1	08-02-19		**TLM1**	CO3	T1,R1	
26.	Single source shortest path problem, Example Problem	1	12-02-19		**TLM1**	CO3	T1,R2	
27.	Reliability design, Example Problem	1	14-02-19		**TLM1**	CO3	T1,R2	
28.	Tutorial-3/ Assignment-3	1	15-02-19		**TLM 3 /TLM 6**	CO3	T1,R1,R2	
No. of classes required to complete **UNIT-3**		09			No. of classes taken:			

UNIT –IV: BACK TRACKING

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.	General Method	1	19-02-19		**TLM1**	CO4	T1	
30.	The 8-Queens problem	2	21-02-19, 22-02-19		**TLM1 /TLM4**	CO4	T1,R1,R2	
31.	Sum of subsets problem	2	26-02-19, 28-02-19		**TLM1 /TLM4**	CO4	T1,R1,R2	
32.	Graph coloring problem	1	01-03-19		**TLM1 /TLM4**	CO4	T1,R1	
33.	Hamiltonian cycles	1	05-03-19		**TLM1 /TLM4**	CO4	T1,R1	
34.	Tutorial-4/Assignment-4	1	07-03-19		**TLM 3 /TLM 6**	CO4	T1,R1,R2	
No. of classes required to complete **UNIT-4**		08			No. of classes taken:			

UNIT-V: BRANCH AND BOUND

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
35.	Branch and Bound-General method	1	08-03-19		**TLM1**	CO5	T1	
36.	LC Branch and bound solution for Travelling Sales Person Problem	1	12-03-19		**TLM1 /TLM4**	CO5	T1,R1,R2	
37.	LC Branch and bound solution 0/1 Knapsack problem	1	14-03-19		**TLM1 /TLM4**	CO5	T1,R1,R2	
38.	FIFO Branch and bound solution for Travelling Sales Person Problem	1	15-03-19		**TLM1 /TLM4**	CO5	T1,R2	
39.	FIFO Branch and bound solution 0/1 Knapsack problem	1	19-03-19		**TLM1 /TLM4**	CO5	T1,R2	
40.	Assignment-5 /Tutorial-5	1	22-03-19		**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

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
41.	Master Theorem	1	26-03-19		**TLM1 /TLM4**	CO1	T1	
42.	Huffman Coding	1	28-03-19		**TLM1 /TLM4**	CO2	T1	
43.	Matrix chain multiplication	1	29-03-19		**TLM1 /TLM4**	CO3	T1,R1	

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:

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.

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

COURSE HANDOUT

PROGRAM : B.Tech., IV-Sem., CSE-B-sec

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : DESIGN ANALYSIS OF ALGORITHMS

L-T-P STRUCTURE : 3

COURSE CREDITS : 3

COURSE INSTRUCTOR : D.SRINIVASA RAO

COURSE COORDINATOR : D.SRINIVASA RAO

1. Pre-requisites: Basic mathematical knowledge, Data structures basics

Course Educational Objectives (CEOs):

Students undergoing this course are expected to:

Explain the fundamental concepts of various algorithm design techniques. Make the students familiar to conduct performance evaluation of algorithms. Expertise the students with the various existing algorithm design techniques .Motivate the students to design a new algorithms for various problems. Introduce the concepts of P&NP-class problems.

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

CO1: Identify the basic properties and analysis methods of algorithms and design divide and conquer paradigm for solving a few example problems and analyze them.

CO2:Design Greedy algorithms for knapsack problem, minimum cost spanning tree,single source shortest path problem and analyze them.

CO3:Apply dynamic programming paradigm to solve travelling sales person problem,0/1 knapsack problem,Optimal binary search tree.

CO4: Apply Backtracking search methods on state space trees for few example problems

CO5: Analyze branch and bound search methods through problems such as 0/1 knapsack problem, Travelling salesperson problem.

4. Course Articulation Matrix:

Course Code	COs	Programme Outcomes												PSOs		
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3

S197	**CO1**	3	3	2	-	-	-	-	-	-	-	-	-	3		
	CO2	2	3	1	-	-	-	-	-	-	-	-	-	3		
	CO3	2	3	1	-	-	-	-	-	-	-	-	-	3		
	CO4	2	3	1	-	-	-	-	-	-	-	-	-	1		
	CO5	2	3	1	-	-	-	-	-	-	-	-	-	1		

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

BOS APPROVED TEXT BOOKS:

T1: Ellis Horowitz, SartajSahni, 'Fundamentals of Computer Algorithms', Galgotia Pubications.

T2:**Data Structures and Algorithm Analysis in C++, 3/e, Mark Allen Weiss, Pearson , 2007.**

BOS APPROVED REFERENCE BOOKS:

R1: Aho, Hopcroft& Ullman, 'The Design and Analysis of Computer Algorithms', Addison Wesley publications

R2:. Thomas H. Corman et al, 'Introduction to Algorithms', PHI.

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT –I: INTRODUCTION

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	1	26-11-18		**TLM1**	CO1	T1	
2.	Algorithm definition,Specification	1	30-11-18		**TLM1**	CO1	T1,R1	
3.	Performance Analysis	1	03-12-18		**TLM1**	CO1	T1,R1	
4.	Time Complexity	1	05-12-18		**TLM1**	CO1	T1,R1	
5.	Space Complexity	1	07-12-18		**TLM1**	CO1	T1,R1	
6.	Divide & Conquer Technique: General Method	1	12-12-18		**TLM1**	CO1	T1,R1	
7.	Binary Search	1	14-12-18		**TLM1,TLM4**	CO1	T1,R1	
8.	Finding Maximum and Minimum	1	17-12-18		**TLM1,TLM4**	CO1	T1,R1,R2	
9.	Merge sort, Example, Analysis of Merge Sort	1	19-12-18		**TLM1,TLM4**	CO1	T1,R1	
10.	Quick Sort, Example,	1	21-12-18		**TLM1,TLM4**		T1,R1	

						CO1		
11.	Analysis of Quick Sort,	1	24-12-18		**TLM1**	CO1	T1,R1,R2	
12.	Assignment-1/Tutorial-1	1	26-12-18		**TLM 3 /TLM 6**	CO1		
No. of classes required to complete UNIT-I		**13**			No. of classes taken:			

UNIT –II: Greedy Method

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
13.	Greedy Method – Introduction,General method	1	28-12-18		**TLM1,TLM4**	CO2	T1	
14.	Knapsack problem , Example problem	1	31-12-18		**TLM1,TLM4**	CO2	T1,R1	
15.	Job sequencing with deadlines, Example problem	1	02-01-19		**TLM1,TLM4**	CO2	T1,R1	
16.	Minimum cost spanning trees, example problems	1	04-01-19		**TLM1,TLM4**	CO2	T1,R1	
17.	Optimal storage on tapes, Example problem	1	07-01-19		**TLM1,TLM4**	CO2	T1,R1,R2	
18.	Optimal Merge patterns, Example problems	1	09-01-19		**TLM1,TLM4**	CO2	T1,R1,R2	
19.	Single source Shortest path problem	1	11-01-19		**TLM1,TLM4**	CO2	T1,R1,R2	
20.	Assignment-2/Tutorial-2	1	11-01-19		**TLM 3 /TLM 6**	CO2	T1	
No. of classes required to complete **UNIT-2**		8			No. of classes taken:			

