LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)
Accredited by NAAC with'A' Grade& NBA (Under Tier - I),
An ISO 21001:2018,14001:2015,50001:2018 Certified Institution
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs.G.V.Rajya Lakshmi
Course Name & Code : DATABASE MANAGEMENT SYSTEMS & 23CS03
L-T-P Structure : 3-0-0 **Credits:** 3
Program/Sem/Sec : B.Tech IV Sem CSE – A Section **A.Y.:** 2024-25
PREREQUISITE : Data Structures

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is to introduce database management systems and to give a good formal foundation on the relational model of data and usage of Relational Algebra. Introduce the concepts of basic SQL as a universal Database language and to demonstrate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization. Provide an overview of physical design of a database system, by discussing Database indexing techniques and storage techniques

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

CO1	Understand the foundation of database management system and various data models. (Understand- L2)
CO2	Identify relational model concepts, implement various constraints, perform SQL queries and DML operations. (Understand- L2)
CO3	Apply SQL queries, functions, and work with nested queries, grouping, joins, views, and set operations. (Apply - L3)
CO4	Apply various normalization techniques for efficient data handling. (Apply-L3)
CO5	Understand Transaction management, recovery & indexing techniques. (Understand-L2)

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

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

TEXTBOOKS:

T1 Database Management Systems, 3rd edition, Raghurama Krishnan, Johannes Gehrke, TMH (For Chapters 2, 3, 4)..

T2 Database System Concepts,5th edition, Silberschatz, Korth, Sudarsan,TMH (For Chapter 1 and Chapter 5)

REFERENCE BOOKS:

R1 Introduction to Database Systems, 8thedition, C J Date, Pearson.

R2 Database Management System, 6th edition, RamezElmasri, Shamkant B. Navathe,

Pearson

R3 Database Principles Fundamentals of Design Implementation and Management, Corlos Coronel, Steven Morris, Peter Robb, Cengage Learning.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: DBMS Introduction

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	CEOs and COs discussion, Introduction: An overview of Database Management System	1	09-12-24		1 & 2	
2.	Database System Vs File System, Database System Concepts	1	11-12-24		1 & 2	
3.	Database Users, Advantages of Database systems.	1	12-12-24		1 & 2	
4.	Database applications	1	14-12-24		1 & 2	
5.	Database Models	1	16-12-24		1 & 2	
6.	Database Schema and Instances, Data Independence	1	18-12-24		1 & 2	
7.	Three Tier Schema Architecture for data independence	1	19-12-24		1 & 2	
8.	Database System Structure	1	21-12-24		1 & 2	
9.	Database environment, components	1	23-12-24		1 & 2	
10.	Centralized and Client Server architecture for the database.	1	26-12-24		1 & 2	
11.	Examples on Real time databases	1	28-12-24		1 & 2	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Entity – Relationship model

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Introduction to ER-Model	1	30-12-24		1 & 2	
13.	Representation of entities, attributes	1	02-01-25		1 & 2	
14.	entity set, relationship, relationship set,	1	04-01-25		1 & 2	
15.	constraints, sub classes, super class, inheritance,	1	06-01-25		1 & 2	
16.	specialization, generalization using ER Diagrams.	1	08-01-25		1 & 2	
17.	Case scenarios on ER diagrams	1	09-01-25		1 & 2	
18.	Introduction to relational model, concepts of domain,	1	16-01-25		1 & 2	
19.	Attribute, tuple, relation, Examples	1	18-01-25		1 & 2	
20.	importance of null values, examples	1	20-01-25		1 & 2	
21.	constraints (Domain, Key constraints, integrity constraints) and their importance,	1	22-01-25		1 & 2	
22.	Relational Algebra	1	23-01-25		1 & 2	

23.	Relational Calculus	1	25-01-25		1 & 2	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		
I MID EXAMINATIONS (27-01-2025 TO 01-02-2025)						

UNIT-III: Introduction to SQL

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
24.	Basic SQL, Simple Database schema, data types	1	03-02-25		1 & 2	
25.	Table definitions- create, alter commands in SQL	1	05-02-25		1 & 2	
26.	Different DML operations (insert, delete, update).	1	06-01-25		1 & 2	
27.	SQL querying (select and project) using where clause, arithmetic & logical operations,	1	08-02-25		1 & 2	
28.	SQL functions (Date and Time, Numeric, String conversion).	1	10-02-25		1 & 2	
29.	Creating tables with relationship, implementation of key and integrity constraints,	1	12-02-25		1 & 2	
30.	nested queries, sub queries.	1	13-02-25		1 & 2	
31.	grouping, aggregation, ordering commands	1	15-02-25		1 & 2	
32.	implementation of different types of joins	1	17-02-25		1 & 2	
33.	view(updatable and non-updatable), relational set operations.	1	19-02-25			
No. of classes required to complete UNIT-III: 10				**No. of classes taken:**		

UNIT-IV: Schema Refinement (Normalization)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
34.	Purpose of Normalization or schema refinement	1	20-02-25		1 & 2	
35.	Concept of functional dependency	1	22-02-25		1 & 2	
36.	FD closure and Attribute closure	1	24-02-25		1 & 2	
37.	First Normal form, Second Normal Form	1	27-02-25		1 & 2	
38.	Third Normal Form – Transitive dependency	1	01-03-25		1 & 2	
39.	Boyce-Codd normal form (BCNF) – properties	1	03-03-25		1 & 2	
40.	Examples on 1NF,2NF,3NF & BCNF	1	05-03-25		1 & 2	
41.	Lossless join and dependency preserving decomposition,	1	06-03-25		1 & 2	
42.	MVD, Fourth normal form(4NF),	1	08-03-25		1 & 2	
43.	Fifth Normal Form (5NF).	1	10-03-25		1 & 2	

44.	Examples on finding normal forms on given tables.	1	12-03-25		1 & 2	
45.	Tutorial on all normal forms.	1	15-03-25			
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Transaction Processing, Concurrency Control & Introduction to Indexing

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
46.	Introduction to Transaction, Transaction State diagram, ACID properties	1	17-03-25		1 & 2	
47.	Concurrent Executions, Serializability	1	19-03-25		1 & 2	
48.	Recoverability, Implementation of Isolation	1	20-03-25		1 & 2	
49.	Testing for Serializability – view & conflict serializability	1	22-03-25		1 & 2	
50.	Two-Phase Locking Techniques for concurrency control:	1	24-03-25		1 & 2	
51.	Types of Locks, Time stamp-based locking.	1	26-03-25		1 & 2	
52.	Introduction to Recovery Protocols, Recovery Concepts	1	27-03-25		1 & 2	
53.	No-UNDO/REDO Recovery Based on Deferred Update	1	29-03-25		1 & 2	
54.	Recovery Techniques Based on Immediate Update, Shadow Paging,	1	31-03-25		1 & 2	
55.	ARIES – algorithm	1	02-04-25		1 & 2	
56.	Hash based Indexing	1	03-04-25			
57.	Revision on all concepts	1	05-04-25			
No. of classes required to complete UNIT-V: 12				**No. of classes taken:**		

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

Content Beyond Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	NoSQL databases	1	05-04-25					
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS 07-04-2025 TO 12-04-2025)								

PART-C

EVALUATION PROCESS (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mrs.G.V.RajyaLakshmi**	**Dr.P.Bhagath**		**Dr. D. Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : G.V.Rajya Lakshmi
Course Name & Code : DataBase Management Systems Lab (23CS56)
L-T-P Structure : 0-0-3 Credits: 1.5
Program/Sem/Sec : B.Tech., CSE., IV-Sem., Sec-A A.Y : 2024-25

PRE-REQUISITE : Programming language, Discrete Mathematical Structures and Data Structures.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This Course will enable students to populate and query a database using SQL DDL/DML Commands. Declare and enforce integrity constraints on a database and writing Queries using advanced concepts of SQL. To program PL/SQL including procedures, functions, cursors and triggers.

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

CO 1	Implement SQL queries using DDL/DML commands**.(Apply-L3)**
CO 2	Apply different Integrity constraints & Normalization techniques for effective database design. **.(Apply-L3)**
CO 3	Implement PL/SQL including procedures, functions, cursors and triggers. **.(Apply-L3)**
CO 4	Improve individual / teamwork skills, communication & report writing skills with ethical values.

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	Create, alter, insert rows and Dropping of table	3	10-12-24		TLM4	
2	Select queries with various constraints	3	17-12-24		TLM4	
3	sub queries with operations	3	24-12-24		TLM4	
4	Queries using Aggregate functions	3	31-12-24		TLM4	

5	Queries using Conversion functions - date-time	3	07-01-25		TLM4	
6	Queries using Conversion functions – strings	3	21-01-25		TLM4	
7	Simple PL/SQL program	3	28-01-25		TLM4	
8	Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.	3	04-02-25		TLM4	
9	Programs include NESTED IF, CASE	3	11-02-25		TLM4	
10	Programs using WHILE & FOR loops	3	18-02-25		TLM4	
11	creation of procedures – IN & OUT parameters	3	25-02-25		TLM4	
12	Stored functions in PL/SQL	3	04-03-25		TLM4	
13	Programs using CURSORS	3	11-03-25		TLM4	
14	Programs using TRIGGERS	3	18-03-25		TLM4	
15	Search operations using Index and Non-Index, Design database for Case study	3	25-03-25		TLM4	
16	Internal Exam	3	01-04-25			

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

PART-C

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**G.V.Rajya Lakshmi**	**Dr.P.Bhagath**		**Dr.D.Veeraiah**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT
Part-A

PROGRAM : II B. Tech., IV-Sem., CSE-A
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : **Environmental Science**
L-T-P STRUCTURE : 2-0-0
COURSE CREDITS 0
COURSE INSTRUCTOR : Dr. V. Bhagya Lakshmi
COURSE COORDINATOR : Dr. Shaheda Niloufer
PRE-REQUISITES : biology, chemistry, geology, mathematics or physics

Course Objectives:

1	To enlighten the learners in the concept of differential equations and multivariable calculus
2	To furnish the learners with basic concepts and techniques at intermediate level to lead them into advanced level by handling various real-world applications.

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

CO 1	The necessity of resources, their exploitation and sustainable management	L2
CO 2	The interactions of human and ecosystems and their role in the food web in the natural world and the global biodiversity, threats to biodiversity and its conservation.	L2
CO 3	Environmental problems like pollution, disasters and possible solutions.	L1
CO 4	The importance of environmental decision making in organizations through understanding the environmental law and environmental audits.	L2
CO 5	Environmental issues like over population, human health etc related to local, regional and global levels.	L2

Course Articulation Matrix - Correlation between COs, POs & PSOs

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

Correlation Levels: **1**-Slight (Low), **2**-Moderate (Medium), **3**-Substantial (High) and No correlation: **'-'**

Textbooks (T) and References (R):

T1: Erach Bharucha,Text book of Environmental Studies for Undergraduate Courses,Universities Press (India) Private Limited, 2019.

T2: Palaniswamy, Environmental Studies, 2/e, Pearson education, 2014.

T3: S.Azeem Unnisa, Environmental Studies, Academic Publishing Company, 2021.

T4: K.Raghavan Nambiar, "Text book of Environmental Studies for Undergraduate Courses as per UGC model syllabus", SciTech Publications (India), Pvt. Ltd, 2010.

R1. KVSG Murali Krishna, The Book of Environmental Studies, 2/e, VGS Publishers, 2011.

R2. Deeksha Dave and E.Sai Baba Reddy, Textbook of Environmental Science, 2/e, Cengage Publications, 2012.

R3. M.Anji Reddy, "Textbook of Environmental Sciences and Technology", BS Publication, 2014.

R4. J.P. Sharma, Comprehensive Environmental studies, Laxmi publications, 2006.

R5. J. Glynn Henry and Gary W. Heinke, Environmental Sciences and Engineering, Prentice Hall of India Private limited, 1988.

R6. G.R. Chatwal, A Text Book of Environmental Studies, Himalaya Publishing House, 2018.

R7. Gilbert M. Masters and Wendell P. Ela, Introduction to Environmental Engineering and Science, 1/e, Prentice Hall of India Private limited, 1991.

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
1.	Introduction to the course	1	10-12-2024		TLM2			
2.	Multidisciplinary Nature of Environmental Studies	1	13-12-2024		TLM2			

UNIT-I: Multidisciplinary Nature of Environmental Studies

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
3.	Natural Resources – Forest resources	1	17-12-2024		TLM1	CO1	T1,T2	
4.	Water resources	1	20-12-2024		TLM1	CO1	T1,T2	
5.	Mineral resources & Food resources	1	24-12-2024		TLM1	CO1	T1,T2	
6.	Energy resources	1	27-12-2024		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		06			No. of classes taken:			

UNIT-II: Ecosystem & Biodiversity

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
7.	Ecosystems – Structure & Functions	1	31-12-2024		TLM1	CO1	T1,T2	
8.	Ecological succession & Food chains, Food webs & Ecological Pyramids	1	03-01-2025		TLM1	CO1	T1,T2	
9.	Types of ecosystems	1	07-01-2025		TLM1	CO1	T1,T2	

10.	Biodiversity – introduction, levels, biogeographic classification,	1	10-01-2025		TLM1	CO1	T1,T2	
11.	Values of Biodiversity, India as mega diversity nation		17-01-2025					
12.	Threats to biodiversity & Conservation of biodiversity		21-01-2025					
13.	Revision	1	24-01-2025		TLM1	CO1	T1,T2	
14.	I MID	1	28-01-2025					
15.	I MID	1	31-01-2025					
No. of classes required to complete UNIT-II		06			No. of classes taken:			

I MID EXAMINATIONS (27-01-2025 TO 01-02-2025)

UNIT-III: Environmental pollution

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
16.	Environmental pollution -Air pollution	1	04-02-2025		TLM1	CO2	T1,T2	
17.	Water pollution, Marine pollution, Thermal pollution	1	07-02-2025		TLM1	CO2	T1,T2	
18.	Soil pollution	1	11-02-2025		TLM1	CO2	T1,T2	
19.	Noise pollution & Nuclear Hazards	1	14-02-2025		TLM1	CO2	T1,T2	
20.	Solid waste management.	1	18-02-2025		TLM1	CO2	T1,T2	
21.	Disaster Management	1	21-02-2025					
No. of classes required to complete UNIT-III		06			No. of classes taken:			

UNIT-IV: Social issues & Environment

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
22.	From Unsustainable to Sustainable development	1	25-02-2025		TLM1	CO3	T1,T2	
23.	Urban problems related to energy – Resettlement and rehabilitation of people; its problems and concerns	1	28-02-2025		TLM1	CO3	T1,T2	
24.	Environmental ethics, Climate change	1	04-03-2025		TLM1	CO3	T1,T2	

25.	Carbon credits & Mission LiFE - Wasteland reclamation. – Consumerism and waste products	1	07-03-2025		TLM1	CO3	T1,T2	
26.	Environmental Acts	1	11-03-2025		TLM1	CO3	T1,T2	
27.			14-03-2025					
No. of classes required to complete UNIT-IV		05			No. of classes taken:			

UNIT-V: Human population & Environment

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
28.	Population growth, variation among nations. Population explosion – Family Welfare Programmes.	1	18-03-2025		TLM1	CO4	T1,T2	
29.	Environment and human health –Human Rights – Value Education	1	21-03-2025		TLM1	CO4	T1,T2	
30.	HIV/AIDS – Women and Child Welfare	1	25-03-2025		TLM1	CO4	T1,T2	
31.	Role of information Technology in Environment and human health	1	28-03-2025		TLM1	CO4	T1,T2	
32.	Revision	1	01-04-2025		TLM1	CO4	T1,T2	
33.	Revision	1	04-04-2025		TLM1	CO4	T1,T2	
34.	II MID	1	08-04-2025					
35.	II MID	1	11-04-2025					
No. of classes required to complete UNIT-V		06			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
36.	Case studies	2	03-02-2025 11-03-2025		TLM2	CO2	T1,T2	
No. of classes		2			No. of classes taken:			
II MID EXAMINATIONS (07-04-2025 TO 12-04-2025)								

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

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

PART-C EVALUATION PROCESS (R23 Regulation):

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

PART-D PROGRAMME OUTCOMES (POs):

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

Dr. V. Bhagya Lakshmi	Dr. Shaheda Niloufer	**Dr. Shaheda Niloufer**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. A. Sudhakar
Course Name & Code : Full Stack Development-I & 23CSS2
L-T-P Structure : 0-1-2 **Credits:** 2
Program/Sem/Sec : B.Tech. - CSE/IV/A **A.Y.:** 2024-25

PREREQUISITE: Knowledge of basic Computer hardware & software.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objectives of the course are to
- Make use of HTML elements and their attributes for designing static web pages
- Build a web page by applying appropriate CSS styles to HTML elements
- Experiment with JavaScript to develop dynamic web pages and validate forms.