UNIT –III: DYNAMIC PROGRAMMING

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
21.	Dynamic Programming-General method	1	27-01-19		**TLM1,TLM4**	CO3	T1	
22.	Multistage Graph, Example problem	1	28-01-19		**TLM1,TLM4**	CO3	T1,R1,R2	
23.	All pairs Shortest path, Example problem	1	30-01-19		**TLM1,TLM4**	CO3	T1,R1	
24.	Optimal Binary Search Tree , Example problem	1	01-02-19		**TLM1,TLM4**	CO3	T1,R1,R2	
25.	0/1 Knapsack Problem	1	04-02-19		**TLM1,TLM4**	CO3	T1,R1,R2	
26.	Travelling Sales Person Problem	1	06-02-19		**TLM1,TLM4**	CO3	T1,R1,R2	

27.	Single source shortest path problem, Example Problem	1	08-02-19		**TLM1,TLM4**	CO3	T1,R1,R2	
28.	Reliability design, Example Problem	1	11-02-19		**TLM1,TLM4**	CO3	T1,R1	
29.	Tutorial-3/ Assignment-3	1	13-02-19		**TLM 3 /TLM 6**	CO3	T1	
No. of classes required to complete **UNIT-3**		09			No. of classes taken:			

UNIT –IV: BACK TRACKING

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
30.	General Method	1	15-02-19		**TLM1**	CO4	T1	
31.	The 8-Queens problem	1	18-02-19		**TLM1,TLM4**	CO4	T1,R1	
32.	Sum of subsets problem	1	20-02-19		**TLM1,TLM4**	CO4	T1,R1,R2	
33.	Graph coloring problem	1	22-02-19		**TLM1,TLM4**	CO4	T1,R1,R2	
34.	Hamiltonian cycles	1	25-02-19		**TLM1,TLM4**	CO4	T1,R1	
35.	Tutorial-4/Assignment-4	1	27-02-19		**TLM 3 /TLM 6**	CO4	T1	
No. of classes required to complete **UNIT-4**		6			No. of classes taken:			

UNIT-V: BRANCH AND BOUND TECHNIQUES

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
36.	Branch and Bound-General method	1	01-03-19		**TLM1**	CO5	T1	
37.	0/1 Knapsack problem	1	04-03-19		**TLM1,TLM4**	CO5	T1,R1,R2	
38.	0/1 Knapsack problem	1	06-03-19		**TLM1,TLM4**	CO5	T1,R1,R2	
39.	Travelling Sales Person Problem	1	08-03-19		**TLM1,TLM4**	CO5	T1,R1,R2	
40.	Travelling Sales Person Problem	1	11-03-19		**TLM1,TLM4**	CO5	T1,R1	
41.	Assignment-5 /Tutorial-5	1	13-03-19		**TLM 3 /TLM 6**	CO5	T1	
No. of classes required to complete **UNIT-5**		5			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
42.	Master Theorem	1	15-03-19		**TLM1/TLM4**	CO1	T1,R1,R2	

43.	Huffman Coding	1	18-03-19		**TLM1/TLM4**	CO2	T1,R1,R2	
44.	Matrix chain multiplication	1	20-03-19		**TLM1/TLM4**	CO3	T1,R1,R2	
45.	Revision	1	22-03-19		**TLM 6 /TLM 9/TLM1**	CO1	T1,R1	
46.	Revision	1	25-03-19		**TLM 6 /TLM 9/TLM1**	CO2	T1,R1	
47.	Revision	1	27-03-19		**TLM 6 /TLM 9/TLM1**	CO3	T1,R1	
48.	Revision	1	29-03-19		**TLM 6 /TLM 9/TLM1**	CO4	T1,R1	

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:

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

engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

1. Programming Paradigms:

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

2. Data Engineering:

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

3. Software Engineering:

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

Course Instructor **Course Coordinator** **Module Coordinator**

HOD

LAKKIREDDY BALI REDDY COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi, NAAC Accredited with 'A' grade, Accredited by NBA, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech., IV-Sem., CSE-A

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : OOPS THROUGH JAVA – 17CI07

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

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr.K.SUNDEEP SARADHI

COURSE COORDINATOR : Mr.A.SREE RAMA CHANDRA MURTHY

PRE-REQUISITE: Knowledge of Procedural Programming Language

COURSE OBJECTIVE:. Concentrates on the methodological and technical aspects of software design and programming based on OOP. Acquire the basic knowledge and skills necessary to implement object-oriented programming techniques in software development through JAVA. Know about the importance of GUI based applications and the development of those Applications through JAVA. Get sufficient knowledge to enter the job market related to web development.

COURSE OUTCOMES (CO)

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

CO1: Identify Object Oriented concepts through constructs of JAVA.
CO2: Analyze the role of Inheritance, Polymorphism and implement Packages, Interfaces in program design using JAVA.
CO3: Explore Exception handling and Multi-threading concepts in program design using JAVA.
CO4: Develop GUI based applications using Applet class and explore the concept of Event Handling using JAVA
CO5: Design some examples of GUI based applications using AWT controls and Swings.

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

BOS APPROVED TEXT BOOKS:

T1 Herbert Schildt, "Java: The complete Reference", TMH Publications, 7th edition, 2006.

BOS APPROVED REFERENCE BOOKS:

R1 Dr.R.Nageswara Rao, "Core JAVA: An Integrated Approach", Dreamtech Press, 1st Edition, 2008.

R2 E.Balaguruswamy, "Programming with JAVA", TMH Publications, 2nd Edition, 2000.

R3 Patrick Niemeyer & Jonathan Knudsen, "Learning Java", O'REILLY Publications, 3rd Edition, 2005.

R4 Benjamin J Evans & David Flanagan, "Java-in a Nutshell – A desktop quick reference", O'REILLY Publications, 6th Edition, 2014.

R5 David Flanagan, "Java Examples in a nutshell – A Tutorial companion to java in a nutshell", O'REILLY Publications, 3rd Edition, 2004.