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

CO1	Design static web pages by using HTML elements. (Apply-L3)
CO2	Develop a web page by applying appropriate CSS styles to HTML elements. (Apply-L3)
CO3	Develop dynamic web pages and validate forms using JavaScript. (Apply-L3)
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values

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

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

REFERENCE BOOKS:

R1	Programming the World Wide Web, 7th Edition, Robet W Sebesta, Pearson, 2013.
R2	Web Programming with HTML5, CSS and JavaScript, John Dean, Jones & Bartlett Learning, 2019 (Chapters 1-11).
R3	Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node, Vasan Subramanian, 2nd edition, A Press, O'Reilly.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Lab Cycle-1**: Lists, Links and Images	4	13-12-2024 & 14-12-2024		**DM5**	
2.	**Lab Cycle-1:** Lists, Links and Images	4	20-12-2024 & 21-12-2024		**DM5**	
3.	**Lab Cycle-2**: HTML Tables, Forms and Frames	4	27-12-2024 & 28-12-2024		**DM5**	
4.	**Lab Cycle-2**: HTML Tables, Forms and Frames	4	03-01-2025 & 04-01-2025		**DM5**	
5.	**Lab Cycle-3**: HTML 5 and Cascading Style Sheets, Types of CSS	4	10-01-2025 & 11-01-2025		**DM5**	
6.	**Lab Cycle-3**: HTML 5 and Cascading Style Sheets, Types of CSS	4	24-01-2025 & 25-01-2025		**DM5**	
7.	**Lab Cycle-4:** Selector forms	4	07-02-2025 & 08-02-2025		**DM5**	
8.	**Lab Cycle-4:** Selector forms	4	14-02-2025 & 15-02-2025		**DM5**	
9.	**Lab Cycle-5**: CSS with Color, Background, Font, Text and CSS Box Model	4	21-02-2025 & 22-02-2025		**DM5**	
10.	**Lab Cycle-6:** Applying JavaScript - internal and external, I/O, Type Conversion	4	28-02-2025 & 01-03-2025		**DM5**	
11.	**Lab Cycle-6:** Applying JavaScript - internal and external, I/O, Type Conversion	4	07-03-2025 & 08-03-2025		**DM5**	
12.	**Lab Cycle-7:** Java Script Pre-defined and User-defined Objects	4	15-03-2025 & 21-03-2025		**DM5**	
13.	**Lab Cycle-8:** Java Script Conditional Statements and Loops	4	22-03-2025 & 28-03-2025		**DM5**	
14.	**Lab Cycle-9:** Java Script Functions and Events	4	29-03-2025 & 04-04-2025		**DM5**	

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

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Day to Day Work:	15
Internal Test	15
Continuous Internal Assessment	30
Procedure	20
Execution & Results	30
Viva-voce	20
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	**100**

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. A. Sudhakar	Mr. A. Sudhakar	Dr. Y. V. B. Reddy	Dr. D. Veeraiah
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.U. RAMBABU

Course Name & Code : Managerial Economics and Financial Analysis & 23HS02
L-T-P Structure : **2-0-0** **Credits:** 2
Program/Sem/Sec : B.Tech/CSE/IV /A **A.Y.:** 2024-25

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES(CEO):

- To inculcate the basic knowledge of microeconomics and financial accounting
- To make the students learn how demand is estimated for different products, input output relationship for optimizing production and cost
- To Know the Various types of market structure and pricing methods and strategy
- To give an overview of investment appraisal methods to promote the students to learn how to plan long-term investment decisions.
- To provide fundamental skills on accounting and to explain the process of preparing financial statements

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

CO1	Define the concepts related to Managerial Economics, Financial Accounting and Management. **(Understand-L2)**
CO2	Understand the fundament also Economics viz., Demand, Production, cost, revenue and markets. **(Understand-L2)**
CO3	Apply the Concept of Production cost and revenues for effective Business decision **(Apply-L3)**
CO4	Evaluate the capital budgeting techniques **(Analyze-L4)**
CO5	Develop accounting statements and evaluate the financial performance of business entity. **(Analyze-L4)**

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

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

Textbooks:

1. Varshney & Maheswari: Managerial Economics, Sultan Chand.
2. Aryasri: Business Economics and Financial Analysis, 4/e, MGH.

Reference Books:

1. Ahuja Hl Managerial economics Schand.
2. S.A. Siddiqui and A.S. Siddiqui: Managerial Economics and Financial Analysis, New Age International.
3. Joseph G. Nellis and David Parker: Principles of Business Economics, Pearson, 2/e, New Delhi.
4. Domnick Salvatore: Managerial Economics in a Global Economy, Cengage.

Online Learning Resources:

https://www.slideshare.net/123ps/managerial-economics-ppt
https://www.slideshare.net/rossanz/production-and-cost-45827016
https://www.slideshare.net/darkyla/business-organizations-19917607
https://www.slideshare.net/balarajbl/market-and-classification-of-market
https://www.slideshare.net/ruchi101/capital-budgeting-ppt-59565396
https://www.slideshare.net/ashu1983/financial-accounting

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):SEC-A

UNIT-I: Introduction to Managerial Economics:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction and Discussion of CO's	1	09-12-2024		TLM1	
2.	Economics-Managerial Economics	1	12-12-2024		TLM1	
3.	Nature and Scope.	1	13-12-2024		TLM1	
4.	Demand	1	16-12-2024		TLM1	
5.	Law of demand-	2	19-12-2024		TLM1	
6.	Elasticity of demand	1	20-12-2024		TLM1	
7.	Types of Elasticity of demand	2	23-12-2024 26-12-2024		TLM1	
8.	Demand Forecasting -Methods.	2	27-12-2024 30-12-2024		TLM1	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Theory of Production and Cost analysis:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Production Function	2	02-01-2024 03-01-2024		TLM1	
10.	Isoquant and Isocost	1	06-01-2024		TLM1	
11.	Least Cost Combination of inputs	1	09-01-2024		TLM1	
12.	Law of Returns	2	10-01-2024		TLM1	
13.	Internal and External Economies of Scale.	2	13-01-2024 16-01-2024		TLM1	
14.	Cost Concepts	2	17-01-2024 20-1-2024		TLM1	
15.	Break-even Analysis	2	23-01-2024 24-01-2024		TLM1	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		
I MID EXAMINATIONS (27-01-2024 TO 01-02-2024)						

UNIT-III: Markets & Pricing Policies

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
16.	Market structures: Markets-Types of markets	1	03-02-2024		TLM1	
17.	Features	2	06-02-2024 07-02-2024		TLM1	
18.	price out determinations under Perfect competition	1	10-02-2024		TLM1	
19.	Monopoly, Monopolistic Competition	2	13-02-2024 14-02-2024		TLM1	
20.	Pricing –Pricing polices & its Objectives	1	17-02-2024		TLM1	
21.	Pricing Methods and its applications in business.	1	20-02-2024		TLM1	
No. of classes required to complete UNIT-III: 8				**No. of classes taken:**		

UNIT-IV: Unit -IV Capital and Capital Budgeting:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Nature and its significance,	1	21-02-2024		TLM1	
23.	Types of Capital	1	24-02-2024		TLM1	
24.	Sources of raising capital	1	27-02-2024		TLM1	
25.	Capital budgeting-Significance & Process	1	28-02-2024		TLM1	
26.	Techniques of Capital Budgeting (Non-Discounted)	2	03-03-2024 06-03-2024		TLM1	
27.	Techniques of Capital Budgeting (Discounted)	3	07-03-2024 10-03-2024 13-03-2024		TLM1	
No. of classes required to complete UNIT-IV: 9				**No. of classes taken:**		

UNIT-V: Financial Accounting and analysis:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
28.	Accounting –significance -	2	14-03-2024 17-03-2024		TLM1	
29.	Bookkeeping-Double entry system	1	20-03-2024		TLM1	
30.	Journal	1	21-03-2024		TLM1	
31.	Ledger	1	24-03-2024		TLM1	
32.	Trial Balance	1	27-03-2024		TLM1	
33.	Final Accounts with simple adjustments	1	28-03-2024		TLM1	
34.	Financial Statement Analysis through ratios.	2	31-03-2024 03-04-2024		TLM1	
No. of classes required to complete UNIT-V: 9				**No. of classes taken:**		

Content Beyond Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	Stock Market Essentials: Knowledge for Tomorrow's Leaders	1	18-04-2024	04-04-2024	TLM2			
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (07-04-2024 TO 12-04-2024)								

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
PSO 2	The ability to design and develop computer programs in networking, web applications andIoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr.U. RAMBABU**	**Dr. A. ADISESHA REDDY**	**Dr. A. ADISESHA REDDY**	**Dr. D.Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.D.Venkata Subbaiah
Course Name & Code :OPERATING SYSTEMS Lab & 20CS55
L-T-P Structure :0-0-3 **Credits:1.5**
Program/Sem/Sec : B.Tech. - CSE/IV/A **A.Y.:**2024-25

PREREQUISITE: Knowledge of basic Computer hardware & software.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objectives of the course are to

- Provide insights into system calls, file systems, semaphores,
- Develop and debug CPU Scheduling algorithms, page replacement algorithms, thread implementation
- Implement Bankers Algorithms to Avoid the Dead Lock
- acquire the generic software development skill through various stages of software life cycle
- generate test cases for software testing

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

CO1	Implement and evaluate fundamental operating system concepts through programming exercises, including UNIX commands, system calls, and simulations of CPU scheduling algorithms. (L3)
CO2	Analyze synchronization mechanisms (semaphores and monitors) and memory allocation algorithms (first-fit, worst-fit, best-fit) through writing concurrent programs using the pthreads library. (L4)
CO3	Apply operating system concepts of memory management, deadlock avoidance, and file allocation strategies through simulations and experimentation with a real operating system (Nachos). (L3)
CO4	Improve individual/ Teamwork skills, communication and report writing skills with ethical values.

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

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

REFERENCE BOOKS:

1. Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10th Edition, Wiley, 2018.
2. Modern Operating Systems, Tanenbaum A S, 4th Edition, Pearson, 2016
3. Operating Systems -Internals and Design Principles, Stallings W, 9th edition, Pearson, 2018
4. Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3rd Edition, McGrawHill, 2013

Online Learning Resources:
1. https://www.cse.iitb.ac.in/~mythili/os/
2. http://peterindia.net/OperatingSystems.html
3. www.cs.washington.edu/~tom/nachos

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Basic Unix Commands	3	11-12-24		**DM5**	
2.	Lab Cycle-1	3	18-12-24		**DM5**	
3.	Lab Cycle -2	3	08-01-25		**DM5**	
4.	Lab Cycle-3	3	22-01-25		**DM5**	
5.	Lab Cycle-4	3	05-02-25		**DM5**	
6.	Lab Cycle-5	3	12-02-25		**DM5**	
7.	Lab Cycle-6	3	19-02-25		**DM5**	
8.	Lab Cycle-7	3	05-03-25		**DM5**	
9.	Lab Cycle-8	3	12-03-25		**DM5**	
10.	Lab Cycle9	3	19-03-25		**DM5**	
11.	Lab Cycle10	3	26-03-25		**DM5**	
12.	Internal Lab Exam	3	02-04-25		**DM5**	

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

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	**Marks**
Day-to-day work	A1 = 05
Record	A2 = 05
Internal test	A3 = 05
CIE Total: (A1+A2+A3)	**M1 = 15**
Procedure/Algorithm	B1 = 5
Experimentation/Program execution	B2 = 10
Observations/Calculations/Validation	B3 = 10
Result/Inference	B4 = 5
Viva voce	B5 = 5
SEE Total: (B1+B2+B3+B4+B5)	**M2 = 35**
Total Marks = CIE + SEE = (M1+M2)	**50**

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.D.Venkata Subbaiah
Course Name & Code : Operating Systems -23CS06
L-T-P Structure : **3-1-0** **Credits:** 3
Program/Sem/Sec : II B.tech/IV-sem/A-Sec **A.Y.:** 2024-25

PREREQUISITE: Knowledge of Computer fundamentals & Data structures & algorithms

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of the course is to make student:

- Understand the basic concepts and principles of operating systems, including process management, memory management, file systems, and Protection
- Make use of process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.
- Illustrate different conditions for deadlock and their possible solutions.

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

CO1	Understand the fundamental concepts, functions, and structures of operating systems, including their design, implementation, and the various types of system calls and services. (Understand-L2)
CO2	Understand process concepts, multithreading models, and CPU scheduling algorithms to effectively manage operations on processes, inter-process communication, and threading issues in operating systems. (Understand-L2)
CO3	Analyze synchronization tools, deadlock-handling methods to solve critical section problems and ensure efficient process synchronization in operating systems. (Apply-L3)
CO4	Analyze different memory management techniques paging and segmentation to understand their suitability for various memory allocation scenarios. (Apply-L3)
CO5	Apply knowledge of file system structures and protection mechanisms to design and implement secure file management systems. (Apply-L3)

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

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

TEXT BOOKS:

1. Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10th Edition, Wiley, 2018.
2. Modern Operating Systems, Tanenbaum A S, 4 th Edition, Pearson , 2016

Reference Books:

1. Operating Systems -Internals and Design Principles, Stallings W, 9 th edition, Pearson, 2018
2. Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3rd Edition, McGrawHill, 2013

Online Learning Resources:

1. https://nptel.ac.in/courses/106/106/106106144/
2. http://peterindia.net/OperatingSystems.html

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Operating Systems

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Operating systems	1	09-12-2024		TLM2	
2.	operating system functions, operating systems operations	1	09-12-2024		TLM2	
3.	Computing environments	1	11-12-2024		TLM2	
4.	Free and Open-Source Operating Systems	1	16-12-2024		TLM2	
5.	System Structures: Operating System Services	1	16-12-2024		TLM2	
6.	System programs, System calls	1	18-12-2024		TLM2	
7.	Types of System Calls, system programs	1	21-12-2024		TLM2	
8.	operating system Design and Implementation	1	23-12-2024			
9.	Building and Booting an Operating System	1	23-12-2024		TLM2	
10.	Operating system debugging	1	28-12-2024		TLM2	
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II: Process Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	Processes: Process Concept,	1	30-12-2024		TLM2	
12.	Process scheduling	2	30-12-2024 & 04-1-2025		TLM2	
13.	Operations on processes	1	06-1-2025		TLM2	

14.	Inter-process communication systems	1	06-1-2025		TLM2	
15.	Threads and Concurrency: Multithreading models	2	08-1-2025 & 11-1-2025		TLM2	
16.	Thread libraries and Thread issues	1	18-1-2025		TLM2	
17.	CPU Scheduling: Basic concepts	1	20-1-2025		TLM2	
18.	Scheduling Criteria	1	20-1-2025		TLM2	
19.	Scheduling algorithms	1	22-1-2025		TLM2	
20.	Multiple processor scheduling	1	25-1-2025		TLM2	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

UNIT-III: Synchronization Tools

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
21.	Synchronization Tools: The Critical section problem, Peterson's solutions	1	03-02-2025		TLM1	
22.	Mutex Locks	1	03-02-2025		TLM1	
23.	Semaphores	1	05-02-2025		TLM1	
24.	Monitors	1	08-02-2025		TLM1	
25.	Classic problems of Synchronization	1	10-02-2025		TLM1	
26.	Synchronization examples	1	10-02-2025		TLM1	
27.	Deadlocks: System model and deadlock characterization	1	12-02-2025		TLM1	
28.	Methods for Handling deadlocks and deadlock prevention	1	15-02-2025		TLM1	
29.	Deadlock Avoidance	1	17-02-2025		TLM1	
30.	Deadlock detection	1	17-02-2025		TLM1	
31.	Recovery from deadlock	1	19-02-2025		TLM1	
No. of classes required to complete UNIT-III: 11						

UNIT-IV: Memory management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Memory-Management Strategies: Introduction	1	22-02-2025		TLM1	
33.	Contiguous Memory Allocation	1	24-02-2025		TLM1	
34.	Paging and structure of a page table	1	24-02-2025		TLM1	

35.	Swapping	1	01-03-2025		TLM1	
36.	Virtual Memory Management: Introduction, Demand paging and Copy-on-write	1	03-03-2025		TLM1	
37.	Page replacement	1	03-3-2025		TLM1	
38.	Allocation of frames	1	05-3-2025		TLM1	
39.	Thrashing	1	10-3-2025		TLM1	
40.	Storage Management: Overview of Mass Storage Structure	1	10-3-2025		TLM1	
41.	HDD Scheduling	1	12-3-2025		TLM1	
No. of classes required to complete UNIT-IV: 10				**No. of classes taken:**		

UNIT-V: File System Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42.	File System: File System Interface: File concept, Access methods and Directory Structure	1	15-3-2025		TLM2	
43.	File system Implementation: File-system structure	1	17-3-2025		TLM2	
44.	File-system Operations	1	17-3-2025		TLM2	
45.	Allocation method, Free space management	1	19-3-2025		TLM2	
46.	File-System Internals: File-System Mounting	1	22-3-2025		TLM2	
47.	Partitions and Mounting and File Sharing	1	24-3-2025		TLM2	
48.	Protection: Goals of protection	1	24-3-2025		TLM2	
49.	Principles of protection	1	26-3-2025		TLM2	
50.	Protection Rings	1	29-3-2025		TLM2	
51.	Domain of protection and Access matrix	1	02-4-2025		TLM2	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R19 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
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PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : II B. Tech., II-Sem., CSE A
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : PROBABILITY & STATISTICS
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS 3
COURSE INSTRUCTOR : Dr. K. Jhansi Rani
COURSE COORDINATOR : Dr. M. Rami Reddy
PRE-REQUISITES : Basics ofmathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To familiarize the students with the foundations of probability and statistical methods
- To impart probability concepts and statistical methods in various applications Engineering

COURSE OUTCOMES (COs): Upon successful completion of this course, the student should be able to

CO1: Classify the concepts of data science and its importance (L2)
CO2: Interpret the association of characteristics and through correlation and regression tools (L3)
CO3: Apply discrete and continuous probability distributions (L3)
CO4: Design the components of a classical hypothesis test (L4)
CO5: Infer the statistical inferential methods based on small and large sampling tests (L4)

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

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

1. **Miller and Freund's,** Probability and Statistics for Engineers,7/e, Pearson, 2008.
2. S. **C. Gupta and V.K. Kapoor,** Fundamentals of Mathematical Statistics, 11/e, Sultan Chand & Sons Publications, 2012.

BOS APPROVED REFERENCE ROOKS:

1. **Shron L. Myers, Keying Ye, Ronald E Walpole,** Probability and Statistics for Engineers and the Scientists, 8th Edition. Pearson 2007.
2. **Jay 1. Devore,** Probability and Statistics for Engineering and the Sciences, 8th Edition, Cengage.
3. **Sheldon M. Ross,** Introduction to probability and statistics Engineers and the Scientists, 4th Edition, Academic Foundation, 2011.
4. **Johannes Ledolter and Robert V. Hogg,** Applied statistics for Engineers and Physical Scientists, 3rd Edition, Pearson, 2010.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Descriptive statistics and methods for data science

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 class	1	9/12/2024		TLM1	CO1	T1,T2	
2.	Syllabus Co's, PO's	1	10/12/2024		TLM1	CO1	T1,T2	
3.	Unit-1, Introduction to data science	1	11/12/2024		TLM3	CO1	T1,T2	
4.	Statistics- Population and sample, Collection of data,	1	13/12/2024		TLM1	CO1	T1,T2	
5.	Types of variables	1	16/12/2024		TLM1	CO1	T1,T2	
6.	Data visualization	1	17/12/2024		TLM1	CO1	T1,T2	
7.	Measures of central tendency, A.M	1	18/12/2024		TLM1	CO1	T1,T2	
8.	Median, mode problems	1	20/12/2024		TLM3	CO1	T1,T2	
9.	Measures of variability Range, Mean deviation	1	23/12/2024		TLM1	CO1	T1,T2	
10.	S.D. & Q D	1	24/12/2024		TLM1	CO1	T1,T2	
11.	Skewness	1	27/12/2024		TLM1	CO1	T1,T2	
12.	Kurtosis	1	30/12/2024		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		12			No. of classes taken:			

UNIT-II: Correlation and Regression

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.	Correlation, types	1	31/12/2024		TLM1	CO2	T1,T2	
14.	Coefficient of correlation	1	03/01/2025		TLM1	CO2	T1,T2	
15.	Rnak correlation	1	06/01/2025		TLM3	CO2	T1,T2	
16.	Linear regression (lines)	1	07/01/2025		TLM1	CO2	T1,T2	
17.	Problems	1	08/01/2025		TLM1	CO2	T1,T2	
18.	Multiple regression	1	10/01/2025		TLM1	CO2	T1,T2	
19.	Regression coefficients	1	17/01/2025		TLM1	CO2	T1,T2	
20.	Properties, problems	1	20/01/2025		TLM1	CO2	T1,T2	
21.	Fitting of parabola	1	21/01/2025		TLM1	CO2	T1,T2	
22.	Exponential curve	1	22/01/2025		TLM3	CO2	T1,T2	
23.	Fitting of power curve	1	24/01/2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		11			No. of classes taken:			

I MID EXAMINATIONS (26-01-2025 TO 01-02-2025)

UNIT-III: Probability and Distributions

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

24.	Probability, Introduction	1	03/02/2025		TLM1	CO3	T1,T2	
25.	Conditional probability	1	04/02/2025		TLM1	CO3	T1,T2	
26.	Bayes theorem	1	05/02/2025		TLM3	CO3	T1,T2	
27.	Problems	1	07/02/2025		TLM1	CO3	T1,T2	
28.	Random variables, Distribution function	1	10/02/2025		TLM1	CO3	T1,T2	
29.	Probability mass function	1	11/02/2025		TLM1	CO3	T1,T2	
30.	Probability density function	1	12/02/2025		TLM1	CO3	T1,T2	
31.	Mathematical expectation, variance	1	14/02/2025		TLM3	CO3	T1,T2	
32.	Binomial distribution	1	17/02/2025		TLM1	CO3	T1,T2	
33.	Poisson distribution	1	18/02/2025		TLM1	CO3	T1,T2	
34.	problems	1	19/02/2025		TLM1	CO3	T1,T2	
35.	Normal distribution	1	21/02/2025		TLM3	CO3	T1,T2	
36.	Problems	1	24/02/2025		TLM1	CO3	T1,T2	
37.	Uniform distribution	1	25/02/2025					
No. of classes required to complete UNIT-III		14			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
38.	Introduction: population & sample Sampling distribution	1	28/02/2025		TLM1	CO4	T1,T2	
39.	Sampling distribution of means & variance	1	03/03/2025		TLM1	CO4	T1,T2	
40.	problems	1	04/03/2025		TLM1	CO4	T1,T2	
41.	Central limit theorem	1	05/03/2025		TLM3	CO4	T1,T2	
42.	Estimation- point & interval, maximum error	1	07/03/2025		TLM1	CO4	T1,T2	
43.	Estimation using t-distribution	1	10/03/2025		TLM1	CO4	T1,T2	
44.	problems	1	11/03/2025		TLM3	CO4	T1,T2	
45.	Estimation using F-distribution	1	12/03/2025		TLM1	CO4	T1,T2	
46.	Estimation using χ^2 −distribution	1	17/03/2025		TLM1	CO4	T1,T2	
No. of classes required to complete UNIT-IV		9			No. of classes taken:			

UNIT-V: Multiple Integrals (Multi variable Calculus)

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.	Hypothesis: introduction, Definitions	1	18/03/2025		TLM1	CO5	T1,T2	
48.	Z-test for single mean	1	19/03/2025		TLM1	CO5	T1,T2	
49.	Z-test for diff. of mean	1	21/03/2025		TLM3	CO5	T1,T2	

50.	Z-test for single proportion	1	24/03/2025		TLM1	CO5	T1,T2	
51.	Z-test for difference of proportion	1	25/03/2025		TLM1	CO5	T1,T2	
52.	t-test for single mean	1	26/03/2025		TLM1	CO5	T1,T2	
53.	t-test for diff. means,	1	28/03/2025		TLM1	CO5	T1,T2	
54.	F-test for variances	1	01/04/2025		TLM1	CO5	T1,T2	
55.	χ^2 −test for goodness of fit	1	02/04/2025		TLM1	CO5	T1,T2	
56.	χ^2 −test for independence	1	04/04/2025		TLM1	CO5	T1,T2	
No. of classes required to complete UNIT-V		10			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
57.	Paired t-test	1	28/03/2025		TLM1	CO5	T1,T2	
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (16-12-2024 TO 21-12-2024)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

	provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dr. K. Jhansi Rani	**Dr. M. RAMI REDDY**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. T. VINEETHA
Course Name & Code : SOFTWARE ENGINEERING & 23IT02
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/IV SEM /A **A.Y.:** 2024-25
Regulations : R23

PREREQUISITE: Object Oriented Programming

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- The objective of the course is to provide an understanding of different s/w process models and how to choose one among them by gathering the requirements from a client and specifying them.
- Using those requirements in the design of the software architecture based on the choices with the help of modules and interfaces.
- To enable s/w development, by using different testing techniques like unit, integration and functional testing, quality assurance can be achieved.

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

CO1	Understanding the Evolution in Software Development and Implementation of Modern Software Development Practices **(Understand - L2)**
CO2	Understand Software Project Management and Requirements Analysis Techniques. **(Understand - L2)**
CO3	Demonstrate Effective Software Design and Agile Practices. **(Apply - L3)**
CO4	Apply Coding, Testing, and Quality Management Practices.**(Apply - L3)**
CO5	Apply the usage of CASE tools, Software Maintenance process and Software Reuse. **(Apply - L3)**

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

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

TEXTBOOKS:

T1	Fundamentals of Software Engineering, Rajib Mall, 5th Edition
T2	Software Engineering A practitioner's Approach, Roger S. Pressman, 9th Edition, Mc-Graw Hill International Edition

REFERENCE BOOKS:

R1	Software Engineering, Ian Sommerville, 10thEdition, Pearson
R2	Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
R3	https://nptel.ac.in/courses/106/105/106105182/
R4	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012605895063871 48827_shared/overview
R5	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013382690411003 904735_shared/overview

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction & Software Life Cycle Models

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Software Engineering & Evolving role of Software	2	9/12/24 10/12/24		TLM1, 2	
2.	Software Development projects	1	12/12/24		TLM1, 2	
3.	Exploratory style of software developments	1	16/12/24		TLM1, 2	
4.	Emergence of software engineering	1	17/12/24		TLM1, 2	
5.	Notable changes in software development practices	1	19/12/24		TLM1, 2	
6.	Computer system engineering.	1	21/12/24		TLM1, 2	
7.	Software Life Cycle Models. Basic concepts	1	23/12/24		TLM1, 2	
8.	Waterfall model and its extensions.	1	24/12/24		TLM1, 2	
9.	Rapid application development	1	26/12/24		TLM1, 2	
10.	Agile development model.	1	28/30/12		TLM1, 2	
11.	Spiral Model.	1	30/12/24		TLM1, 2	
No. of classes required to complete UNIT-I: 12				**No. of classes taken:**		

UNIT-II: Software Project Management

S.	Topics to be covered	No. of	Tentative	Actual	Teaching	HOD

No.		Classes Required	Date of Completion	Date of Completion	Learning Methods	Sign Weekly
12.	Software project management complexities	1	31/12/24		TLM1,2	
13.	Responsibilities of a software project manager	1	02/01/25		TLM1,2	
14.	Metrics for project size estimation Project estimation techniques	2	04/01/25 06/01/25		TLM1,2	
15.	Empirical Estimation techniques, COCOMO	1	07/01/25		TLM1,2	
16.	Halstead's software science, risk management.	2	09/01/25 16/01/25		TLM1,2	
17.	Requirements Analysis and Specification	1	18/01/25		TLM1,2	
18.	Software Requirements Specification (SRS)	1	20/01/25		TLM1,2	
19.	Axiomatic specification, Algebraic specification	1	21/01/25		TLM1,2	
20.	Executable specification and 4GL.	1	23/01/25		TLM1,2	
21.	Tutorial	1	25/01/25		TLM1,2	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

UNIT-III: Software Design:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Software Design Overview of the design process	1	03/02/25		TLM1,2	
23.	How to characterize a good software design?	1	04/02/25		TLM1,2	
24.	Layered arrangement of modules, Cohesion and Coupling	1	6/2/25		TLM1,2	
25.	Approaches to software design	1	10/2/25		TLM1,2	
26.	Agility and the Cost of Change, Agile Process	1	11/2/25		TLM1,2	
27.	Extreme Programming (XP), Other Agile Process Models	1	13/2/25		TLM1,2	
28.	Tool Set for the Agile Process	1	15/2/25		TLM1,2	
29.	Function-Oriented Software Design: Overview of SA/SD methodology	1	17/2/25		TLM1,2	
30.	Structured analysis, Developing the DFD model of a system	1	18/2/25		TLM1,2	
31.	Structured design, Detailed design, and Design Review	1	20/2/25		TLM1,2	
32.	User Interface Design: Characteristics of a good user interface	1	22/2/25		TLM1,2	
33.	Basic concepts, Types of user interfaces	1	24/2/25		TLM1,2	
34.	Fundamentals of component-based GUI development	1	25/2/25			
35.	user interface design methodology.	1	27/2/25			
36.	ASSIGNMENT-3					

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

UNIT-IV: Coding and Testing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
37.	Coding, Code review	1	1/3/25		TLM1,2	
38.	Software documentation, Testing.	1	3/3/25		TLM1,2	
39.	Black-box testing	1	4/3/25		TLM1,2	
40.	White-Box testing	1	6/3/25		TLM1,2	
41.	Debugging, Program analysis tools	1	10/3/25		TLM1,2	
42.	Integration testing	1	11/3/25		TLM1,2	
43.	Testing object-oriented programs	1	13/3/25		TLM1,2	
44.	Smoke testing, and some general issues associated with testing.	1	15/3/25		TLM1,2	
45.	Software Reliability and Quality Management: Software reliability	1	17/3/25		TLM1,2	
46.	Software quality management system	1	18/3/25		TLM1,2	
47.	ISO 9000.SEI Capability maturity model	1	20/3/25		TLM1,2	
48.	Few other important quality standards, and Six Sigma.	1	22/3/25		TLM1,2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Computer-Aided Software Engineering(CASE)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
49.	Computer-Aided Software Engineering (Case): CASE and its scope, CASE environment	1	24/3/25		TLM1,2	
50.	CASE support in the software life cycle and other characteristics of CASE tools	1	25/3/25		TLM1,2	
51.	Towards second generation CASE Tool, Architecture of a CASE Environment.	1	27/03/25		TLM1,2	
52.	Software Maintenance: Characteristics of software maintenance, Software reverse engineering	1	29/3/25		TLM1,2	
53.	Software maintenance process models and	1	31/3/25		TLM1,2	

	Estimation of maintenance cost.					
54.	Software Reuse: reuse-definition, Introduction.	1	1/04/25		TLM1,2	
55.	Reason behind no reuse so far, Basic issues in any reuse program	1	3/04/25		TLM1,2	
56.	A reuse approach and Reuse at organization level.	1	5/04/25		TLM1,2	
57.	ASSIGNMENT-5				TLM3	
No. of classes required to complete UNIT-V: 08				**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	HOD Sign Weekly
1.	Emerging Technologies in Software Engineering	1	29/03/25		**TLM6**	

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 (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Ms. T. Vineetha**	**Dr. J. Nageswara Rao**	**Dr. Y. V. Bhaskara Reddy**	**Dr. D. Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr.U. RAMBABU

Course Name & Code : Managerial Economics and Financial Analysis & 23HS02
L-T-P Structure : **2-0-0** **Credits:** 2
Program/Sem/Sec : B.Tech/CSE/IV /B **A.Y.:** 2024-25

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES(CEO):

- To inculcate the basic knowledge of microeconomics and financial accounting
- To make the students learn how demand is estimated for different products, input output relationship for optimizing production and cost
- To Know the Various types of market structure and pricing methods and strategy
- To give an overview of investment appraisal methods to promote the students to learn how to plan long-term investment decisions.
- To provide fundamental skills on accounting and to explain the process of preparing financial statements

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

CO1	Define the concepts related to Managerial Economics, Financial Accounting and Management. **(Understand-L2)**
CO2	Understand the fundament also Economics viz., Demand, Production, cost, revenue and markets. **(Understand-L2)**
CO3	Apply the Concept of Production cost and revenues for effective Business decision **(Apply-L3)**
CO4	Evaluate the capital budgeting techniques **(Analyze-L4)**
CO5	Develop accounting statements and evaluate the financial performance of business entity. **(Analyze-L4)**

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

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

Textbooks:

1. Varshney & Maheswari: Managerial Economics, Sultan Chand.
2. Aryasri: Business Economics and Financial Analysis, 4/e, MGH.

Reference Books:

1. Ahuja Hl Managerial economics Schand.
2. S.A. Siddiqui and A.S. Siddiqui: Managerial Economics and Financial Analysis, New Age International.
3. Joseph G. Nellis and David Parker: Principles of Business Economics, Pearson, 2/e, New Delhi.
4. Domnick Salvatore: Managerial Economics in a Global Economy, Cengage.

Online Learning Resources:

https://www.slideshare.net/123ps/managerial-economics-ppt
https://www.slideshare.net/rossanz/production-and-cost-45827016
https://www.slideshare.net/darkyla/business-organizations-19917607
https://www.slideshare.net/balarajbl/market-and-classification-of-market
https://www.slideshare.net/ruchi101/capital-budgeting-ppt-59565396
https://www.slideshare.net/ashu1983/financial-accounting

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):SEC-B

UNIT-I: Introduction to Managerial Economics:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction and Discussion of CO's	1	11-12-2024		TLM1	
2.	Economics-Managerial Economics	1	12-12-2024		TLM1	
3.	Nature and Scope.	1	13-12-2024		TLM1	
4.	Demand	1	18-12-2024		TLM1	
5.	Law of demand-	2	19-12-2024		TLM1	
6.	Elasticity of demand	1	20-12-2024		TLM1	
7.	Types of Elasticity of demand	2	25-12-2024 26-12-2024		TLM1	
8.	Demand Forecasting -Methods.	2	27-12-2024 02-01-2024		TLM1	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Theory of Production and Cost analysis:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
9.	Production Function	2	03-01-2025 08-01-2025		TLM1	
10.	Isoquant and Isocost	1	09-01-2025		TLM1	
11.	Least Cost Combination of inputs	1	10-01-2025		TLM1	
12.	Law of Returns	2	15-01-2025		TLM1	
13.	Internal and External Economies of Scale.	1	16-01-2025		TLM1	
14.	Cost Concepts	2	17-01-2025 22-01-2025		TLM1	
15.	Break-even Analysis	2	23-01-2025 24-01-2025		TLM1	
No. of classes required to complete UNIT-II: 11				**No. of classes taken:**		
I MID EXAMINATIONS (27-01-2025 TO 01-02-2025)						

UNIT-III: Markets & Pricing Policies

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
16.	Market structures: Markets-Types of markets	1	05-02-2025		TLM1	
17.	Features	2	06-02-2025 07-02-2025		TLM1	
18.	price out determinations under Perfect competition	1	12-02-2025		TLM1	
19.	Monopoly, Monopolistic Competition	2	13-02-2025 14-02-2025		TLM1	
20.	Pricing –Pricing polices & its Objectives	1	19-02-2025		TLM1	
21.	Pricing Methods and its applications in business.	1	20-02-2025		TLM1	
No. of classes required to complete UNIT-III: 8				**No. of classes taken:**		

UNIT-IV: Unit -IV Capital and Capital Budgeting:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Nature and its significance,	1	21-02-2025		TLM1	
23.	Types of Capital	1	26-02-2025		TLM1	
24.	Sources of raising capital	1	27-02-2025		TLM1	
25.	Capital budgeting-Significance & Process	1	28-02-2025		TLM1	
26.	Techniques of Capital Budgeting (Non-Discounted)	2	05-03-2025 06-03-2025		TLM1	
27.	Techniques of Capital Budgeting (Discounted)	3	07-03-2025 12-03-2025 13-03-2025		TLM1	
No. of classes required to complete UNIT-IV: 9				**No. of classes taken:**		

UNIT-V: Financial Accounting and analysis:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
28.	Accounting –significance -	2	14-03-2025 19-03-2025		TLM1	
29.	Bookkeeping-Double entry system	1	20-03-2025		TLM1	
30.	Journal	1	21-03-2025		TLM1	
31.	Ledger	1	26-03-2025		TLM1	
32.	Trial Balance	1	27-03-2025		TLM1	
33.	Final Accounts with simple adjustments	1	28-03-2025		TLM1	
34.	Financial Statement Analysis through ratios.	2	02-04-2025 03-04-2025		TLM1	
No. of classes required to complete UNIT-V: 9				**No. of classes taken:**		

Content Beyond 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	Textbook followed	HOD Sign Weekly
1.	Stock Market Essentials: Knowledge for Tomorrow's Leaders	1	18-04-2025	04-04-2025	TLM2			
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS (07-04-2025 TO 12-04-2025)								

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success oforganization.
PSO 2	The ability to design and develop computer programs in networking, web applications andIoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr.U. RAMBABU**	**Dr. A. ADISESHA REDDY**	**Dr. A. ADISESHA REDDY**	**Dr. D.Veeraiah**
Signature				

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L.B. REDDY NAGAR, MYLAVARAM, NTR DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : II B. Tech., II-Sem., CSE-B
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : PROBABILITY & STATISTICS (23FE10)
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS 3
COURSE INSTRUCTOR : M. Rami Reddy
COURSE COORDINATOR : M. Rami Reddy
PRE-REQUISITES : Basics of mathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To familiarize the students with the foundations of probability and statistical methods
- To impart probability concepts and statistical methods in various Engineering applications.