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

UNIT-I : Introduction to Java Language and Classes

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.	Drawbacks of POP, Object Oriented paradigm	1	27.11.2018		**TLM1**	CO1	T1	
2.	OOP Concept	1	29.11.2018		**TLM1**	CO1	T1	
3.	Java Buzzwords, Byte Code, Simple types	1	01.12.2018		**TLM1**	CO1	T1	
4.	Arrays, Type Conversion and Casting	1	04.12.2018		**TLM1**	CO1	T1	
5.	Simple Java Programs , Class Fundamentals	1	06.12.2018		**TLM1/ TLM8**	CO1	T1	
6.	Declaring Objects, Access Control and recursion, Constructors	1	11.12.2018		**TLM1**	CO1	T1	
7.	Garbage Collection, Programs on String and String Buffer classes and Wrapper classes	1	13.12.2018		**TLM1**	CO1	R1	

8.	Tutorial - 1	1	15.12.2018		**TLM3**	CO1	T1	
No. of classes required to complete UNIT-I		8			No. of classes taken:			

UNIT-II: Inheritance & Polymorphism, Packages and Interfaces

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.	Inheritance Basics, Super Keyword, Multilevel Hierarchy,	1	18.12.2018		**TLM1**	CO2	T1	
10.	Method Overloading & Method Overriding	1	20.12.2018		**TLM1**	CO2	T1	
11.	Dynamic method dispatch, Abstract class, Object class and final keyword.	1	22.12.2018		**TLM1**	CO2	T1	
12.	Package definition, Accessing package, understanding CLASSPATH	1	27.12.2018		**TLM1**	CO2	T1	
13.	Importing Packages, java.util package	1	29.12.2018		**TLM1**	CO2	T1	
14.	Defining, Implementing and Applying Interfaces	1	03.01.2019		**TLM1**	CO2	T1	
15.	Variables in interface and extending interfaces	1	05.01.2019		**TLM1**	CO2	T1	
16.	Differences between classes and interfaces	1	08.01.2019		**TLM1**	CO2	T1	
17.	Tutorial - 2	1	10.01.2019		**TLM3**	CO2	T1	
No. of classes required to complete UNIT-II		9			No. of classes taken:			

UNIT-III: Exception Handling, Multithreading

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.	Exception Handling Fundamentals, Exception types	1	29.01.2019		**TLM1**	CO3	T1	
19.	Usage of try & catch , throws and finally	1	31.01.2019		**TLM1/ TLM8**	CO3	T1	
20.	Java Built-in Exceptions	1	02.02.2019		**TLM1**	CO3	T1	
21.	Differences between multi-threading and muti-tasking.	1	05.02.2019		**TLM1**	CO3	T1	
22.	Java thread model Creating thread	1	07.02.2019		**TLM1**	CO3	T1	
23.	Multiple threads and synchronizing threads	1	12.02.2019		**TLM1**	CO3	T1	
24.	Tutorial - 3	1	14.02.2019		**TLM3**	CO3	T1	
No. of classes required to complete		07			No. of classes taken:			

UNIT-III				

UNIT-IV: Applet class and Event Handling

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Concepts of Appltes, Differences between Applets and Applications	1	16.02.2019		**TLM1**	CO4	T1	
26.	Applet Architecture, skeleton and creation.	1	19.02.2019		**TLM1**	CO4	T1	
27.	Passing parameters to applets and working with graphics class.	1	21.02.2019		**TLM1**	CO4	T1	
28.	Event handling mechanisms, Events and Event sources.	1	23.02.2019		**TLM1**	CO4	T1	
29.	Event class, Listener interface, Delegation event model.	1	26.02.2019		**TLM1**	CO4	T1	
30.	Keyboard and Mouse Events, Adapter class, Inner class.	1	28.02.2019		**TLM1/ TLM8**	CO4	T1	
31.	Tutorial - 4	1	02.03.2019		**TLM3**	CO4	T1	
No. of classes required to complete UNIT-IV		07			No. of classes taken:			

UNIT-V: AWT Controls and Introduction to Swings

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.	Label, button, Scrollbars, Text Components	1	05.03.2019		**TLM1**	CO5	T1	
33.	Check Box, Check Box groups, choices, controls, lists	1	07.03.2019		**TLM1**	CO5	T1	
34.	Scrollbar, Text field, Layout Managers – border, grid, flow	1	12.03.2019		**TLM1**	CO5	T1	
35.	Introduction to swing, Key features, Limitations of AWT	1	14.03.2019		**TLM1**	CO5	T1	
36.	Components and Containers, Swing packages.	1	16.03.2019		**TLM1**	CO5	T1	
37.	Creating Swing applet.	1	19.03.2019		**TLM1/ TLM8**	CO5	T1	
38.	JApplet class, JComponents – Labels, Text fields, buttons	1	23.03.2019		**TLM1**	CO5	T1	
39.	Jbutton class, Tabbed Panes	1	26.03.2019		**TLM1**	CO5	T1	
40.	Scroll Panes, Tables	1	28.03.2019		**TLM1**	CO5	T1	
41.	Tutorial - 5	1	30.03.2019		**TLM3**	CO5	T1	
No. of classes required to complete UNIT-V		9			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
42.	Differences Between C,C++ & Java	1	01.12.18		**TLM1**	CO1		

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-1	26-11-2018	12-01-2019	7W
I Mid Examinations	18-01-2019	25-01-2019	1W
II Phase of Instructions	28-01-2019	30-03-2019	9W
II Mid Examinations	01-04-2019	06-04-2019	1W
Preparation and Practicals	08-04-2019	20-04-2019	2W
Semester End Examinations	22-04-2019	04-05-2019	2W

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment –1	1	A1=5
Assignment –2	2	A2=5
Quiz-1	1,2	B1=10
I-Mid Examination	1,2	C1=20
Assignment –3	3	A3=5
Assignment –4	4	A4=5
Assignment --5	5	A5=5
Quiz-2	3,4,5	B2=10
II-Mid Examination	3,4,5	C2=20
Evaluation of Assignment Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Quiz Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=10
Evaluation of Mid Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=20
Attendance	-	D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**A+B+C+D=40**

Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

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

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

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

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

PROGRAM OUTCOMES

Engineering Graduates will be able to:

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

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the 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.

PROGRAM SPECIFIC OUTCOMES

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 Analyse, 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
K.Sundeep Saradhi	A.S.R.C.Murthy	Dr. D.Veeraiah	Dr.Ch.Venkata Narayana

COURSE HANDOUT

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

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : OOPs Through JAVA – 17CI07

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

COURSE CREDITS : 3

COURSE INSTRUCTOR : Mr.A.SREE RAMA CHANDRA MURTHY

COURSE COORDINATOR : Mr.A.SREE RAMA CHANDRA MURTHY

PRE-REQUISITE: Knowledge of Procedural Programming Language, C++

COURSE OBJECTIVE:. Concentrates on the methodological and technical aspects of software design and programming based on OOP. Acquire the basic knowledge and skills necessary to implement object-oriented programming techniques in software development through JAVA. Know about the importance of GUI based applications and the development of those Applications through JAVA. Get sufficient knowledge to enter the job market related to web development.

COURSE OUTCOMES (CO)

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

CO1: Identify Object Oriented concepts through constructs of JAVA.
CO2: Analyze the role of Inheritance, Polymorphism and implement Packages, Interfaces in program design using JAVA.
CO3: Explore Exception handling and Multi-threading concepts in program design using JAVA.
CO4: Develop GUI based applications using Applet class and explore the concept of Event Handling using JAVA.
CO5: Design some examples of GUI based applications using AWT controls and Swings.