COURSE OUTCOMES (COs): Upon successful completion of this course, the student should be able to

CO1: Classify the concepts of data science and its importance (L2)
CO2: Interpret the association of characteristics and through correlation and regression tools (L3)
CO3: Apply discrete and continuous probability distributions (L3)
CO4: Design the components of a classical hypothesis test (L4)
CO5: Infer the statistical inferential methods based on small and large sampling tests (L4)

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

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

1. **Miller and Freund's,** Probability and Statistics for Engineers,7/e, Pearson, 2008.
2. S. **C. Gupta and V.K. Kapoor,** Fundamentals of Mathematical Statistics, 11/e, Sultan Chand & Sons Publications, 2012.

BOS APPROVED REFERENCE ROOKS:

1. **Shron L. Myers, Keying Ye, Ronald E Walpole,** Probability and Statistics for Engineers and the Scientists, 8th Edition. Pearson 2007.
2. **Jay 1. Devore,** Probability and Statistics for Engineering and the Sciences, 8th Edition, Cengage.
3. **Sheldon M. Ross,** Introduction to probability and statistics Engineers and the Scientists, 4th Edition, Academic Foundation, 2011.
4. **Johannes Ledolter and Robert V. Hogg,** Applied statistics for Engineers and Physical Scientists, 3rd Edition, Pearson, 2010.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Descriptive statistics and methods for data science

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 class, Syllabus Co's, PO's	1	09-12-24		TLM1	CO1	T1,T2	
2.	Unit-1, Introduction to data science	1	11-12-24		TLM1	CO1	T1,T2	
3.	Statistics- Population and sample, Collection of data,	1	13-12-24		TLM1	CO1	T1,T2	
4.	Types of variables	1	16-12-24		TLM1	CO1	T1,T2	
5.	Data visualization	1	18-12-24		TLM1.2	CO1	T1,T2	
6.	Measures of central tendency, A.M	1	20-12-24		TLM1	CO1	T1,T2	
7.	Median, problems	1	21-12-24		TLM1	CO1	T1,T2	
8.	Mode, problems	1	23-12-24		TLM3	CO1	T1,T2	
9.	Measures of variability Range, Mean deviation	1	27-12-24		TLM1	CO1	T1,T2	
10.	S.D. & Q D	1	28-12-24		TLM1	CO1	T1,T2	
11.	Skewness	1	30-12-24		TLM1	CO1	T1,T2	
12.	Kurtosis	1	03-01-25		TLM1.2	CO1	T1,T2	
No. of classes required to complete UNIT-I		12			No. of classes taken:			

UNIT-II: Correlation and Regression

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.	Correlation, types	1	04-01-25		TLM1.2	CO2	T1,T2	
14.	Coefficient of correlation	1	06-01-25		TLM1	CO2	T1,T2	
15.	Regression lines	1	08-01-25		TLM1	CO2	T1,T2	
16.	Multiple regression and Regression coefficients	1	10-01-25		TLM1	CO2	T1,T2	
17.	Properties, problems	1	17-01-25		TLM1	CO2	T1,T2	
18.	Rank correlation	1	18-01-25		TLM1	CO2	T1,T2	
19.	problems	1	20-01-25		TLM1.2	CO2	T1,T2	
20.	Fitting of parabola	1	22-01-25		TLM1	CO2	T1,T2	
21.	Exponential curve	1	24-01-25		TLM1	CO2	T1,T2	
22.	Fitting of power curve	1	25-01-25		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		10			No. of classes taken:			

I MID EXAMINATIONS (27-01-2025 TO 01-02-2025)

UNIT-III: Probability and Distributions

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
23.	Probability, Introduction	1	03-02-25		TLM1,2	CO3	T1,T2	
24.	Conditional probability, Multiplication theorem	1	05-02-25		TLM1	CO3	T1,T2	
25.	Problems	1	07-02-25		TLM1	CO3	T1,T2	
26.	Bayes theorem	1	10-02-25		TLM1	CO3	T1,T2	
27.	Problems	1	12-02-25		TLM1,2	CO3	T1,T2	
28.	Random variables, Distribution function, Expectations	1	14-02-25		TLM1	CO3	T1,T2	
29.	Probability mass function	1	15-02-25		TLM1	CO3	T1,T2	
30.	Probability density function	1	17-02-25		TLM1	CO3	T1,T2	
31.	Binomial distribution	1	19-02-25		TLM1	CO3	T1,T2	
32.	Problems	1	21-02-25		TLM1,2	CO3	T1,T2	
33.	Poisson distribution	1	22-02-25		TLM1	CO3	T1,T2	
34.	problems	1	24-02-25		TLM1	CO3	T1,T2	
35.	Normal distribution	1	28-02-25		TLM1	CO3	T1,T2	
36.	Problems	1	01-03-25		TLM1	CO3	T1,T2	
37.	Uniform distribution	1	03-03-25		TLM1	CO3	T1,T2	
No. of classes required to complete UNIT-III		15			No. of classes taken:			

UNIT-IV: Sampling theory

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Textbook followed	HOD Sign Weekly
38.	Introduction: Sampling distribution	1	05-03-25		TLM1,2	CO4	T1,T2	
39.	Sampling distribution of means & variance	1	07-03-25		TLM1	CO4	T1,T2	
40.	problems	1	10-03-25		TLM1	CO4	T1,T2	
41.	Central limit theorem	1	12-03-25		TLM1	CO4	T1,T2	
42.	problems	1	14-03-25		TLM1	CO4	T1,T2	
43.	Estimation- point & interval, maximum error	1	15-03-25		TLM1,2	CO4	T1,T2	
44.	Estimation using t-distribution	1	17-03-25		TLM1	CO4	T1,T2	
45.	problems	1	19-03-25		TLM1	CO4	T1,T2	
46.	Estimation using F and χ^2 −distributions	1	21-03-25		TLM1	CO4	T1,T2	
No. of classes required to complete UNIT-IV		09			No. of classes taken:			

UNIT-V: Tests of Hypothesis

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Textbook followed	HOD Sign Weekly
47.	Hypothesis: introduction, Definitions	1	22-03-25		TLM1,2	CO5	T1,T2	
48.	Z-test for single mean	1	24-03-25		TLM1	CO5	T1,T2	
49.	Z-test for diff. of mean	1	26-03-25		TLM1	CO5	T1,T2	
50.	Z-test for proportions	1	28-03-25		TLM1	CO5	T1,T2	
51.	t-test for single means	1	29-03-25		TLM1	CO5	T1,T2	
52.	Paired t-test	1	01-04-25		TLM1	CO5	T1,T2	
53.	F-test for variances	1	02-04-25		TLM1	CO5	T1,T2	
54.	χ^2 –test for goodness of fit	1	04-04-25		TLM1	CO5	T1,T2	
55.	χ^2 –test for independence of attributes	1	05-04-25		TLM1	CO5	T1,T2	
No. of classes required to complete UNIT-V		09			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
56.	Bivariate random variables	1	14-02-25		TLM2	C03	T1,T2	
57.	Multiple correlation & regression	1	15-02-25		TLM2	CO2	T1,T2	
No. of classes		2			No. of classes taken:			
II MID EXAMINATIONS (07-04-2025 TO 12-04-2025)								

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

M. RAMI REDDY	**M. RAMI REDDY**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Ch Venkata Narayana
Course Name & Code **:** Operating Systems -23CS06
L-T-P Structure **: 3-1-0** **Credits:** 3
Program/Sem/Sec : II B.tech/IV-sem/B-Sec **A.Y.:** 2024-25

PREREQUISITE: Knowledge of Computer fundamentals & Data structures & algorithms

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of the course is to make student:

- Understand the basic concepts and principles of operating systems, including process management, memory management, file systems, and Protection
- Make use of process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.
- Illustrate different conditions for deadlock and their possible solutions.

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

CO1	Understand the fundamental concepts, functions, and structures of operating systems, including their design, implementation, and the various types of system calls and services. (Understand-L2)
CO2	Understand process concepts, multithreading models, and CPU scheduling algorithms to effectively manage operations on processes, inter-process communication, and threading issues in operating systems. (Understand-L2)
CO3	Analyze synchronization tools, deadlock-handling methods to solve critical section problems and ensure efficient process synchronization in operating systems. (Apply-L3)
CO4	Analyze different memory management techniques paging and segmentation to understand their suitability for various memory allocation scenarios. (Apply-L3)
CO5	Apply knowledge of file system structures and protection mechanisms to design and implement secure file management systems. (Apply-L3)

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

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

TEXT BOOKS:

1. Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10th Edition, Wiley, 2018.
2. Modern Operating Systems, Tanenbaum A S, 4 th Edition, Pearson , 2016

Reference Books:

1. Operating Systems -Internals and Design Principles, Stallings W, 9 th edition, Pearson, 2018
2. Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3rd Edition, McGrawHill, 2013

Online Learning Resources:

1. https://nptel.ac.in/courses/106/106/106106144/
2. http://peterindia.net/OperatingSystems.html

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Operating Systems

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Operating systems	1	09-12-2024		TLM2	
2.	operating system functions, operating systems operations	1	09-12-2024		TLM2	
3.	Computing environments	1	10-12-2024		TLM2	
4.	Free and Open-Source Operating Systems	1	12-12-2024		TLM2	
5.	System Structures: Operating System Services	1	16-12-2024		TLM2	
6.	System programs, System calls	1	17-12-2024		TLM2	
7.	Types of System Calls, system programs	1	18-12-2024		TLM2	
8.	operating system Design and Implementation	1	19-12-2024			
9.	Building and Booting an Operating System	1	23-12-2024		TLM2	
10.	Operating system debugging	1	24-12-2024		TLM2	
No. of classes required to complete UNIT-I: 10				**No. of classes taken:**		

UNIT-II: Process Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
11.	Processes: Process Concept,	1	26-12-2024		TLM2	
12.	Process scheduling	2	30-12-2024 & 31-1-2025		TLM2	
13.	Operations on processes	1	01-1-2025		TLM2	

14.	Inter-process communication systems	1	02-1-2025		TLM2	
15.	Threads and Concurrency: Multithreading models	2	06-1-2025 & 07-1-2025		TLM2	
16.	Thread libraries and Thread issues	1	08-1-2025		TLM2	
17.	CPU Scheduling: Basic concepts	1	09-1-2025		TLM2	
18.	Scheduling Criteria	1	20-1-2025		TLM2	
19.	Scheduling algorithms	1	21-1-2025		TLM2	
20.	Multiple processor scheduling	1	22-1-2025		TLM2	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

UNIT-III: Synchronization Tools

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
21.	Synchronization Tools: The Critical section problem, Peterson's solutions	1	23-01-2025		TLM1	
22.	Mutex Locks	1	27-01-2025		TLM1	
23.	Semaphores	1	28-01-2025		TLM1	
24.	Monitors	1	29-01-2025		TLM1	
25.	Classic problems of Synchronization	1	30-01-2025		TLM1	
26.	Synchronization examples	1	03-02-2025		TLM1	
27.	Deadlocks: System model and deadlock characterization	1	04-02-2025		TLM1	
28.	Methods for Handling deadlocks and deadlock prevention	1	05-02-2025		TLM1	
29.	Deadlock Avoidance	1	06-02-2025		TLM1	
30.	Deadlock detection	1	10-02-2025		TLM1	
31.	Recovery from deadlock	1	19-02-2025		TLM1	
No. of classes required to complete UNIT-III: 11						

UNIT-IV: Memory management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
32.	Memory-Management Strategies: Introduction	1	20-02-2025		TLM1	
33.	Contiguous Memory Allocation	1	24-02-2025		TLM1	
34.	Paging and structure of a page table	1	25-02-2025		TLM1	

35.	Swapping	1	27-02-2025		TLM1	
36.	Virtual Memory Management: Introduction, Demand paging and Copy-on-write	1	03-03-2025		TLM1	
37.	Page replacement	1	04-3-2025		TLM1	
38.	Allocation of frames	1	05-3-2025		TLM1	
39.	Thrashing	1	06-3-2025		TLM1	
40.	Storage Management: Overview of Mass Storage Structure	1	10-3-2025		TLM1	
41.	HDD Scheduling	1	11-3-2025		TLM1	
No. of classes required to complete UNIT-IV: 10				**No. of classes taken:**		

UNIT-V: File System Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
42.	File System: File System Interface: File concept, Access methods and Directory Structure	1	12-3-2025		TLM2	
43.	File system Implementation: File-system structure	1	13-3-2025		TLM2	
44.	File-system Operations	1	17-3-2025		TLM2	
45.	Allocation method, Free space management	1	18-3-2025		TLM2	
46.	File-System Internals: File-System Mounting	1	19-3-2025		TLM2	
47.	Partitions and Mounting and File Sharing	1	20-3-2025		TLM2	
48.	Protection: Goals of protection	1	24-3-2025		TLM2	
49.	Principles of protection	1	25-3-2025		TLM2	
50.	Protection Rings	1	26-3-2025		TLM2	
51.	Domain of protection and Access matrix	1	27-4-2025		TLM2	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R19 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. Ch V Narayana
Course Name & Code : OPERATING SYSTEMS Lab & 20CS55
L-T-P Structure : 0-0-3 **Credits:1.5**
Program/Sem/Sec : B.Tech. - CSE/IV/B **A.Y.:**2024-25

PREREQUISITE: Knowledge of basic Computer hardware & software.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objectives of the course are to

- Provide insights into system calls, file systems, semaphores,
- Develop and debug CPU Scheduling algorithms, page replacement algorithms, thread implementation
- Implement Bankers Algorithms to Avoid the Dead Lock
- acquire the generic software development skill through various stages of software life cycle
- generate test cases for software testing

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

CO1	Implement and evaluate fundamental operating system concepts through programming exercises, including UNIX commands, system calls, and simulations of CPU scheduling algorithms. (L3)
CO2	Analyze synchronization mechanisms (semaphores and monitors) and memory allocation algorithms (first-fit, worst-fit, best-fit) through writing concurrent programs using the pthreads library. (L4)
CO3	Apply operating system concepts of memory management, deadlock avoidance, and file allocation strategies through simulations and experimentation with a real operating system (Nachos). (L3)
CO4	Improve individual/ Teamwork skills, communication and report writing skills with ethical values.

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

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

REFERENCE BOOKS:

1. Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10th Edition, Wiley, 2018.
2. Modern Operating Systems, Tanenbaum A S, 4th Edition, Pearson, 2016
3. Operating Systems -Internals and Design Principles, Stallings W, 9th edition, Pearson, 2018
4. Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3rd Edition, McGrawHill, 2013

Online Learning Resources:
1. https://www.cse.iitb.ac.in/~mythili/os/
2. http://peterindia.net/OperatingSystems.html
3. www.cs.washington.edu/~tom/nachos

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Basic Unix Commands	3	1 13-12-24		**DM5**	
2.	Lab Cycle-1	3	20-12-24		**DM5**	
3.	Lab Cycle -2	3	27-12-25		**DM5**	
4.	Lab Cycle-3	3	03-01-25		**DM5**	
5.	Lab Cycle-4	3	10-01-25		**DM5**	
6.	Lab Cycle-5	3	24-01-25		**DM5**	
7.	Lab Cycle-6	3	31-01-25 & 07-02-25		**DM5**	
8.	Lab Cycle-7	3	07-02-25		**DM5**	
9.	Lab Cycle-8	3	14-02-25 & 21-02-25		**DM5**	
10.	Lab Cycle9	3	28-02-25 & 07-03-25		**DM5**	
11.	Lab Cycle10	3	21-03-25		**DM5**	
12.	Internal Lab Exam	3	28-03-25		**DM5**	

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

PART-C

EVALUATION PROCESS (R20 Regulations):

Evaluation Task	**Marks**
Day-to-day work	A1 = 05
Record	A2 = 05
Internal test	A3 = 05
CIE Total: (A1+A2+A3)	**M1 = 15**
Procedure/Algorithm	B1 = 5
Experimentation/Program execution	B2 = 10
Observations/Calculations/Validation	B3 = 10
Result/Inference	B4 = 5
Viva voce	B5 = 5
SEE Total: (B1+B2+B3+B4+B5)	**M2 = 35**
Total Marks = CIE + SEE = (M1+M2)	**50**

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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PO 12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

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

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. P. SARALA
Course Name & Code : DATABASE MANAGEMENT SYSTEMS & 23CS03
L-T-P Structure : 3-0-0 **Credits:** 3
Program/Sem/Sec : B.Tech IV Sem CSE – B Section **A.Y.:** 2024-25

PREREQUISITE: Data Structures

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of this course is

- Introduce database management systems and to give a good formal foundation on the relational model of data and usage of Relational Algebra
- Introduce the concepts of basic SQL as a universal Database language
- Demonstrate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization
- Provide an overview of physical design of a database system, by discussing Database indexing techniques and storage techniques

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

CO1	Understand the foundation of database management system and various data models. (Understand-L2)
CO2	Identify relational model concepts, implement various constraints, perform SQL queries and DML operations. (Understand-L2)
CO3	Apply SQL queries, functions, and work with nested queries, grouping, joins, views, and set operations. (Apply-L3)
CO4	Apply various normalization techniques for efficient data handling. (Apply-L3)
CO5	Understand Transaction management, recovery & indexing techniques. (Understand-L2)

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

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

TEXTBOOKS:

T1 Database Management Systems, 3rd edition, Raghurama Krishnan, Johannes Gehrke, TMH (For Chapters 2, 3, 4)

T2 Database System Concepts,5th edition, Silberschatz, Korth, Sudarsan,TMH (For Chapter 1 and Chapter 5)

REFERENCE BOOKS:

R1 Introduction to Database Systems, 8thedition, C J Date, Pearson

R2 Database Management System, 6th edition, RamezElmasri, Shamkant B. Navathe, Pearson

R3 Database Principles Fundamentals of Design Implementation and Management, Corlos Coronel, Steven Morris, Peter Robb, Cengage Learning.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: DBMS Introduction

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	CEOs and COs discussion, Introduction: An overview of Database Management System	1	11-12-24		1 & 2	
2.	Characteristics (Database Vs File System), Database Users	1	12-12-24		1 & 2	
3.	Advantages of Database Systems, Database Applications	1	13-12-24		1 & 2	
4.	Data Models	1	18-12-24		1 & 2	
5.	Concepts of Schema	1	19-12-24		1 & 2	
6.	Instance and Data Independence	1	20-12-24		1 & 2	
7.	Three tier schema architecture for data independence	1	21-12-24		1 & 2	
8.	Database System Structure and	1	26-12-24		1 & 2	
9.	Environment	1	27-12-24		1 & 2	
10.	Centralized and Client Server architecture for the database	1	28-12-24		1 & 2	
11.	Unit-1 Revision	1	02-01-25		1 & 2	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Entity Relationship Model and Relational Model

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Entity Relationship Model: Introduction	1	03-01-25		1 & 2	
13.	Representation of entities, Attributes and entity set	1	04-01-25		1 & 2	
14.	Relationship and relationship set	1	08-01-25		1 & 2	
15.	Constraints	1	09-01-25		1 & 2	
16.	Sub Classes and Super Class, Inheritance	1	10-01-25		1 & 2	
17.	Specialization and Generalization using ER Diagrams	1	15-01-25		1 & 2	
18.	Relational Model: Introduction to relational model	1	16-01-25		1 & 2	
19.	Concepts of domain, Attribute and Tuple	1	17-01-25		1 & 2	
20.	Relation and importance of null values	1	18-01-25		1 & 2	

21.	Constraints (Domain, Key constraints, Integrity constraints) and their importance	1	22-01-25		1 & 2	
22.	Relational Algebra	1	23-01-25		1 & 2	
23.	Relational Calculus	1	24-01-25		1 & 2	
24.	Unit-II revision	1	25-01-25		1 & 2	
No. of classes required to complete UNIT-II: 13				**No. of classes taken:**		

UNIT-III: BASIC SQL

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
25.	BASIC SQL: Simple Database schema, data types	1	05-02-25		1 & 2	
26.	Table definitions (create, alter), different DML operations (insert, delete, update)	1	06-02-25		1 & 2	
27.	SQL querying (select and project) using where clause, arithmetic & logical operations	1	07-02-25		1 & 2	
28.	SQL functions (Date and Time, Numeric, String conversion)	1	12-02-25		1 & 2	
29.	Creating tables with relationship, implementation of key and integrity constraints	1	13-02-25		1 & 2	
30.	Nested queries and sub queries	1	14-02-25		1 & 2	
31.	Grouping and Aggregation	1	15-02-25		1 & 2	
32.	Ordering	1	19-02-25		1 & 2	
33.	Implementation of different types of joins	1	20-02-25		1 & 2	
34.	View(updatable and non-updatable)	1	21-02-25		1 & 2	
35.	Relational set operations	1	22-02-25		1 & 2	
36.	Unit-III Revision	1	27-02-25		1 & 2	
No. of classes required to complete UNIT-III: 12				**No. of classes taken:**		

UNIT-IV: Schema Refinement (Normalization)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
37.	Schema Refinement (Normalization): Purpose of Normalization or schema refinement	1	28-02-25		1 & 2	
38.	Concept of functional dependency	1	01-03-25		1 & 2	
39.	Normal forms based on functional dependency	1	05-03-25		1 & 2	
40.	Lossless join and dependency preserving decomposition	1	06-03-25		1 & 2	
41.	1NF and 2NF	1	07-03-25		1 & 2	
42.	3 NF concept of surrogate key	1	12-03-25		1 & 2	
43.	Concept of surrogate key	1	13-03-25		1 & 2	
44.	BoyceCodd normal form (BCNF)	1	15-03-25		1 & 2	

45.	MVD, Fourth normal form(4NF)	1	19-03-25		1 & 2	
46.	Fifth Normal Form (5NF)	1	20-03-25		1 & 2	
47.	Unit-IV revision	1	21-03-25		1 & 2	
No. of classes required to complete UNIT-IV: 11				**No. of classes taken:**		

UNIT-V: Transaction Processing and Concurrency Control, Introduction to Recovery Protocols and Introduction to Indexing

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
48.	Transaction Processing and Concurrency Control: Transaction State, ACID properties	1	22-03-25		1 & 2	
49.	Concurrent Executions, Serializability, Recoverability	1	26-03-25		1 & 2	
50.	Implementation of Isolation, Testing for Serializability	1	27-03-25		1 & 2	
51.	Two-Phase Locking Techniques for concurrency control: Types of Locks, Time stamp-based locking	1	28-03-25		1 & 2	
52.	Introduction to Recovery Protocols: Recovery Concepts, No-UNDO/REDO	1	29-03-25		1 & 2	
53.	Recovery Based on Deferred Update, Recovery Techniques Based on Immediate Update	1	02-04-25		1 & 2	
54.	Shadow Paging, ARIES	1	03-04-25		1 & 2	
55.	Introduction to Indexing: Hash based Indexing	1	04-04-25		1 & 2	
56.	Unit-5 revision	1	05-04-25		1 & 2	
No. of classes required to complete UNIT-V: 09				**No. of classes taken:**		

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

Content Beyond Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
1.	NoSQL databases	1	05-04-25					
No. of classes		1			No. of classes taken:			
II MID EXAMINATIONS 07-04-2025 TO 12-04-2025)								

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
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PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need for and have the preparation and ability to engage

	in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
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Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty				
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor: Ms. P. SARALA
Course Name & Code **:** Database Management Systems Lab (23CS56)
L-T-P Structure **:**0-0-3 **Credits:**1.5
Program/Sem/Sec : B. Tech IV Sem CSE – B Section **A.Y.:** 2024-25

PRE-REQUISITE: Programming language, Discrete Mathematical Structures, and Data Structures.

COURSE EDUCATIONAL OBJECTIVES (CEOs): This Course will enable students to
1. Populate and query a database using SQL DDL/DML Commands
2. Declare and enforce integrity constraints on a database
3. Writing Queries using advanced concepts of SQL
4. Programming PL/SQL including procedures, functions, cursors and triggers

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

CO 1	Implement SQL queries using DDL/DML commands.(**Apply-L3**)
CO 2	Apply different Integrity constraints & Normalization techniques for effective database design. (**Apply-L3**)
CO 3	Implement PL/SQL including procedures, functions, cursors and triggers. (**Apply-L3**)
CO 4	Improve individual / teamwork skills, communication & report writing skills with ethical Values

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	Introduction to SQL, syntax	3	09-12-24		TLM4	
2	Sample Experiments	3	16-12-24		TLM4	
3	Sample Experiments	3	23-12-24		TLM4	
4	Sample Experiments	3	30-12-24		TLM4	
5	Sample Experiments	3	06-01-25		TLM4	
6	Case study 1	3	20-01-25		TLM4	
7	Case study 1	3	03-02-25		TLM4	
8	Case study 1	3	10-02-25		TLM4	
9	Case study 2	3	17-02-25		TLM4	
10	Case study 2	3	24-02-25		TLM4	
11	Case study 2	3	03-03-25		TLM4	
12	Case study 3	3	10-03-25		TLM4	
13	Case study 3	3	17-03-25		TLM4	
14	Internal Exam	3	24-03-25		TLM4	

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 (R23 Regulations):

Evaluation Task	**Marks**
Day to Day Work	15
Internal Test	15
Continuous Internal Assessment	30
Procedure	20
Execution & Results	30
Vice-voce	20
Semester End Examination(SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	To apply the fundamental engineering knowledge, computational principles, and methods for extracting knowledge from data to identify, formulate and solve real time problems.
PSO 2	To develop multidisciplinary projects with advanced technologies and tools to address social and environmental issues.
PSO 3	To provide a concrete foundation and enrich their abilities for employment and Higher studies in Artificial Intelligence and Data Science with ethical values.

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty				
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. M. Gayathri
Course Name & Code : SOFTWARE ENGINEERING & 23IT02
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/IV SEM /B **A.Y.:** 2024-25
Regulations : R23

PREREQUISITE: Object Oriented Programming

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- The objective of the course is to provide an understanding of different s/w process models and how to choose one among them by gathering the requirements from a client and specifying them.
- Using those requirements in the design of the software architecture based on the choices with the help of modules and interfaces.
- To enable s/w development, by using different testing techniques like unit, integration and functional testing, quality assurance can be achieved.

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

CO1	Understanding the Evolution in Software Development and Implementation of Modern Software Development Practices **(Understand - L2)**
CO2	Understand Software Project Management and Requirements Analysis Techniques. **(Understand - L2)**
CO3	Demonstrate Effective Software Design and Agile Practices. **(Apply - L3)**
CO4	Apply Coding, Testing, and Quality Management Practices.**(Apply - L3)**
CO5	Apply the usage of CASE tools, Software Maintenance process and Software Reuse. **(Apply - L3)**

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

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

TEXTBOOKS:

T1	Fundamentals of Software Engineering, Rajib Mall, 5th Edition
T2	Software Engineering A practitioner's Approach, Roger S. Pressman, 9th Edition, Mc-Graw Hill International Edition

REFERENCE BOOKS:

R1	Software Engineering, Ian Sommerville, 10thEdition, Pearson
R2	Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
R3	https://nptel.ac.in/courses/106/105/106105182/
R4	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012605895063871 48827_shared/overview
R5	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013382690411003 904735_shared/overview

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction & Software Life Cycle Models

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Software Engineering & Evolving role of Software	1	09/12/24		TLM1, 2	
2.	Software Development projects	1	10/12/24		TLM1, 2	
3.	Exploratory style of software developments	1	11/12/24		TLM1, 2	
4.	Emergence of software engineering	1	14/12/24		TLM1, 2	
5.	Notable changes in software development practices	1	16/12/24		TLM1, 2	
6.	Computer system engineering.	1	17/12/24		TLM1, 2	
7.	Software Life Cycle Models. Basic concepts	1	18/12/24		TLM1, 2	
8.	Waterfall model and its extensions.	1	21/12/24		TLM1, 2	
9.	Rapid application development	1	23/12/24		TLM1, 2	
10.	Agile development model.	1	24/12/24		TLM1, 2	
11.	Spiral Model.	1	28/12/24		TLM1, 2	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Software Project Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Software project management complexities	1	30/12/24		TLM1,2	
13.	Responsibilities of a software project manager	1	31/12/24		TLM1,2	
14.	Metrics for project size	2	04/01/25		TLM1,2	

	estimation Project estimation techniques		06/01/25			
15.	Empirical Estimation techniques, COCOMO	2	07/01/25 08/01/25		TLM1,2	
16.	Halstead's software science, risk management.	1	09/01/25		TLM1,2	
17.	Requirements Analysis and Specification	2	11/01/25 18/01/25		TLM1,2	
18.	Software Requirements Specification (SRS)	1	20/01/25		TLM1,2	
19.	Axiomatic specification, Algebraic specification	1	21/01/25		TLM1,2	
20.	Executable specification and 4GL.	1	22/01/25		TLM1,2	
21.	Tutorial	1	25/01/25		TLM1,2	
No. of classes required to complete UNIT-II: 13				**No. of classes taken:**		

UNIT-III: Software Design:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Software Design Overview of the design process	1	03/02/25		TLM1,2	
23.	How to characterize a good software design?	1	04/02/25		TLM1,2	
24.	Layered arrangement of modules, Cohesion and Coupling	1	05/02/25		TLM1,2	
25.	Approaches to software design	1	08/02/25		TLM1,2	
26.	Agility and the Cost of Change, Agile Process	1	10/02/25		TLM1,2	
27.	Extreme Programming (XP), Other Agile Process Models	1	11/02/25		TLM1,2	
28.	Tool Set for the Agile Process	1	12/02/25		TLM1,2	
29.	Function-Oriented Software Design: Overview of SA/SD methodology	1	15/02/25		TLM1,2	
30.	Structured analysis, Developing the DFD model of a system	1	17/02/25		TLM1,2	
31.	Structured design, Detailed design, and Design Review	1	18/02/25		TLM1,2	
32.	User Interface Design: Characteristics of a good user interface	1	19/02/25		TLM1,2	
33.	Basic concepts, Types of user interfaces	1	22/02/25		TLM1,2	
34.	Fundamentals of component-based GUI development	1	24/02/25			
35.	user interface design methodology.	1	25/02/25			
36.	ASSIGNMENT-3					
No. of classes required to complete UNIT-III: 14				**No. of classes taken:**		

UNIT-IV: Coding and Testing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
37.	Coding, Code review	1	01/03/25		TLM1,2	
38.	Software documentation, Testing.	1	03/03/25		TLM1,2	
39.	Black-box testing	1	04/03/25		TLM1,2	
40.	White-Box testing	1	05/03/25		TLM1,2	
41.	Debugging, Program analysis tools	1	08/03/25		TLM1,2	
42.	Integration testing	1	10/03/25		TLM1,2	
43.	Testing object-oriented programs	1	11/03/25		TLM1,2	
44.	Smoke testing, and some general issues associated with testing.	1	12/03/25		TLM1,2	
45.	Software Reliability and Quality Management: Software reliability	1	15/03/25		TLM1,2	
46.	Software quality management system	1	17/03/25		TLM1,2	
47.	ISO 9000.SEI Capability maturity model	1	18/03/25		TLM1,2	
48.	Few other important quality standards, and Six Sigma.	1	19/03/25		TLM1,2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Computer-Aided Software Engineering(CASE)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
49.	Computer-Aided Software Engineering (Case): CASE and its scope, CASE environment	1	22/03/25		TLM1,2	
50.	CASE support in the software life cycle and other characteristics of CASE tools	1	24/03/25		TLM1,2	
51.	Towards second generation CASE Tool, Architecture of a CASE Environment.	1	25/03/25		TLM1,2	
52.	Software Maintenance: Characteristics of software maintenance, Software reverse engineering	1	26/03/25		TLM1,2	
53.	Software maintenance process models and Estimation of maintenance cost.	1	29/04/25		TLM1,2	
54.	Software Reuse: reuse-definition, Introduction.	1	01/04/25		TLM1,2	
55.	Reason behind no reuse so far, Basic issues in any reuse program	1	02/04/25		TLM1,2	
56.	A reuse approach and Reuse at organization level.	1	03/04/25		TLM1,2	

57.	ASSIGNMENT-5	1	05/04/25		TLM3	
No. of classes required to complete UNIT-V: 08				**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	HOD Sign Weekly
1.	Emerging Technologies in Software Engineering	1	29/03/25		**TLM6**	

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 (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mrs. M. Gayathri**	**Dr. J. Nageswara Rao**	**Dr.Y.Vijay Baskar Reddy**	**Dr. D. Veeraiah**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT
Part-A

PROGRAM : II B. Tech., IV-Sem., CSE B
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : **Environmental Science**
L-T-P STRUCTURE : 2-0-0
COURSE CREDITS 0
COURSE INSTRUCTOR : Dr. V. Bhagya Lakshmi
COURSE COORDINATOR : Dr. Shaheda Niloufer
PRE-REQUISITES : biology, chemistry, geology, mathematics or physics

Course Objectives:

1	To enlighten the learners in the concept of differential equations and multivariable calculus
2	To furnish the learners with basic concepts and techniques at intermediate level to lead them into advanced level by handling various real-world applications.

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

CO 1	The necessity of resources, their exploitation and sustainable management	L2
CO 2	The interactions of human and ecosystems and their role in the food web in the natural world and the global biodiversity, threats to biodiversity and its conservation.	L2
CO 3	Environmental problems like pollution, disasters and possible solutions.	L1
CO 4	The importance of environmental decision making in organizations through understanding the environmental law and environmental audits.	L2
CO 5	Environmental issues like over population, human health etc related to local, regional and global levels.	L2

Course Articulation Matrix - Correlation between COs, POs & PSOs

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

Correlation Levels: **1**-Slight (Low), **2**-Moderate (Medium), **3**-Substantial (High) and No correlation: **'-'**

Textbooks (T) and References (R):

T1: Erach Bharucha,Text book of Environmental Studies for Undergraduate Courses,Universities Press (India) Private Limited, 2019.

T2: Palaniswamy, Environmental Studies, 2/e, Pearson education, 2014.

T3: S.Azeem Unnisa, Environmental Studies, Academic Publishing Company, 2021.

T4: K.Raghavan Nambiar, "Text book of Environmental Studies for Undergraduate Courses as per UGC model syllabus", SciTech Publications (India), Pvt. Ltd, 2010.

R1. KVSG Murali Krishna, The Book of Environmental Studies, 2/e, VGS Publishers, 2011.

R2. Deeksha Dave and E.Sai Baba Reddy, Textbook of Environmental Science, 2/e, Cengage Publications, 2012.

R3. M.Anji Reddy, "Textbook of Environmental Sciences and Technology", BS Publication, 2014.