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

BOS APPROVED TEXT BOOKS:

T1 Herbert Schildt, "Java: The complete Reference", TMH Publications, 7th edition, 2006.

BOS APPROVED REFERENCE BOOKS:

R1 Dr.R.Nageswara Rao, "Core JAVA: An Integrated Approach", Dreamtech Press, 1st Edition, 2008.

R2 E.Balaguruswamy, "Programming with JAVA", TMH Publications, 2nd Edition, 2000.

R3 Patrick Niemeyer & Jonathan Knudsen, "Learning Java", O'REILLY Publications, 3rd Edition, 2005.

R4 Benjamin J Evans & David Flanagan, "Java-in a Nutshell – A desktop quick reference", O'REILLY Publications, 6th Edition, 2014.

R5 David Flanagan, "Java Examples in a nutshell – A Tutorial companion to java in a nutshell", O'REILLY Publications, 3rd Edition, 2004.

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

UNIT-I : Introduction to Java Language and Classes

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.	Drawbacks of POP, Object Oriented paradigm	1	26.11.2018		**TLM1**	CO1	T1	
2.	OOP Concept	1	27.11.2018		**TLM1**	CO1	T1	
3.	Java Buzzwords, Byte Code, Simple types	1	28.11.2018		**TLM1**	CO1	T1	
4.	Arrays, Type Conversion and Casting	1	03.12.2018		**TLM1**	CO1	T1	
5.	Simple Java Programs , Class Fundamentals	1	04.12.2018		**TLM1/ TLM8**	CO1	T1	
6.	Declaring Objects, Access Control and recursion, Constructors	1	06.12.2018		**TLM1**	CO1	T1	
7.	Garbage Collection, Programs on String	1	10.12.2018		**TLM1**	CO1	R1	
8.	String Buffer classes and	1	11.12.2018					

	Wrapper classes							
9.	Tutorial - 1	1	13.12.2018		**TLM3**	CO1	T1	
No. of classes required to complete UNIT-I		8			No. of classes taken:			

UNIT-II: Inheritance & Polymorphism, Packages and Interfaces

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.	Inheritance Basics, Super Keyword,	1	17.12.2018		**TLM1**	CO2	T1	
11.	Multilevel Hierarchy	1	18.12.2018					
12.	Method Overloading & Method Overriding	1	20.12.2018		**TLM1**	CO2	T1	
13.	Dynamic method dispatch, Abstract class, Object class and final keyword.	1	24.12.2018		**TLM1**	CO2	T1	
14.	Package definition, Accessing package, understanding CLASSPATH	1	27.12.2019		**TLM1**	CO2	T1	
15.	Importing Packages, java.util package	1	31.12.2019		**TLM1**	CO2	T1	
16.	Defining, Implementing and Applying Interfaces	1	03.01.2019		**TLM1**	CO2	T1	
17.	Variables in interface and extending interfaces	1	07.01.2019		**TLM1**	CO2	T1	
18.	Differences between classes and interfaces	1	08.01.2019		**TLM1**	CO2	T1	
19.	Tutorial - 2	1	10.01.2019		**TLM3**	CO2	T1	
No. of classes required to complete UNIT-II		9			No. of classes taken:			

UNIT-III: Exception Handling, Multithreading

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20.	Exception Handling Fundamentals, Exception types	1	28.01.2019		**TLM1**	CO3	T1	
21.	Usage of try & catch , throws and finally	1	29.01.2019		**TLM1/ TLM8**	CO3	T1	
22.	Java Built-in Exceptions	1	31.01.2019		**TLM1**	CO3	T1	
23.	Differences between multi-threading and muti-tasking.	1	04.02.2019		**TLM1**	CO3	T1	
24.	Java thread model Creating thread	1	05.02.2019		**TLM1**	CO3	T1	
25.	Multiple threads and	1	05.02.2019		**TLM1**	CO3	T1	

26.	synchronizing threads	1	07.02.2019					
27.	Tutorial - 3	1	11.02.2019		**TLM3**	CO3	T1	
No. of classes required to complete UNIT-III		07			No. of classes taken:			

UNIT-IV: Applet class and Event Handling

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
28.	Concepts of Appltes, Differences between Applets and Applications	1	12.02.2019		**TLM1**	CO4	T1	
29.	Applet Architecture, skeleton and creation.	1	14.02.2019		**TLM1**	CO4	T1	
30.	Passing parameters to applets and working with graphics class.	1	18.02.2019		**TLM1**	CO4	T1	
31.	working with graphics class	1	19.02.2019					
32.	Event handling mechanisms, Events and Event sources.	1	21.02.2019		**TLM1**	CO4	T1	
33.	Event class, Listener interface, Delegation event model.	1	25.02.2019		**TLM1**	CO4	T1	
34.	Keyboard and Mouse Events, Adapter class, Inner class.	1	26.03.2019		**TLM1/ TLM8**	CO4	T1	
35.	Tutorial - 4	1	28.03.2019		**TLM3**	CO4	T1	
No. of classes required to complete UNIT-IV		07			No. of classes taken:			

UNIT-V: AWT Controls and Introduction to Swings

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
36.	Label, button, Scrollbars, Text Components	1	05.03.2019		**TLM1**	CO5	T1	
37.	Check Box, Check Box groups, choices, controls, lists	1	07.03.2019		**TLM1**	CO5	T1	
38.	Scrollbar, Text field,	1	11.03.2019		**TLM1**	CO5	T1	
39.	Layout Managers – border, grid, flow	1	12.03.2019					
40.	Introduction to swing, Key features, Limitations of AWT	1	14.03.2019		**TLM1**	CO5	T1	
41.	Components and Containers, Swing packages.	1	18.03.2019		**TLM1**	CO5	T1	
42.	Creating Swing applet.	1	19.03.2019		**TLM1/ TLM8**	CO5	T1	
43.	JApplet class, JComponents – Labels, Text fields, buttons	1	21.03.2019		**TLM1**	CO5	T1	
44.	Jbutton class, Tabbed Panes	1	25.03.2019		**TLM1**	CO5	T1	

45.	Scroll Panes, Tables	1	26.03.2018		**TLM1**	CO5	T1	
46.	Tutorial - 5	1	28.03.2019		**TLM3**	CO5	T1	
No. of classes required to complete UNIT-V		9			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
47.	Differences Between C,C++ & Java	1	01.12.18		**TLM1**	CO1		
48.	Introduction to JDBC	1	29.03.19		**TLM1**			

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-1	26-11-2018	12-01-2019	7W
I Mid Examinations	18-01-2019	25-01-2019	1W
II Phase of Instructions	28-01-2019	30-03-2019	9W
II Mid Examinations	01-04-2019	06-04-2019	1W
Preparation and Practicals	08-04-2019	20-04-2019	2W
Semester End Examinations	22-04-2019	04-05-2019	2W

EVALUATION PROCESS:

Evaluation Task	COs	Marks
Assignment –1	1	A1=5
Assignment –2	2	A2=5
Quiz-1	1,2	B1=10
I-Mid Examination	1,2	C1=20
Assignment –3	3	A3=5
Assignment –4	4	A4=5
Assignment --5	5	A5=5
Quiz-2	3,4,5	B2=10

II-Mid Examination	3,4,5	C2=20
Evaluation of Assignment Marks: A=(A1+A2+A3+A4+A5)/5	1,2,3,4,5	A=5
Evaluation of Quiz Marks: B=75% of Max(B1,B2)+25% of Min(B1,B2)	1,2,3,4,5	B=10
Evaluation of Mid Marks: C=75% of Max(C1,C2)+25% of Min(C1,C2)	1,2,3,4,5	C=20
Attendance	-	D=5
Cumulative Internal Examination : A+B+C+D	**1,2,3,4,5**	**A+B+C+D=40**
Semester End Examinations	**1,2,3,4,5**	**E=60**
Total Marks: A+B+C+D+E	**1,2,3,4,5**	**100**

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

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

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

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

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

PROGRAM OUTCOMES

Engineering Graduates will be able to:

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

modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance**: Demonstrate knowledge and understanding of the 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.

PROGRAM SPECIFIC OUTCOMES

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
A.S.R.C.Murthy	A.S.R.C.Murthy	Dr. D.Veeraiah	Dr.Ch.Venkata Narayana

COURSE HANDOUT

PROGRAM : B.Tech., IV-Sem., CSE-A/S
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : LINUX PROGRAMMING LAB & 17CI61
L-T-P STRUCTURE : 0-0-2
COURSE CREDITS : 1
COURSE INSTRUCTOR : G NAGESWARA RAO
COURSE COORDINATOR : Dr. D JAGAN MOHAN REDDY
PRE-REQUISITE : Programming Knowledge
COURSE OBJECTIVE:

To familiarize students with the Linux environment and to learn the fundamentals of shell scripting/programming.

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

CO1 : Apply built in commands for file processing.
CO2 : Design and implement Linux shell scripts.
CO3 : Design And Implement AWK scripts.
CO4 : Develop programs to implement system calls.

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

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

BOS APPROVED TEXT BOOKS:
TEXT BOOKS

T1	Sumitabha Das.,Your "Unix The Ultimate Guide", TMH Publications, 2001.
T2	M.G. Venkatesh Murthy, "Introduction to UNIX & SHELL programming" , Pearson Education, First Edition, New Delhi, 2009.

BOS APPROVED REFERENCE BOOKS:

R1 B.A. Forouzan& R.F. Giberg, "Unix and shell Programming", Thomson, First Edition, New Delhi, 2003.
R2 E. Foster – Johnson & others, "Beginning shell scripting", John Wiley & sons, First Edition, New Delhi, 2008.
R3 Sumitabha Das, "Unix concepts and applications", TMH Publications, 4th Edition.

R4 Gaham Glass & K. Ables ,Unix for programmers and users, pearson education,3rd edition,.

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Experiment	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	HOD Sign Weekly
1.	Introduction	1	26/11/2018		
2.	Commands	1	03/12/2018		
3.	Commands	1	10/12/2018		
4.	Commands	1	17/12/2018		
5.	**Week1** **Session-1** a)Log into the system b)Use vi editor to create a file called myfile.txt which contains some text. c)correct typing errors during creation. d)Save the file e)logout of the system **Session-2** a)Log into the system b)open the file created in session 1 c)Add some text d)Change some text e)Delete some text f)Save the Changes g)Logout of the system	1	24/12/2018		

6.	**Week2** a. log in the system b.use the appropriate commands to determine your login shell c. use the /etc/passwd file to verify the result of step b. d. use the who command redirect the result to a file called myfile.txt. Use the more command to see the contents of myfile.txt. e.Use the date and who commands in sequence ?(in one line) such that the output of date will display on the screen and the output of who will be redirected to a file called myfile1.txt. Use the more command to check the contents of myfile1.txt.	1	31/12/2018		
7.	**Week3** Log into the system Use the cat command to create a file containing the following data. Call it mytable.txt use tabs to separate the fields 1425 ravi 15.65 4320 ramu 26.27 6830 sita 36.15 1450 raju 21.86 a. use the cat command to display the file, mytable.txt b. use the vi command to correct any errors in the file, mytable.txt c. use the sort command to sort the file mytable.txt according to the first field. Call the sorted file mytable.txt (same name) d. print the file mytable.txt e. use the cut & paste commands to swap fields 2 and 3 my table. Call it mytable.txt (same name) f. print the new file, mytable.txt g. logout of the system	1	07/01/2019		
8.	**Week4** a) Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else. b) Write a shell script that accepts one or more file name as arguments and converts all of them		14/01/2019		

	to uppercase, provided they exist in the current directory. c) Write a shell script that determines the period for which a specified user is working on the system.				
9.	**Week5** Write a shell script that computes the total and average marks of a student according to the following If average marks ≥69 then result is "Distinction" If average marks ≥59 and ≤ 70 then result is "First Class" If average marks ≥49 and ≤ 60 then result is "Second Class" If average marks ≤ 50 then result is "Pass" Note that any subject marks ≤ 40 then result is "Fail" Accept student name and six subject marks through the key board	1	21/01/2019		
10.	**Week6** a) Write an interactive file-handling shell program. Let it offer the user the choice of copying, removing, renaming, or linking files. Once the user has made a choice, have the program ask the user for the necessary information, such as the file name, new name and so on. b) Write shell script that takes a login name as command – line argument and reports when that person logs in c) Write a shell script which receives two file names as arguments. It should check whether the two file contents are same or not. If they are same then second file should be deleted.	1	28/01/2019		
11.	**Week7**		04/02/2019		

	a)Write a shell script that accepts a file name starting and ending line numbers as arguments and displays all the lines between the given line numbers. b)Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.				
12.	**Week8** a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute permissions. b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.		11/02/2019		
13.	**Week9** a) Write a shell script to perform the following string operations: i)To extract a sub-string from a given string. ii)To find the length of a given string. b) Write a awk script to find the number of characters, words and lines in a file.		18/02/2019		
14.	**Week10** Write a C program that takes one or more file or directory names as command line input and reports the following information on the file: i) File type ii) Number of links iii) Read, write and execute permissions iv) Time of last access (Note : Use stat/fstat system calls)		25/02/2019		

15.	**Week11** Write C programs that simulate the following unix commands: a) mv b) cp c) ls (Use system calls)		11/03/2019		
16.	**Week12** Write a program for bubble sorting using fork system call in linux		18/03/2019		
17.	Revision		25/03/2019		
18.	Internal lab exam		01/04/2019		

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**

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

COMPUTER SCIENCE AND ENGINEERING

(Autonomous & Affiliated to JNTUK, Kakinada & Approved by AICTE, New Delhi,
NAAC Accredited with 'A' grade, Certified by ISO 9001:2015)
L B Reddy Nagar, Mylavaram-521 230, Krishna District, Andhra Pradesh.