R4. J.P. Sharma, Comprehensive Environmental studies, Laxmi publications, 2006.

R5. J. Glynn Henry and Gary W. Heinke, Environmental Sciences and Engineering, Prentice Hall of India Private limited, 1988.

R6. G.R. Chatwal, A Text Book of Environmental Studies, Himalaya Publishing House, 2018.

R7. Gilbert M. Masters and Wendell P. Ela, Introduction to Environmental Engineering and Science, 1/e, Prentice Hall of India Private limited, 1991.

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
1.	Introduction to the course	1	10-12-2024		TLM2			
2.	Multidisciplinary Nature of Environmental Studies	1	11-12-2024		TLM2			

UNIT-I: Multidisciplinary Nature of Environmental Studies

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
3.	Natural Resources – Forest resources	1	17-12-2024		TLM1	CO1	T1,T2	
4.	Water resources	1	18-12-2024		TLM1	CO1	T1,T2	
5.	Mineral resources & Food resources	1	24-12-2024		TLM1	CO1	T1,T2	
6.	Energy resources	1	31-12-2024		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		06			No. of classes taken:			

UNIT-II: Ecosystem & Biodiversity

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
7.	Ecosystems – Structure & Functions	1	07-01-2025		TLM1	CO1	T1,T2	
8.	Ecological succession & Food chains, Food webs & Ecological Pyramids	1	08-01-2025		TLM1	CO1	T1,T2	
9.	Types of ecosystems	1	21-01-2025		TLM1	CO1	T1,T2	

10.	Biodiversity – introduction, levels, biogeographic classification,	1	22-01-2025		TLM1	CO1	T1,T2	
11.	I MID		28-01-2025					
12.	I MID		29-01-2025					
13.	Values of Biodiversity, India as mega diversity nation	1	04-02-2025		TLM1	CO1	T1,T2	
14.	Threats to biodiversity & Conservation of biodiversity	1	05-02-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-II		06			No. of classes taken:			

I MID EXAMINATIONS (27-01-2025 TO 01-02-2025)

UNIT-III: Environmental pollution

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15.	Environmental pollution -Air pollution	1	11-02-2025		TLM1	CO2	T1,T2	
16.	Water pollution, Marine pollution, Thermal pollution	1	12-02-2025		TLM1	CO2	T1,T2	
17.	Soil pollution	1	18-02-2025		TLM1	CO2	T1,T2	
18.	Noise pollution & Nuclear Hazards	1	19-02-2025		TLM1	CO2	T1,T2	
19.	Solid waste management. Disaster Management	1	25-02-2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-III		05			No. of classes taken:			

UNIT-IV: Social issues & Environment

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20.	From Unsustainable to Sustainable development	1	04-03-2025		TLM1	CO3	T1,T2	
21.	Urban problems related to energy – Resettlement and rehabilitation of people; its problems and concerns	1	05-03-2025		TLM1	CO3	T1,T2	
22.	Environmental ethics, Climate change	1	11-03-2025		TLM1	CO3	T1,T2	
23.	Carbon credits & Mission LiFE - Wasteland reclamation. – Consumerism and waste products	1	12-03-2025		TLM1	CO3	T1,T2	
24.	Environmental Acts	1	18-03-2025		TLM1	CO3	T1,T2	

No. of classes required to complete UNIT-IV	05	No. of classes taken:

UNIT-V: Human population & Environment

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Population growth, variation among nations. Population explosion – Family Welfare Programmes.	1	19-03-2025		TLM1	CO4	T1,T2	
26.	Environment and human health –Human Rights – Value Education	1	25-03-2025		TLM1	CO4	T1,T2	
27.	HIV/AIDS – Women and Child Welfare	1	26-03-2025		TLM1	CO4	T1,T2	
28.	Role of information Technology in Environment and human health	1	01-04-2025		TLM1	CO4	T1,T2	
29.	Revision	1	02-04-2025		TLM1	CO4	T1,T2	
30.	II MID	1	08-04-2025					
31.	II MID	1	09-04-2025					
No. of classes required to complete UNIT-V		05			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
32.	Case studies	2	08-02-2025 11-03-2025		TLM2	CO2	T1,T2	
No. of classes		2			No. of classes taken:			
II MID EXAMINATIONS (07-04-2025 TO 12-04-2025)								

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

PART-C EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10

Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D PROGRAMME OUTCOMES (POs):

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

Dr. V. Bhagya Lakshmi	Dr. Shaheda Niloufer	**Dr. Shaheda Niloufer**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. A. Sudhakar
Course Name & Code : Full Stack Development-I & 23CSS2
L-T-P Structure : 0-1-2 **Credits:** 2
Program/Sem/Sec : B.Tech. - CSE/IV/B **A.Y.:** 2024-25

PREREQUISITE: Knowledge of basic Computer hardware & software.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objectives of the course are to
- Make use of HTML elements and their attributes for designing static web pages
- Build a web page by applying appropriate CSS styles to HTML elements
- Experiment with JavaScript to develop dynamic web pages and validate forms.

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

CO1	Design static web pages by using HTML elements. (Apply-L3)
CO2	Develop a web page by applying appropriate CSS styles to HTML elements. (Apply-L3)
CO3	Develop dynamic web pages and validate forms using JavaScript. (Apply-L3)
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values

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

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

REFERENCE BOOKS:

R1	Programming the World Wide Web, 7th Edition, Robet W Sebesta, Pearson, 2013.
R2	Web Programming with HTML5, CSS and JavaScript, John Dean, Jones & Bartlett Learning, 2019 (Chapters 1-11).
R3	Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node, Vasan Subramanian, 2nd edition, A Press, O'Reilly.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Lab Cycle-1**: Lists, Links and Images	4	12-12-2024 & 14-12-2024		**DM5**	
2.	**Lab Cycle-1:** Lists, Links and Images	4	19-12-2024 & 21-12-2024		**DM5**	
3.	**Lab Cycle-2**: HTML Tables, Forms and Frames	4	26-12-2024 & 28-12-2024		**DM5**	
4.	**Lab Cycle-2**: HTML Tables, Forms and Frames	4	02-01-2025 & 04-01-2025		**DM5**	
5.	**Lab Cycle-3**: HTML 5 and Cascading Style Sheets, Types of CSS	4	09-01-2025 & 11-01-2025		**DM5**	
6.	**Lab Cycle-3**: HTML 5 and Cascading Style Sheets, Types of CSS	4	23-01-2025 & 25-01-2025		**DM5**	
7.	**Lab Cycle-4:** Selector forms	4	06-02-2025 & 08-02-2025		**DM5**	
8.	**Lab Cycle-4:** Selector forms	4	13-02-2025 & 15-02-2025		**DM5**	
9.	**Lab Cycle-5**: CSS with Color, Background, Font, Text and CSS Box Model	4	20-02-2025 & 22-02-2025		**DM5**	
10.	**Lab Cycle-6:** Applying JavaScript - internal and external, I/O, Type Conversion	4	27-02-2025 & 01-03-2025		**DM5**	
11.	**Lab Cycle-6:** Applying JavaScript - internal and external, I/O, Type Conversion	4	06-03-2025 & 08-03-2025		**DM5**	
12.	**Lab Cycle-7:** Java Script Pre-defined and User-defined Objects	4	13-03-2025 & 15-03-2025		**DM5**	
13.	**Lab Cycle-8:** Java Script Conditional Statements and Loops	4	20-03-2025 & 22-03-2025		**DM5**	
14.	**Lab Cycle-9:** Java Script Functions and Events	4	27-03-2025 & 29-03-2025		**DM5**	

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

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Day to Day Work:	15
Internal Test	15
Continuous Internal Assessment	30
Procedure	20
Execution & Results	30
Viva-voce	20
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	**100**

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. A. Sudhakar	Mr. A. Sudhakar	Dr. Y. V. B. Reddy	Dr. D. Veeraiah
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. P. Bhagath, Ms. N. V. Padmavathi
Course Name & Code : Design Thinking & Innovation (23ME57)
Regulation : R23
L-T-P Structure : 1-0-2 **Credits:** 02
Program/Sem/Sec : B.Tech – IV Semester – A Section **A.Y.:** 2024-25

PREREQUISITE: None

COURSE OBJECTIVES:

The objectives of the course are to

- Bring awareness on innovative design and new product development.
- Explain the basics of design thinking.
- Familiarize the role of reverse engineering in product development.
- Train how to identify the needs of society and convert into demand.
- Introduce product planning and product development process

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

CO1	Apply fundamental design components, principles, and new materials to create and improve design projects. **(Applying-L3)**
CO2	Apply the design thinking process to develop and present innovative product solutions. **(Applying-L3)**
CO3	Analyze the relationship between creativity and innovation, evaluate their roles in organizations, and develop strategic plans for transforming creative ideas into innovative solutions**. (Analyzing-L4)**
CO4	Analyze to work in a multidisciplinary environment. **(Analyzing-L4)**
CO5	Apply design thinking principles to address business challenges, develop and test business models and prototypes, and evaluate the value of creativity. **(Evaluating-L5)**

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

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

Textbooks:

1. Tim Brown, Change by design, 1/e, Harper Bollins, 2009.
2. Idris Mootee, Design Thinking for Strategic Innovation, 1/e, Adams Media, 2014.

Reference Books:

1. David Lee, Design Thinking in the Classroom, Ulysses press, 2018.
2. Shrrutin N Shetty, Design the Future, 1/e, Norton Press, 2018.
3. William lidwell, Kritinaholden, &Jill butter, Universal principles of design, 2/e, Rockport Publishers, 2010.
4. Chesbrough.H, The era of open innovation, 2003

Online Learning Resources:

- https://nptel.ac.in/courses/110/106/110106124/
- https://nptel.ac.in/courses/109/104/109104109/
- https://swayam.gov.in/nd1_noc19_mg60/preview
- https://onlinecourses.nptel.ac.in/noc22_de16/preview

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
	UNIT–I: INTRODUCTION TO DESIGN THINKING					
1	Introduction to elements and principles of Design	1	10-12-2024		TLM2	
	Activity: To understand the importance of design	2	10.12.2024		TLM6	
2	History of Design Thinking, New materials in Industry	1	17.12.2024		TLM2	
	Activity: To understand the importance of teamwork	2	17.12.2024		TLM6	
3	Basics of design-dot, line, shape, form as fundamental design components	1	07.1.2025		TLM2	
	Activity: Developing sketches using dot, line and form	2	07.1.2025		TLM6	
	UNIT–II: DESIGN THINKING PROCESS					
4	Design thinking process: Empathy	1	21.1.2025		TLM2	
	Activity: To understand the	2	21.1.2025		TLM6	

	significance of Empathy					
5	Design thinking process: Define or Analyze	1	04.2.2025		TLM2	
	Activity: To understand the significance of Define/analyze	2	04.2.2025		TLM6	
6	Design thinking process: Ideate	1	11.2.2025		TLM2	
	Activity: To understand the significance of Ideate	2	11.2.2025		TLM6	
7	Design thinking process: Prototype	1	18.2.2025		TLM2	
	Activity: To understand the significance of Prototype	2	18.2.2025		TLM6	
8	Tools of design thinking in social innovations	1	04.3.2025		TLM2	
	Activity: Students should present their understanding of DTI elements using example	2	04.3.2025		TLM6	
	UNIT – III: INNOVATION					
9	Art of innovation, Difference between innovation and creativity, role of creativity and innovation in organizations	1	11.3.2025		TLM2	
	Activity: Debate on innovation and creativity, Flow and planning from idea to innovation, Debate on value-based innovation	2	11.3.2025		TLM6	
	UNIT – IV: PRODUCT DESIGN					
10	Problem formation, introduction to product design, Product strategies,	1	18.3.2025		TLM2	

	Product value					
	Activity: Development of Business models, setting of specifications	2	18.3.2025		TLM6	
11	Product planning, product specifications. Innovation towards product design Case studies.	1	25.3.2025		TLM2	
	Activity: Explaining their own product and model design, case studies	2	25.3.2025		TLM6	
	UNIT – V: DESIGN THINKING IN BUSINESS PROCESSES					
12	Business & Strategic Innovation, Business challenges, Startups. Defining and testing Business Models and Business Cases. Developing & testing prototypes	1	02.4.2025		TLM2	
	Activity: Marketing strategies of our own product, its maintenance, Reliability and plan for startup	2	02.4.2025		TLM6	
I Mid Exams: 27-01-2025 to 01-02-2025						
II Mid Exams: 07-04-2025 to 12-04-2025						
No. of classes required to complete: 36				**No. of classes taken:**		

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

PART-B

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Internal Examination	30

Semester End Examination	70
Total Marks:	**100**

ACADEMIC CALENDAR

Commencement of IV Semester Classwork	**09-12-2024**		
Description	**From**	**To**	**Weeks**
I Phase of Instructions	09-12-2024	25-01-2025	7 W
I Mid Examinations	**27-01-2025**	**01-02-2025**	1 W
II Phase of Instructions	03-02-2025	05-04-2025	9 W
II Mid Examinations	**07-04-2025**	**12-04-2025**	1 W
Preparation and Practicals	14-04-2025	19-04-2025	1 W
Semester End Examinations	**21-04-2025**	**03-05-2025**	2 W
Internship	05-05-2025	28-06-2025	8 W
Commencement of V Semester Classwork	**30 –06–2025**		

PART-C

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To possess knowledge in both fundamental and application aspects of mathematical, scientific, engineering principles to analyze complex engineering problems for meeting the national and international requirements and demonstrating the need for sustainable development.
PEO 2	To adapt to the modern engineering tools for planning, analysis, design, implementation of analytical data and assess their relevant significance in societal and legal issues necessary in their professional career.
PEO 3	To exhibit professionalism, ethical attitude, communication, managerial skills, team work and social responsibility in their profession and adapt to current trends by engaging in continuous learning.

PROGRAMME OUTCOMES (POs):

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

	societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Signature				
Name of the Faculty	Dr. P. Bhagath Ms. N. V. Padmavathi	Dr V. Ramakrishna	Dr. D. Venkata Subbaiah	Dr. D. Veeraiah
Designation	**Course Instructors**	**Course Coordinator**	**Module Coordinator**	**HoD**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : **K.RAVI KIRAN YASASWI**
Course Name & Code : Managerial Economics and Financial Analysis(23HS02)

L-T-P Structure : 2-0-0 Credits : 0
Program/Sem/Sec : B.Tech., CSE., IV-Sem., C A.Y: 2024-25

PRE-REQUISITE: Understand the Concept of Economic and Financial Accounting

Course Objectives:
- To inculcate the basic knowledge of Managerial economics and Financial Accounting
- To make the students learn how demand is estimated for different products, input output relationship for optimizing production and cost
- To Know the Various types of market structure and pricing methods and strategy
- To give an overview on investment appraisal methods to promote the students to learn how to plan long-term investment decisions.
- To provide fundamental skills on accounting and to explain the process of preparing financial statements.

Course Outcomes: At the end of the course, the student will be able to:
CO1: Define the concepts related to Managerial Economics, Financial accounting and management (L2)
CO2: Understand the Fundamentals of Economics viz., Demand, Production, Cost, Revenue and Markets (L2)
CO3: Apply the Concept of Production cost and Revenues for effective Business Decision (L3)
CO4: Evaluate the Capital Budgeting Techniques. (L3)
CO5: Develop the Accounting Statements and Evaluate the Financial Performance of Business Entity (L4)

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

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO 10	PO 11	PO 12
CO1	3											
CO2	3	2										
CO3			2									
CO4				2		2						
CO5					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).

Textbooks:
1. Varshney & Maheswari: Managerial Economics, Sultan Chand.
2. Aryasri: Business Economics and Financial Analysis, 4/e, MGH.

Reference Books:

1. Ahuja H Managerial economics S Chand.
2. S.A. Siddiqui and A.S. Siddiqui: Managerial Economics and Financial Analysis, New Age International.
3. Joseph G. Nellis and David Parker: Principles of Business Economics, Pearson, 2/e, New Delhi.
4. Domnick Salvatore: Managerial Economics in a Global Economy, Cengage.