COURSE HANDOUT

PROGRAM : B.Tech., IV-Sem., CSE-B/S
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : LINUX PROGRAMMING LAB & 17CI61
L-T-P STRUCTURE : 0-0-2
COURSE CREDITS : 1
COURSE INSTRUCTOR : Dr. D JAGAN MOHAN REDDY
COURSE COORDINATOR : Dr. D JAGAN MOHAN REDDY
PRE-REQUISITE : Programming Knowledge
COURSE OBJECTIVE:

To familiarize students with the Linux environment and to learn the fundamentals of shell scripting/programming.

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

CO1 : Apply built in commands for file processing.
CO2 : Design and implement Linux shell scripts.
CO3 : Design And Implement AWK scripts.
CO4 : Develop programs to implement system calls.

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

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

BOS APPROVED TEXT BOOKS:
TEXT BOOKS

T1	Sumitabha Das.,Your "Unix The Ultimate Guide", TMH Publications, 2001.
T2	M.G. Venkatesh Murthy, "Introduction to UNIX & SHELL programming" , Pearson Education, First Edition, New Delhi, 2009.

BOS APPROVED REFERENCE BOOKS:

R1 B.A. Forouzan& R.F. Giberg, "Unix and shell Programming", Thomson, First Edition, New Delhi, 2003.
R2 E. Foster – Johnson & others, "Beginning shell scripting", John Wiley & sons, First Edition, New Delhi, 2008.
R3 Sumitabha Das, "Unix concepts and applications", TMH Publications, 4th Edition.

R4 Gaham Glass & K. Ables ,Unix for programmers and users, pearson education,3rd edition,.

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Experiment	No. of Classes Required (1 session is – 2hrs)	Tentative Date of Completion	Actual Date of Completion	HOD Sign Weekly
1.	**Week1** **Session-1** a)Log into the system b) Use vi editor to create a file called myfile.txt which contains some text. c) Correct typing errors during creation. d)Save the file e)logout of the system **Session-2** a)Log into the system b)open the file created in session 1 c)Add some text d)Change some text e)Delete some text f)Save the Changes g)Logout of the system	1	29/11/2018		
2.	**Week2** a. log in the system b. Use the appropriate commands to determine your login shell c. use the /etc/passwd file to verify the result of step b. d. use the who command redirect the result to a file called myfile.txt. Use the more command to see the contents of myfile.txt. e. Use the date and who commands in sequence? (in one line) such that the output of date will display on the screen and the output of who will be redirected to a file called myfile1.txt. Use the	1	06/12/2018		

3.	**Week3** Log into the system Use the cat command to create a file containing the following data. Call it mytable.txt use tabs to separate the fields 1425 ravi 15.65 4320 ramu 26.27 6830 sita 36.15 1450 raju 21.86 a. use the cat command to display the file, mytable.txt b. use the vi command to correct any errors in the file, mytable.txt c. use the sort command to sort the file mytable.txt according to the first field. Call the sorted file mytable.txt (same name) d. print the file mytable.txt e. use the cut & paste commands to swap fields 2 and 3 my table. Call it mytable.txt (same name) f. print the new file, mytable.txt g. logout of the system	1	13/12/2018		
4.	**Week4** a) Write a shell script that takes a command –line argument and reports on whether it is directory, a file, or something else. b) Write a shell script that accepts one or more file name as arguments and converts all of them to uppercase, provided they exist in the current directory. c) Write a shell script that determines the period for which a specified user is working on the system.		20/12/2018		
5.	**Week5** Write a shell script that computes the total and average marks of a student according to the following If average marks ≥69 then result is “Distinction” If average marks ≥59 and ≤ 70 then result is “First Class” If average marks ≥49 and ≤ 60 then result is “Second Class” If average marks ≤ 50 then result	1	27/12/2018		

	is “Pass” Note that any subject marks ≤ 40 then result is “Fail” Accept student name and six subject marks through the key board				
6.	**Week6** a) Write an interactive file-handling shell program. Let it offer the user the choice of copying, removing, renaming, or linking files. Once the user has made a choice, have the program ask the user for the necessary information, such as the file name, new name and so on. b) Write shell script that takes a login name as command – line argument and reports when that person logs in c) Write a shell script which receives two file names as arguments. It should check whether the two file contents are same or not. If they are same then second file should be deleted.	1	03/01/2019		
7.	**Week7** a)Write a shell script that accepts a file name starting and ending line numbers as arguments and displays all the lines between the given line numbers. b)Write a shell script that deletes all lines containing a specified word in one or more files supplied as arguments to it.		10/01/2019		
8.	**Week8** a) Write a shell script that displays a list of all the files in the current directory to which the user has read, write and execute		17/01/2019		

	permissions. b) Develop an interactive script that ask for a word and a file name and then tells how many times that word occurred in the file.				
9.	**Week9** a) Write a shell script to perform the following string operations: i)To extract a sub-string from a given string. ii)To find the length of a given string. b) Write a awk script to find the number of characters, words and lines in a file.		24/01/2019		
10.	**Week10** Write a C program that takes one or more file or directory names as command line input and reports the following information on the file: i) File type ii) Number of links iii) Read, write and execute permissions iv) Time of last access (Note : Use stat/fstat system calls)		31/01/2019		
11.	**Week11** Write C programs that simulate the following unix commands: a) mv b) cp c) ls (Use system calls)		07/02/2019		
12.	**Week12** Write a program for bubble sorting using fork system call in linux		14/02/2019		

Course Instructor **Course Coordinator** **Module Coordinator** **HOD**

COURSE HANDOUT

PROGRAM : B.Tech., IV-Sem., CSE-A/S
ACADEMIC YEAR : 2018-19
COURSE NAME & CODE : LINUX PROGRAMMING & 17CS01
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : G NAGESWARA RAO
COURSE COORDINATOR : Dr. D JAGAN MOHAN REDDY
PRE-REQUISITE: Knowledge in Operating Systems
COURSE OBJECTIVE:

1. Introduce the student to Linux kernel programming techniques. Review basic concepts covered in the core Operating Systems course prerequisite as they are realized in the Linux platform. Discuss the Process, Inter-Process Communication Techniques and Network Implementation in Linux.

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

CO1: Explore LINUX Ecosystem.

CO2: Implement Shell scripting in LINUX Kernel.

Design AWK scripts for text processing and Apply Regular Expressions for Pattern

CO3: Matching.

CO4: Design Scripts for Process Creation & Network Management.

CO5: Analyze multi-processing in Linux kernel.

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

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

BOS APPROVED TEXT BOOKS:
TEXT BOOKS

T1 Sumitabha Das.,Your "Unix The Ultimate Guide", TMH Publications, 2001.
T2 M.G. Venkatesh Murthy, "Introduction to UNIX & SHELL programming" , Pearson Education, First Edition, New Delhi, 2009.