Online Learning Resources:

1.https://www.slideshare.net/123ps/managerial-economics-ppt 2.https://www.slideshare.net/rossanz/production-and-cost-45827016
3. https://www.slideshare.net/darkyla/business-organizations-19917607 4.https://www.slideshare.net/balarajbl/market-and-classification-of-market
5.https://www.slideshare.net/ruchi101/capital-budgeting-ppt-59565396 6.https://www.slideshare.net/ashu1983/financial-accounting

COURSE DELIVERY PLAN (LESSON PLAN): Section C

UNIT-I : Introduction to Managerial Economics

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Economics-Definitions and importance with other disciplines	1	10-12-2024		TLM2	CO1	T1 / T2	
2.	Managerial Economics - Nature & Scope of ME	1	12-12-2024		TLM2	CO1	T1 / T2	
3.	Assignment -II	1	13-12-2024		TLM2	CO1	T1 / T2	
4.	Demand -Laws of Demand	1	17-12-2024		TLM2	CO1	T1 / T2	
5.	Elasticity of Demand	1	19-12-2024		TLM2	CO1	T1 / T2	
6.	Types of Elasticity of demand	1	20-12-2024		TLM2	CO1	T1 / T2	
7.	Demand Forecasting Methods	1	24-12-2024		TLM2	CO1	T1 / T2	
No. of classes required to complete UNIT-I		**07**			**No. of classes taken:**			

UNIT-II: Theory of Production and Cost Analysis

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8	Production Function	1	26-12-2024		TLM2	CO2	T1 / T2	
9	ISO quant and ISO Cost Least Cost-Combination of inputs	1	27-12-2024		TLM2	CO2	T1 / T2	
10	Assignment -II	1	02-01-2025		TLM2	CO2	T1 / T2	
11	Law of Returns	1	03-01-2025		TLM2	CO2	T1 / T2	

12	Internal and External Economies of Scale	1	07-01-2025		TLM2	CO2	T1 / T2	
13	Cost Concepts	1	09-01-2025		TLM2	CO2	T1 / T2	
14	Break Even Analysis	1	10-01-2025		TLM2			
No. of classes required to complete UNIT-II		**07**			**No. of classes taken:**			

UNIT-III: Markets & Pricing Policies

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15	Market Structures	1	16-01-2025		TLM2	CO3	T1 / T2	
I MID EXAMINATIONS 27-01-2025 to 01-02-2025								
16	Types of Markets	1	17-01-2025		TLM2	CO3	T1 / T2	
17	Features and Price out determination under perfect competition	1	21-01-2025		TLM2	CO3	T1 / T2	
18	Monopoly	1	23-01-2025		TLM2	CO3	T1 / T2	
19	Monopolistic Competition	1	24-01-2025		TLM2	CO3	T1 / T2	
20	Assignment-III	1	04-02-2025		TLM2			
21	Pricing Policies & its Objectives	1	06-02-2025		TLM2			
22	Pricing Methods	1	07-02-2025		TLM2			
23	Pricing Methods and its applications in business	1	11-02-2025		TLM2			
No. of classes required to complete UNIT-III		**09**			**No. of classes taken:**			

UNIT-IV: Capital and Capital Budgeting

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
24	Capital budgeting Nature and its significance	1	13-02-2025		TLM2	CO4	T1 / T2	
25	Types of Capital	1	14-02-2025		TLM2	CO4	T1 / T2	
26	Sources of raising capital	1	18-02-2025		TLM2	CO4	T1 / T2	
27	Assignment-IV	1	20-02-2025		TLM2	CO4	T1 / T2	
28	Significance of capital budgeting	1	21-02-2025		TLM2	CO4	T1 / T2	

29	Process of Capital budgeting	1	25-02-2025		TLM2	CO4	T1 / T2	
30	Techniques of Capital budgeting (non-discounted cash flow techniques and discounted cash flow of techniques)	1	28-02-2025		TLM2	CO4	T1 / T2	
31	Problems of capital budgeting	1	04-03-2025		TLM2	CO4	T1 / T2	
No. of classes required to complete UNIT-IV		**05**			**No. of classes taken:**			

UNIT-V: Financial Accounting and Analysis

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
32	Introduction to Accounting-History Book keeping	1	06-03-2025		TLM2	CO5	T1 / T2	
33	Scope and Objectives of Accounting-Double entry system of accounting	1	07-03-2025		TLM2	CO5	T1 / T2	
34	Accounting Concepts and Conventions	1	11-03-2025		TLM2	CO5	T1 / T2	
35	Journal entries	1	13-03-2025		TLM2	CO5	T1 / T2	
36	Ledger	1	14-03-2025		TLM2	CO5	T1 / T2	
37	Trial Balance-Final accounts	1	18-03-2025		TLM2	CO5	T1 / T2	
38	Final accounts with adjustments problems	1	20-03-2025		TLM2	CO5	T1 / T2	
39	Final accounts with adjustments problems	1	21-03-2025		TLM2	CO5	T1 / T2	
40	Assignment -V	1	25-03-2025		TLM2	CO5	T1 / T2	
41	Financial Statements through Ratio analysis	1	27-03-2025		TLM2	CO5	T1 / T2	
42	Problems on Ratio analysis	1	28-03-2025		TLM2	CO5	T1 / T2	
43	Problems on Ratio analysis	1	01-04-2025		TLM2	CO5	T1 / T2	
II MID EXAMINATIONS 07-04-2025 to 12-04-2025								
No. of classes required to complete UNIT-V		**10**			**No. of classes taken:**			

Content Beyond the Syllabus

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
44	Crowd funding FinTechs 5.O	2	03-04-2025 & 04-04-2025		TLM2/ TLM5		Fintech 5.o	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project
TLM 7	Assignment /Quiz		

PART-C

EVALUATION PROCESS (R23 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I , Unit-II)	A1=5
Assignment-II (Unit-III , Unit-IV , Unit-V)	A2=5
I-Mid Examination (Units-I & II)	M1=15
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=15
II-Quiz Examination (Units-III, IV & V)	Q2=10
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=15
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
K.Ravi Kiran Yasaswi	K.Ravi Kiran Yasaswi	Dr A Adisesha Reddy	Dr A Adisesha Reddy

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FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : II B. Tech., II-Sem., CSE-C
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : PROBABILITY & STATISTICS
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS 3
COURSE INSTRUCTOR : Dr. K.R. Kavitha
COURSE COORDINATOR: Dr. M. Rami Reddy
PRE-REQUISITES : Basics of Mathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To familiarize the students with the foundations of probability and statistical methods
- To impart probability concepts and statistical methods in various applications Engineering

COURSE OUTCOMES (COs): Upon successful completion of this course, the student should be able to

CO1: Classify the concepts of data science and its importance (L2)
CO2: Interpret the association of characteristics and through correlation and regression tools (L3)
CO3: Apply discrete and continuous probability distributions (L3)
CO4: Design the components of a classical hypothesis test (L4)
CO5: Infer the statistical inferential methods based on small and large sampling tests (L4)

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

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

1. **Miller and Freund's,** Probability and Statistics for Engineers,7/e, Pearson, 2008.
2. S. **C. Gupta and V.K. Kapoor,** Fundamentals of Mathematical Statistics, 11/e, Sultan Chand & Sons Publications, 2012.

BOS APPROVED REFERENCE ROOKS:

1. **Shron L. Myers, Keying Ye, Ronald E Walpole,** Probability and Statistics for Engineers and the Scientists, 8th Edition. Pearson 2007.
2. **Jay 1. Devore,** Probability and Statistics for Engineering and the Sciences, 8th Edition, Cengage.
3. **Sheldon M. Ross,** Introduction to probability and statistics Engineers and the Scientists, 4th Edition, Academic Foundation, 2011.
4. **Johannes Ledolter and Robert V. Hogg,** Applied statistics for Engineers and Physical Scientists, 3rd Edition, Pearson, 2010.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Descriptive Statistics and methods for Data Science

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 class	1	9/12/2024		TLM1	CO1	T1,T2	
2.	Syllabus Co's, PO's	1	11/12/2024		TLM1	CO1	T1,T2	
3.	Unit-1, Introduction to data science	1	13/12/2024		TLM2	CO1	T1,T2	
4.	Statistics- Population and sample, Collection of data	1	13/12/2024		TLM1	CO1	T1,T2	
5.	Types of variables, Data Visualization	1	16/12/2024		TLM1	CO1	T1,T2	
6.	Measures of central tendency, A.M	1	18/12/2024		TLM1	CO1	T1,T2	
7.	Median, Mode problems	1	20/12/2024		TLM1	CO1	T1,T2	
8.	Measures of variability Range, Mean deviation	1	20/12/2024		TLM3	CO1	T1,T2	
9.	S.D. & Q D	1	23/12/2024		TLM1	CO1	T1,T2	
10.	Skewness, Kurtosis	1	27/12/2024		TLM1	CO1	T1,T2	
11.	TUTORIAL - I	1	27/12/2024		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		11			No. of classes taken:			

UNIT-II: Correlation and Regression

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.	Correlation, types	1	30/12/2024		TLM1	CO2	T1,T2	
2.	Coefficient of correlation	1	03/01/2025		TLM1	CO2	T1,T2	
3.	Problems	1	03/01/2025		TLM1	CO2	T1,T2	
4.	Rank correlation	1	06/01/2025		TLM3	CO2	T1,T2	
5.	Linear regression (lines)	1	08/01/2025		TLM1	CO2	T1,T2	
6.	Multiple regression	1	10/01/2025		TLM1	CO2	T1,T2	
7.	Regression coefficients	1	10/01/2025		TLM1	CO2	T1,T2	
8.	Properties, problems	1	20/01/2025		TLM1	CO2	T1,T2	
9.	Fitting of parabola	1	22/01/2025		TLM1	CO2	T1,T2	
10.	Fitting of power curve, Exponential curve	1	24/01/2025		TLM1	CO2	T1,T2	
11.	TUTORIAL - II	1	24/01/2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		11			No. of classes taken:			

I MID EXAMINATIONS (26-01-2025 TO 01-02-2025)

UNIT-III: Probability and Distributions

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.	Probability, Introduction	1	03/02/2025		TLM1	CO3	T1,T2	

2.	Conditional probability	1	05/02/2025		TLM1	CO3	T1,T2	
3.	Bayes' theorem	1	07/02/2025		TLM1	CO3	T1,T2	
4.	Random variables, Expectations	1	07/02/2025		TLM1	CO3	T1,T2	
5.	Problems on PMF, PDF	1	17/02/2025		TLM1	CO3	T1,T2	
6.	Mathematical Expectations and Variance	1	19/02/2025		TLM1	CO3	T1,T2	
7.	Binomial distribution	1	21/02/2025		TLM1	CO3	T1,T2	
8.	Poisson distribution	1	21/02/2025		TLM1	CO3	T1,T2	
9.	Uniform distribution	1	24/02/2025		TLM1	CO3	T1,T2	
10.	Normal distribution	1	28/02/2025		TLM1	CO3	T1,T2	
11.	TUTORIAL - III	1	28/02/2025		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		11			No. of classes taken:			

UNIT-IV: Sampling Theory

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	19/02/2025		TLM1	CO4	T1,T2	
2.	Sampling distribution, definitions	1	21/02/2025		TLM1	CO4	T1,T2	
3.	Sampling distribution of mean, variance	1	21/02/2025		TLM1	CO4	T1,T2	
4.	Problems	1	24/02/2025		TLM1	CO4	T1,T2	
5.	Problems on central limit theorem	1	28/02/2025		TLM1	CO4	T1,T2	
6.	Estimation	1	28/02/2025		TLM1	CO4	T1,T2	
7.	Normal theory distributions	1	03/03/2025		TLM1	CO4	T1,T2	
8.	Estimation using t distribution	1	05/03/2025		TLM1	CO4	T1,T2	
9.	Estimation using χ^2 distribution	1	07/03/2025		TLM1	CO4	T1,T2	
10.	Estimation using F-distributions	1	10/03/2025		TLM1	CO4	T1,T2	
11.	TUTORIAL - IV	1	07/03/2025		TLM3			
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V: Tests of Hypothesis

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.	Testing of Hypothesis definitions	1	12/03/2025		TLM1	CO5	T1,T2	
2.	Z-test for means	1	17/03/2025		TLM1	CO5	T1,T2	
3.	Z-test for means	1	19/03/2025		TLM1	CO5	T1,T2	
4.	Z-test for proportions	1	21/03/2025		TLM1	CO5	T1,T2	

5.	Z-test for proportions	1	21/03/2025		TLM1	CO5	T1,T2	
6.	t-test for means	1	24/03/2025		TLM1	CO5	T1,T2	
7.	t-test for means	1	28/03/2025		TLM1	CO5	T1,T2	
8.	F-test for variances	1	28/03/2025		TLM3	CO5	T1,T2	
9.	χ^2-test for goodness of fit	1	02/04/2025		TLM1	CO5	T1,T2	
10.	χ^2-test for independence of attributes	1	04/04/2025		TLM1	CO5	T1,T2	
11.	TUTORIAL - V	1	04/04/2025		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		11			No. of classes taken:			

II MID EXAMINATIONS (07-04-2025 TO 12-04-2025)

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 (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

Dr. K.R. KAVITHA	**Dr. M. RAMI REDDY**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: G.V.Suresh
Course Name & Code **:** 23CS06-OPERATING SYSTEMS
L-T-P Structure **: 3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/III/C **A.Y.:** 2024-25
Regulations : R23

PREREQUISITE: Knowledge of Computer Fundamentals & Data Structures

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objectives of the course is to make student

- Understand the basic concepts and principles of operating systems, including process management, memory management, file systems, and Protection.
- Make use of process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.
- Illustrate different conditions for deadlock and their possible solutions.

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

CO1	Understand the fundamental concepts, functions, and structures of operating systems, including their design, implementation, and the various types of system calls and services.(Understand-L2).
CO2	Understand process concepts, multithreading models, and CPU scheduling algorithms to effectively manage operations on processes, inter-process communication, and threading issues in operating systems. (Understand-L2).
CO3	Analyze synchronization tools, deadlock handling methods to solve critical section problems and ensure efficient process synchronization in operating systems. (Apply-L3)
CO4	Analyze different memory management techniques paging and segmentation to understand their suitability for various memory allocation scenarios. (Apply-L3)
CO5	Apply knowledge of file system structures and protection mechanisms to design and implement secure file management systems. (Apply-L3)

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

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

CO4		**2**	**1**												
CO5		**2**	**1**												
1 - Low					**2 –**Medium						**3 -** High				

REFERENCE BOOKS:

T1	Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10th Edition, Wiley, 2018.
T2	Modern Operating Systems, Tanenbaum A S, 4th Edition, Pearson , 2016.
R1	Operating Systems -Internals and Design Principles, Stallings W, 9th edition, Pearson, 2018
R2	Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3rd Edition, McGraw Hill, 2013

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Operating Systems

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Operating systems	1	11-12-24		TLM2	
2.	Introduction to Operating systems	1	12-12-24		TLM2	
3.	Introduction to Operating systems	1	13-12-24		TLM2	
4.	Introduction to Operating systems	1	18-12-24		TLM2	
5.	Operating System Functions	1	19-12-24		TLM2	
6.	Operating Systems Operations	1	20-12-24		TLM2	
7.	Computing Environments	1	21-12-24		TLM2	
8.	Free and Open-Source Operating Systems.	1	26-12-24		TLM2	
9.	Operating System Services	1	27-12-24		TLM2	
10.	User and Operating-System Interface	1	28-12-24		TLM2	
11.	System Calls, Types of System Calls	1	02-01-25		TLM2	
12.	System Programs	1	03-01-25		TLM2	
13.	Operating System Design and Implementation	1	04-01-25		TLM2	
14.	Operating System Structure	1	08-01-25		TLM2	
15.	Operating System Debugging	1	09-01-25		TLM2	
No. of classes required to complete UNIT-I: 15				**No. of classes taken:**		

UNIT-II: Process Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
16.	Process Concept	1	10-01-25		TLM2	
17.	Process Scheduling	1	15-01-25		TLM2	
18.	Operations on Processes	1	16-01-25		TLM2	

19.	Inter-process Communication	1	17-01-25		TLM2	
20.	Multithreading Models	1	18-01-25		TLM2	
21.	Thread Libraries	1	22-01-25		TLM2	
22.	Threading Issues	1	23-01-25		TLM2	
23.	CPU Scheduling: Basic concepts	1	24-01-25		TLM2	
24.	Scheduling Criteria	1	25-01-25		TLM2	
25.	Scheduling Algorithms	1	05-02-25		TLM2	
26.	Multiple Processor Scheduling	1	06-02-25			
No. of classes required to complete UNIT-II: 10				**No. of classes taken:**		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	The Critical section problem, Peterson's solutions	1	07-02-25		TLM1	
28.	Synchronization hardware	1	12-02-25		TLM1	
29.	Semaphores	1	13-02-25		TLM1	
30.	Classic problems of Synchronization	1	14-02-25		TLM1	
31.	Monitors	1	15-02-25		TLM1	
32.	Synchronization examples	1	19-02-25		TLM1	
33.	Atomic transactions	1	20-02-25		TLM1	
34.	System model and deadlock characterization	1	21-02-25		TLM1	
35.	Methods for Handling deadlocks and deadlock prevention	1	22-02-25		TLM1	
36.	Deadlock Avoidance	1	27-02-25		TLM1	
37.	Deadlock detection	1	28-02-25		TLM1	
38.	Recovery from deadlock	1	01-03-25		TLM1	
No. of classes required to complete UNIT-III: 12						

UNIT-IV: Memory Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
39.	Memory-Management Strategies: Introduction	1	05-03-25		TLM1	
40.	Contiguous Memory Allocation	1	06-03-25		TLM1	
41.	Paging, Structure of the Page Table, Swapping.	1	07-03-25		TLM1	
42.	Virtual Memory Management: Introduction	1	12-03-25		TLM1	
43.	Demand Paging	1	13-03-25		TLM1	
44.	Copy-on-Write	1	15-03-25		TLM1	
45.	Page replacement Algorithms	1	19-03-25		TLM1	
46.	Allocation of frames, Thrashing	1	20-03-25		TLM1	
47.	Storage Management: Overview	1	21-03-25			

	of Mass Storage Structure					
48.	HDD Scheduling	1	22-03-25			
No. of classes required to complete UNIT-IV: 10				**No. of classes taken:**		

UNIT-V: File System Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
49.	File System: File System Interface:	1	26-03-25		TLM2	
50.	Access methods	1	26-03-25		TLM2	
51.	Directory Structure	1	27-03-25		TLM2	
52.	File System Implementation: File-System Structure	1	27-03-25		TLM2	
53.	File-system Operations	1	28-03-25		TLM2	
54.	Directory implementation	1	28-03-25		TLM2	
55.	Allocation Method	1	29-03-25		TLM2	
56.	Free Space Management	1	29-03-25		TLM2	
57.	File-System Mounting, Partitions and Mounting, File Sharing	1	02-04-25		TLM2	
58.	Protection: Goals of protection	1	03-04-25		TLM2	
59.	Principles of Protection	1	04-04-25		TLM2	
60.	Protection Rings	1	05-04-25		TLM2	
61.	Domain of Protection, Access Matrix	1	02-04-25		TLM2	
No. of classes required to complete UNIT-V: 13				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I,II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, IV & V)	Q2=10

Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department

Name of the Faculty	G.V.Suresh	Dr.B.Siva Rama Krishna	Dr. D. Venkata Subbaiah	Dr. D. Veeraiah
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. N V NAIK
Course Name & Code : Database Management Systems & 23CS03
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B. Tech/IV/C **A.Y.:** 2024-25
PREREQUISITES : **Data Structures**

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is

- Introduce database management systems and to give a good formal foundation on the relational model of data and usage of Relational Algebra
- Introduce the concepts of basic SQL as a universal Database language
- Demonstrate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization
- Provide an overview of physical design of a database system, by discussing Database indexing techniques and storage techniques