BOS APPROVED REFERENCE BOOKS:

R1 B.A. Forouzan& R.F. Giberg, "Unix and shell Programming", Thomson, First Edition, New Delhi, 2003.
R2 E. Foster – Johnson & others, "Beginning shell scripting", John Wiley & sons, First Edition, New Delhi, 2008.
R3 Sumitabha Das, "Unix concepts and applications", TMH Publications, 4th Edition.
R4 Gaham Glass & K. Ables ,Unix for programmers and users, pearson education,3rd edition,.

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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	**Introduction to LINUX:** Operating System concepts	1	28/11/2018		TLM1	CO1	T1	
2.	Introduction to LINUX	1	29/11/2018		TLM1	CO1	T1	
3.	Features of LINUX, LINUX Kernel	1	30/11/2018		TLM1, TLM2	CO1	T1	
4.	Terminal and shell	1	05/12/2018		TLM1	CO1	T1	
5.	**Introduction to LINUX File System**: The LINUX file System	1	06/12/2018		TLM1, TLM2	CO1	T1	
6.	File System Hierarchy, File system and inodes	1	07/12/2018		TLM2	CO1	T1	
7.	File Attributes, File Permissions	1	12/12/2018		TLM1	CO1	T1	
8.	**LINUX Commands**: man, echo, script, pwd, passwd, who, uname, date, sty, telnet, rlogin		13/12/2018		TLM1 / TLM2	CO1	--	
9.	ftp, more, printf, PATH, SU, ps, arp, mkdir, cd, rmdir, ls, cp, rm, mv, cat, wc,	1	14/12/2018		TLM1 / TLM2	CO1	T1	

10.	lp, od, ln, df, du, locate, tar, zip, chmod, unmask, mount, unmount, ulimit.	1	19/12/2018		TLM1 / TLM2	CO1	T1	
11.	**Tutorial/Assign ment/Test**	1	20/12/2018		TLM6	CO1	--	
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	Learning Outcome COs	Text Book followed	HOD Sign Weekly
12.	**Introduction to Shell**: Shell responsibilities, running a shell script	1	21/12/2018		TLM1	CO2	T1,T2	
13.	Pipes, Redirection, Command Substitution	1	26/12/2018		TLM1	CO2	T1,T2	
14.	**Shell Programming**: VI Editor	1	27/12/2018		TLM1	CO2	T1,T2	
15.	the shell as a programming Language, Shell Meta Characters, Shell Variables	1	28/12/2018		TLM1	CO2	T1,T2	
16.	Shell Commands, Control Structures	1	02/01/2019		TLM1 / TLM2	CO2	T1,T2	
17.	Shell Script Examples	1	03/01/2019		TLM1	CO2	T1,T2	
18.	Shell Script Examples	1	04/01/2019		TLM1	CO2	T1,T2	
19.	Shell Script Examples	1	09/01/2019		TLM1	CO2	T1,T2	
20.	Shell Script Examples	1	10/01/2019		TLM1	CO2	T1,T2	
21.	**Tutorial/Assignment/Test**	1	11/01/2019		TLM6	CO2	--	
No. of classes required to complete UNIT-II:		**10**	**No. of classes taken: MID EXAMINATION:18-0-2019 to 25-01-2019**					

UNIT – III

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.	**Filters: simple filters and commands**: pr,	1	30/01/2019		TLM1	CO3	T1	

	cmp, comm., ulink, diff, head, tail							
23.	find, cut, paste, sort, uniq, tr, w, finger	1	31/01/2019		TLM1	CO3	T1	
24.	**Regular Expressions**: grep, egrep, fgrep	1	01/02/2019		TLM1	CO3	T1	
25.	Sed- line addressing, context addressing, text editing, substitution	1	06/02/2019		TLM1 / TLM2	CO3	T1	
26.	**Programming with awk**: awk statements, variables and expressions	1	07/02/2019		TLM1	CO3	T1,T2, R1,R2	
27.	comparison and logical operators, Begin and End sections	1	08/02/2019		TLM1 / TLM2	CO3	T1,T2, R1,R2	
28.	decision and looping statements	1	13/02/2019		TLM1	CO3	T1,T2, R1,R2	
29.	AWK Examples	1	14/02/2019		TLM1 / TLM2	CO3	T1,T2, R1,R2	
30.	AWK Examples	1	15/02/2019		TLM1 / TLM2	CO3	T1,T2, R1,R2	
31.	**Tutorial/Assignment/Test**	1	20/02/2019		TLM6	CO3	--	
No. of classes required to complete UNIT-III:		**10**	**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**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
32.	**The Process**: Process concept, Process Creation Mechanism	1	21/02/2019		TLM1 / TLM2	CO4	T1,R3	

33.	Process Creation Mechanism, process attributes	1	22/02/2019		TLM1 / TLM2	CO4	T1,R3	
34.	**LINUX Internal**: LINUX Kernel Structure, System Calls	1	27/02/2019		TLM1 / TLM2	CO4	T1,R3	
35.	Signals, Memory Management	1	28/02/2019		TLM1 / TLM2	CO4	T1,R3	
36.	**Network Implementation**: TCP Sockets-socket, connect	1	01/03/2019		TLM1 / TLM2	CO4	T1,R3	
37.	listen, read, write, accept, fork	1	06/03/2019		TLM1 / TLM2	CO4	T1,R3	
38.	UDP-sockets, sendto, recvfrom functions	1	07/03/2019		TLM1 / TLM2	CO4	T1,R3	
39.	Examples on system calls	1	08/03/2019		TLM1 / TLM2	CO4	T1,R3	
40.	**Tutorial/Assignment/Test**	1	13/03/2019		TLM6	CO4	--	
No. of classes required to complete UNIT-IV:		**09**	**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**	**Learning Outcome COs**	**Text Book followed**	**HOD Sign Weekly**
41.	**Multi-Processing**: The intel multi-processor specification	1	15/03/2019		TLM1 / TLM2	CO5	T1	
42.	problems with multi-processor systems	1	20/03/2019		TLM1 / TLM2	CO5	T1	
43.	problems with multi-processor systems	1	21/03/2019		TLM1 / TLM2	CO5	T1	
44.	changes to the kernel	1	22/03/2019		TLM1 / TLM2	CO5	T1,R3	
45.	compiling LINUX SMP	1	27/03/2019		TLM1 /	CO5	T1,R3	

					TLM2			
46.	compiling LINUX SMP	1	28/03/2019		TLM1 / TLM2	CO5	T1	
47.	**Tutorial/Assignment/Test**	1	29/03/2019		TLM6	CO5	--	
No. of classes required to complete UNIT-V:		**07**	**No. of classes taken: MID EXAMINATION:01-04-2019 to 06-04-2019**					

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**

COURSE HANDOUT

PROGRAM : B.Tech. IV-Sem., CSE (Section - B)

ACADEMIC YEAR : 2018-19

COURSE NAME & CODE : **Linux Programming** & 17**CS01**

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

COURSE CREDITS : 3

COURSE INSTRUCTOR : Dr.JAGAN MOHAN REDDY, Assoc. Prof

COURSE COORDINATOR : Dr.JAGAN MOHAN REDDY, Assoc. Prof

PRE-REQUISITE : Knowledge in Operating Systems

Course Objectives:
Introduce the student to Linux kernel programming techniques. Review basic concepts covered in the core Operating Systems course prerequisite as they are realized in the Linux platform. Discuss the Process, Inter-Process Communication Techniques and Network Implementation in Linux.

Course Outcomes (CO):
CO1: Explore LINUX Ecosystem.

CO2: Implement Shell scripting in LINUX Kernel.

CO3:Design AWK scripts for text processing and Apply Regular Expressions for Pattern Matching.

C04: Design Scripts for Process Creation & Network Management.

CO5: Analyze multi-processing in Linux kernel.

COURSE ARTICULATION MATRIX (Correlation between Cos&POs):

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

BOS APPROVED TEXT BOOKS:

T1	Sumitabha Das., "Your Unix The Ultimate Guide", TMH Publications, 2001.
T2	M.G. Venkatesh Murthy, "Introduction to UNIX & SHELL programming", PearsonEducation, First Edition, New Delhi, 2009.

BOS APPROVED REFERENCE BOOKS:

R1	B.A. Forouzan& R.F. Giberg, "Unix and shell Programming", Thomson, First Edition, New Delhi, 2003.
R2	E. Foster – Johnson & others, "Beginning shell scripting", John Wiley & sons, First Edition, New Delhi, 2008.
R3	Sumitabha Das, "Unix concepts and applications", TMH Publications, 4th Edition,.
R4	Gaham Glass & K. Ables, Unix for programmers and users, pearson education, 3rdedition,.

Unit	Content	Text Book
I	**Introduction to LINUX**: Operating System concepts, Introduction to LINUX, Features of LINUX, LINUX Kernel, Terminal and shell.	
	Introduction to LINUX File System: The LINUX file System, File System Hierarchy, File system and inodes, File Attributes, File Permissions.	
	LINUX Commands: man, echo, script, pwd, passwd, who, uname, date, sty, telnet, rlogin, ftp, more, printf, PATH, SU, ps, arp, mkdir, cd, rmdir, ls, cp, rm, mv, cat, wc, lp, od, ln, df, du, locate, tar, zip, chmod, unmask, mount, unmount, ulimit.	
II	**Introduction to Shell**: Shell responsibilities, running a shell script, Pipes, Redirection, Command Substitution.	
	Shell Programming: VI Editor, the shell as a programming Language, Shell Meta Characters, Shell Variables, Shell Commands, Control Structures, Shell Script Examples.	
III	**Filters: simple filters and commands**: pr, cmp, comm., ulink, diff, head, tail, find, cut, paste, sort, uniq, tr, w, finger.	
	Regular Expressions: grep, egrep, fgrep, Sed- line addressing, context addressing, text editing, substitution.	
	Programming with awk: awk statements, variables and expressions, comparison and logical operators, Begin and End sections, decision and looping statements.	
IV	**The Process**: Process concept, Process Creation Mechanism, process attributes.	
	LINUX Internal: LINUX Kernel Structure, System Calls, Signals, Memory Management.	
	Network Implementation: TCP Sockets- socket, connect, listen, read, write, accept, fork, UDPsockets, sendto, recvfrom functions.	
V	**Multi-Processing:** The Intel multi-processor specification, problems with multi-processorsystems, changes to the kernel, compiling LINUX SMP.	

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:Introduction to Linux

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 Operating systems	01	26/11/18		TLM1	CO1	T1	
2.	Features of Linux kernel and shell	01	27/11/18		TLM1	CO1	T1	
3.	Linux file systems	01	01/12/18		TLM1, TLM2	CO1	T1	
4.	Linux Commands	01	03/12/18		TLM1, TLM2	CO1	T1	
5.	Linux Commands	01	04/12/18		TLM1, TLM2	CO1	T1	
6.	Linux Commands	01	08/12/18		TLM1, TLM2	CO1	T1	
No. of classes required to complete UNIT-I		06	No. of classes taken:					

UNIT- II:Introduction to Shell and Shell programming

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 Shell	01	10/12/18		TLM1	CO2	T1	
2.	Shell commands	01	11/12/18		TLM1	CO2	T1	
3.	Shell programming (VI editor)	01	15/12/18		TLM1, TLM2	CO2	T1	
4.	Shell programming	01	17/12/18		TLM1, TLM2	CO2	T1	
5.	Shell programming	01	18/12/18		TLM1, TLM2	CO2	T1	
No. of classes required to complete UNIT-II		05	No. of classes taken:					

UNIT- III: Filters, regular expressions and Programming with AWK

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 Filters and commands	01	22/12/18		TLM1, TLM2	CO3	T1	
2.	Filters and their usage	01	24/12/18		TLM1, TLM2	CO3	T1	
3.	Regular expression	01	29/12/18		TLM1, TLM2	CO3	T1	
4.	Regular expression	01	31/12/18		TLM1, TLM2	CO3	T1	
5.	Introduction to	01	05/01/19		TLM1,	CO3	T1	

	AWK				TLM2			
6.	AWK scripting	01	07/01/19		TLM1, TLM2	CO3	T1	
No. of classes required to complete UNIT-III		06	No. of classes taken:					

UNIT- IV: Linux internals and networking

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.	Linux process and process attributes	01	08/01/19		TLM1	CO4	T1	
2.	Linux kernel and system calls	01	12/01/19		TLM1, TLM2	CO4	T1	
3.	System callas and signals	01	28/01/19		TLM1, TLM2	CO4	T1	
4.	Linux Memory Management	01	29/01/19		TLM1, TLM2	CO4	T1	
5.	Linux networking	01	02/02/19		TLM1, TLM2	CO4	T1	
6.	Network Transport protocols	01	04/02/19		TLM1, TLM2	CO4	T1	
7.	Network internals	01	05/02/19		TLM1, TLM2	CO4	T1	
No. of classes required to complete UNIT-IV		07	No. of classes taken:					

UNIT- V: Multi-Processing

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 multi-processing	02	09/02/19, 11/02/19		TLM1	CO5	T1	
2.	Problems with multi-processor systems	02	12/02/19, 16/02/19		TLM1, TLM2	CO5	T1	
3.	Changes to the kernel	02	18/02/19, 19/02/19		TLM1, TLM2	CO5	T1	
4.	compiling LINUX SMP	02	23/02/19, 25/02/19		TLM1, TLM2	CO5	T1	
No. of classes required to complete UNIT-V		08	No. of classes taken:					

NOTE:The rest of the class work can be tough through practical oriented.

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	26/11/2018	12/01/2019	7 W
I Mid Examinations	18/01/2019	25/01/2019	1 W
II Phase of Instructions	28/01/2019	30/03/2019	9 W
II Mid Examinations	01/04/2019	06/04/2019	1 W
Practical	08/04/2019	13/04/2019	1 W
Semester End Examinations	15/04/2019	01/05/2019	2 W

Course Instructor **Course Coordinator** **Module Coordinator** **HOD**