COURSE OUTCOMES (COs): After successful completion of the course the students are able to

CO1	**Understand the foundation of database management system and various data models. (Understand- L2)**
CO2	**Identify relational model concepts, implement various constraints, perform SQL queries and DML operations. (Understand-L2)**
CO3	**Apply SQL queries, functions, and work with nested queries, grouping, joins, views, and set operations. (Apply-L3)**
CO4	**Apply various normalization techniques for efficient data handling. (Apply-L3)**
CO5	**Understand Transaction management, recovery & indexing techniques. (Understand-L2)**

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

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

TEXTBOOKS:

T1	Database Management Systems, 3rd edition, Raghu Rama Krishnan, Johannes Gehrke, TMH (For Chapters 2, 3, 4)
T2	Database System Concepts,5th edition, Silberschatz, Korth, Sudarsan, TMH (For Chapter 1 and Chapter 5)

REFERENCE BOOKS:

R1	Introduction to Database Systems, 8thedition, C J Date, Pearson.
R2	Database Management System, 6th edition, Ramez Elmasri, Shamkant B. Navathe, Pearson
R3	Database Principles Fundamentals of Design Implementation and Management, Corlos Coronel, Steven Morris, Peter Robb, Cengage Learning.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Database System characteristics	1	10-12-2024		TLM1,2	
2.	Database users	1	12-12-2024		TLM1,2	
3.	Advantages of database systems	1	13-12-2024		TLM1,2	
4.	Database applications	1	14-12-2024		TLM1,2	
5.	Data Models	2	17-12-2024 19-12-2024		TLM1,2	
6.	Schema	1	20-12-2024		TLM1,2	
7	Three tier schema architecture	2	21-12-2024 24-12-2024		TLM1,2	
8	Database structure	2	26-12-2024 28-12-2024		TLM1,2	
9	Centralized and Client server architecture for the database	2	31-12-2024 02-01-2025		TLM1,2	
10	Tutorial	1	03-01-2025		TLM3	
No. of classes required to complete UNIT-I: 14				**No. of classes taken:**		

UNIT-II: Entity Relationship Model and Relational Model

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	04-01-2025		TLM1,2	
2.	Representation of entities	1	07-01-2025		TLM1,2	
3.	Attributes, Entity set, Relationship, Relationship set	2	09-01-2025 10-01-2025		TLM1,2	
4.	Constraints, Sub classes, Super class, Inheritance, Specialization	1	11-01-2025		TLM1,2	
5.	Generalization using ER Diagrams	1	17-01-2025		TLM1,2	
6.	Introduction to relational model	1	18-01-2025		TLM1,2	
7.	Concepts of domain, attribute, tuple, relation, importance of null values	1	21-01-2025		TLM1,2	
8.	Constraints (Domain, Key constraints, integrity constraints) and their importance	1	22-01-2025		TLM1,2	
9.	Relational Algebra Relational Calculus	2	23-01-2025 24-01-2025		TLM1,2	
10.	Tutorial	1	25-01-2025		TLM3	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

UNIT-III: SQL

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	BASIC SQL: Simple Database schema, data types, table definitions (create, alter), different DML operations (insert, delete, update)	2	04-02-2025 06-02-2025		TLM1,2	
2.	SQL querying (select and project) using where clause, arithmetic & logical operations	2	07-02-2025 08-02-2025		TLM1,2	
3.	SQL functions (Date and Time, Numeric, String conversion)	2	11-02-2025 13-02-2025		TLM1,2	
4.	Creating tables with relationship, implementation of key and integrity constraints	2	14-02-2025 15-02-2025		TLM1,2	
5.	Nested queries, sub queries, grouping, aggregation, ordering, implementation of different types of joins, view(updatable and non-updatable), relational set operations.	3	18-02-2025 20-02-2025 21-02-2025		TLM1,2	
6.	Tutorial	1	22-02-2025		TLM3	
No. of classes required to complete UNIT-III: 12				**No. of classes taken:**		

UNIT-IV: Schema Refinement (Normalization)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Purpose of Normalization or schema refinement	1	25-02-2025		TLM1,2	
2.	Concept of functional dependency	2	27-02-2025 28-02-2025		TLM1,2	
3.	Normal forms based on functional dependency Lossless join and dependency preserving decomposition	2	01-03-2025 04-03-2025		TLM1,2	
4.	1NF, 2NF and 3 NF, concept of surrogate key, Boyce- Codd normal form (BCNF)	2	06-03-2025 07-03-2025		TLM1,2	
5.	MVD, Fourth normal form(4NF)	2	08-03-2025 11-03-2025		TLM1,2	
6.	Fifth Normal Form (5NF)	1	13-03-2025		TLM1,2	
7.	Tutorial	1	15-03-2025		TLM3	
No. of classes required to complete UNIT-IV: 11				**No. of classes taken:**		

UNIT-V: Transaction Processing and Concurrency Control

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Transaction State, ACID properties	1	18-03-2025		TLM1,2	
2.	Concurrent Executions, Serializability, Recoverability	2	20-03-2025 21-03-2025		TLM1,2	
3.	Implementation of Isolation, Testing for Serializability	1	22-03-2025		TLM1,2	
4.	Two-Phase Locking Techniques for concurrency control: Types of Locks, Time stamp-based locking	2	25-03-2025 27-03-2025		TLM1,2	
5.	Recovery Concepts	1	28-03-2025		TLM1,2	
6.	No-UNDO/REDO Recovery Based on Deferred Update	1	29-03-2025		TLM1,2	

7.	Recovery Techniques Based on Immediate Update	1	01-04-2025		TLM1,2	
8.	Shadow Paging, ARIES	1	03-04-2025		TLM1,2	
9.	Hash based Indexing	1	04-04-2025		TLM1,2	
10.	Tutorial	1	05-04-2025		TLM3	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering

	problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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PO 9	**Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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PO12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr.N V NAIK**	**Dr. P. Bhagath**	**Dr. D. Venkata Subbaiah**	**Dr. D. Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. B.Nirosha
Course Name & Code : SOFTWARE ENGINEERING & 23IT02
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/IV SEM /c **A.Y.:** 2024-25
Regulations : R23

PREREQUISITE: Object Oriented Programming

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- The objective of the course is to provide an understanding of different s/w process models and how to choose one among them by gathering the requirements from a client and specifying them.
- Using those requirements in the design of the software architecture based on the choices with the help of modules and interfaces.
- To enable s/w development, by using different testing techniques like unit, integration and functional testing, quality assurance can be achieved.

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

CO1	Understanding the Evolution in Software Development and Implementation of Modern Software Development Practices **(Understand - L2)**
CO2	Understand Software Project Management and Requirements Analysis Techniques. **(Understand - L2)**
CO3	Demonstrate Effective Software Design and Agile Practices. **(Apply - L3)**
CO4	Apply Coding, Testing, and Quality Management Practices.**(Apply - L3)**
CO5	Apply the usage of CASE tools, Software Maintenance process and Software Reuse. **(Apply - L3)**

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

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

TEXTBOOKS:

T1	Fundamentals of Software Engineering, Rajib Mall, 5th Edition
T2	Software Engineering A practitioner's Approach, Roger S. Pressman, 9th Edition, Mc-Graw Hill International Edition

REFERENCE BOOKS:

R1	Software Engineering, Ian Sommerville, 10thEdition, Pearson
R2	Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.
R3	https://nptel.ac.in/courses/106/105/106105182/
R4	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012605895063871 48827_shared/overview
R5	https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013382690411003 904735_shared/overview

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction & Software Life Cycle Models

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Software Engineering & Evolving role of Software	1	09/12/24		TLM1, 2	
2.	Software Development projects	1	11/12/24		TLM1, 2	
3.	Exploratory style of software developments	1	13/12/24		TLM1, 2	
4.	Emergence of software engineering	1	14/12/24		TLM1, 2	
5.	Notable changes in software development practices	1	16/12/24		TLM1, 2	
6.	Computer system engineering.	1	18/12/24		TLM1, 2	
7.	Software Life Cycle Models. Basic concepts	1	20/12/24		TLM1, 2	
8.	Waterfall model and its extensions.	1	21/12/24		TLM1, 2	
9.	Rapid application development	1	23/12/24		TLM1, 2	
10.	Agile development model.	1	27/12/24		TLM1, 2	
11.	Spiral Model.	1	28/12/24		TLM1, 2	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Software Project Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Software project management complexities	1	30/12/24		TLM1,2	
13.	Responsibilities of a software project manager	1	01/01/24		TLM1,2	
14.	Metrics for project size	2	03/01/25		TLM1,2	

	estimation Project estimation techniques		04/01/25			
15.	Empirical Estimation techniques, COCOMO	2	06/01/25 08/01/25		TLM1,2	
16.	Halstead's software science, risk management.	1	10/01/25		TLM1,2	
17.	Requirements Analysis and Specification	2	11/01/25		TLM1,2	
18.	Software Requirements Specification (SRS)	1	20/01/25		TLM1,2	
19.	Axiomatic specification, Algebraic specification	1	22/01/25		TLM1,2	
20.	Executable specification and 4GL.	1	24/01/25		TLM1,2	
21.	Tutorial	1	25/01/25		TLM1,2	
No. of classes required to complete UNIT-II: 13				**No. of classes taken:**		

UNIT-III: Software Design:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Software Design Overview of the design process	1	03/02/25		TLM1,2	
23.	How to characterize a good software design?	1	05/02/25		TLM1,2	
24.	Layered arrangement of modules, Cohesion and Coupling	1	07/02/25		TLM1,2	
25.	Approaches to software design	1	08/02/25		TLM1,2	
26.	Agility and the Cost of Change, Agile Process	1	10/02/25		TLM1,2	
27.	Extreme Programming (XP), Other Agile Process Models	1	12/02/25		TLM1,2	
28.	Tool Set for the Agile Process	1	14/02/25		TLM1,2	
29.	Function-Oriented Software Design: Overview of SA/SD methodology	1	15/02/25		TLM1,2	
30.	Structured analysis, Developing the DFD model of a system	1	17/02/25		TLM1,2	
31.	Structured design, Detailed design, and Design Review	1	19/02/25		TLM1,2	
32.	User Interface Design: Characteristics of a good user interface	1	21/02/25		TLM1,2	
33.	Basic concepts, Types of user interfaces	1	22/02/25		TLM1,2	
34.	Fundamentals of component-based GUI development	1	24/02/25			
35.	user interface design methodology.	1	28/02/25			
36.	ASSIGNMENT-3					
No. of classes required to complete UNIT-III: 14				**No. of classes taken:**		

UNIT-IV: Coding and Testing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
37.	Coding, Code review	1	01/03/25		TLM1,2	
38.	Software documentation, Testing.	1	03/03/25		TLM1,2	
39.	Black-box testing	1	05/03/25		TLM1,2	
40.	White-Box testing	1	07/03/25		TLM1,2	
41.	Debugging, Program analysis tools	1	08/03/25		TLM1,2	
42.	Integration testing	1	10/03/25		TLM1,2	
43.	Testing object-oriented programs	1	12/03/25		TLM1,2	
44.	Smoke testing, and some general issues associated with testing.	1	15/03/25		TLM1,2	
45.	Software Reliability and Quality Management: Software reliability	1	17/03/25		TLM1,2	
46.	Software quality management system	1	19/03/25		TLM1,2	
47.	ISO 9000.SEI Capability maturity model	1	21/03/25		TLM1,2	
48.	Few other important quality standards, and Six Sigma.	1	22/03/25		TLM1,2	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V: Computer-Aided Software Engineering(CASE)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
49.	Computer-Aided Software Engineering (Case): CASE and its scope, CASE environment	1	24/03/25		TLM1,2	
50.	CASE support in the software life cycle and other characteristics of CASE tools	1	26/03/25		TLM1,2	
51.	Towards second generation CASE Tool, Architecture of a CASE Environment.	1	28/03/25		TLM1,2	
52.	Software Maintenance: Characteristics of software maintenance, Software reverse engineering	1	29/03/25		TLM1,2	
53.	Software maintenance process models and Estimation of maintenance cost.	1	31/04/25		TLM1,2	
54.	Software Reuse: reuse-definition, Introduction.	1	02/04/25		TLM1,2	
55.	Reason behind no reuse so far, Basic issues in any reuse program	1	04/04/25		TLM1,2	
56.	A reuse approach and Reuse at organization level.	1	05/04/25		TLM1,2	

57.	Assignment 5				TLM3	
No. of classes required to complete UNIT-V: 08				**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	HOD Sign Weekly
1.	Emerging Technologies in Software Engineering	1	29/04/25		**TLM6**	

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 (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mrs. B.Nirosha**	**Dr. J. Nageswara Rao**	**Dr.Y.Vijay Baskar Reddy**	**Dr. D. Veeraiah**
Signature				

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FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT
Part-A

PROGRAM : II B. Tech., IV-Sem., CSE-C
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : **Environmental Science**
L-T-P STRUCTURE : 2-0-0
COURSE CREDITS 0
COURSE INSTRUCTOR : Dr. Shaheda Niloufer
COURSE COORDINATOR : Dr. Shaheda Niloufer
PRE-REQUISITES : biology, chemistry, geology, mathematics or physics

Course Objectives:

1	To enlighten the learners in the concept of differential equations and multivariable calculus
2	To furnish the learners with basic concepts and techniques at intermediate level to lead them into advanced level by handling various real-world applications.

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

CO 1	The necessity of resources, their exploitation and sustainable management	L2
CO 2	The interactions of human and ecosystems and their role in the food web in the natural world and the global biodiversity, threats to biodiversity and its conservation.	L2
CO 3	Environmental problems like pollution, disasters and possible solutions.	L1
CO 4	The importance of environmental decision making in organizations through understanding the environmental law and environmental audits.	L2
CO 5	Environmental issues like over population, human health etc related to local, regional and global levels.	L2

Course Articulation Matrix - Correlation between COs, POs & PSOs

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

Correlation Levels: **1**-Slight (Low), **2**-Moderate (Medium), **3**-Substantial (High) and No correlation: **'-'**

Textbooks (T) and References (R):

T1: Erach Bharucha,Text book of Environmental Studies for Undergraduate Courses,Universities Press (India) Private Limited, 2019.

T2: Palaniswamy, Environmental Studies, 2/e, Pearson education, 2014.

T3: S.Azeem Unnisa, Environmental Studies, Academic Publishing Company, 2021.

T4: K.Raghavan Nambiar, "Text book of Environmental Studies for Undergraduate Courses as per UGC model syllabus", SciTech Publications (India), Pvt. Ltd, 2010.

R1. KVSG Murali Krishna, The Book of Environmental Studies, 2/e, VGS Publishers, 2011.

R2. Deeksha Dave and E.Sai Baba Reddy, Textbook of Environmental Science, 2/e, Cengage Publications, 2012.

R3. M.Anji Reddy, "Textbook of Environmental Sciences and Technology", BS Publication, 2014.

R4. J.P. Sharma, Comprehensive Environmental studies, Laxmi publications, 2006.

R5. J. Glynn Henry and Gary W. Heinke, Environmental Sciences and Engineering, Prentice Hall of India Private limited, 1988.

R6. G.R. Chatwal, A Text Book of Environmental Studies, Himalaya Publishing House, 2018.

R7. Gilbert M. Masters and Wendell P. Ela, Introduction to Environmental Engineering and Science, 1/e, Prentice Hall of India Private limited, 1991.

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
1.	Introduction to the course	1	10-12-2024		TLM2			
2.	Multidisciplinary Nature of Environmental Studies	1	17-12-2024		TLM2			

UNIT-I: Multidisciplinary Nature of Environmental Studies

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
3.	Natural Resources – Forest resources	1	21-12-2024		TLM1	CO1	T1,T2	
4.	Water resources	1	24-12-2024		TLM1	CO1	T1,T2	
5.	Mineral resources & Food resources	1	28-12-2024		TLM1	CO1	T1,T2	
6.	Energy resources	1	31-12-2024		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		06			No. of classes taken:			

UNIT-II: Ecosystem & Biodiversity

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
7.	Ecosystems – Structure & Functions	1	04-01-2025		TLM1	CO1	T1,T2	
8.	Ecological succession & Food chains, Food webs & Ecological Pyramids	1	07-01-2025		TLM1	CO1	T1,T2	
9.	Types of ecosystems	1	18-01-2025		TLM1	CO1	T1,T2	

10.	Biodiversity – introduction, levels, biogeographic classification,	1	21-01-2025		TLM1	CO1	T1,T2	
11.	Values of Biodiversity, India as mega diversity nation		25-01-2025					
12.	I MID		28-01-2025					
13.	I MID	1	01-02-2025		TLM1	CO1	T1,T2	
14.	Threats to biodiversity & Conservation of biodiversity	1	04-02-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-II		06			No. of classes taken:			

I MID EXAMINATIONS (27-01-2025 TO 01-02-2025)

UNIT-III: Environmental pollution

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15.	Environmental pollution -Air pollution	1	11-02-2025		TLM1	CO2	T1,T2	
16.	Water pollution, Marine pollution, Thermal pollution	1	15-02-2025		TLM1	CO2	T1,T2	
17.	Soil pollution	1	18-02-2025		TLM1	CO2	T1,T2	
18.	Noise pollution & Nuclear Hazards	1	22-02-2025		TLM1	CO2	T1,T2	
19.	Solid waste management. Disaster Management	1	25-02-2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-III		05			No. of classes taken:			

UNIT-IV: Social issues & Environment

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20.	From Unsustainable to Sustainable development	1	01-03-2025		TLM1	CO3	T1,T2	
21.	Urban problems related to energy – Resettlement and rehabilitation of people; its problems and concerns	1	04-03-2025		TLM1	CO3	T1,T2	
22.	Environmental ethics, Climate change	1	11-03-2025		TLM1	CO3	T1,T2	
23.	Carbon credits & Mission LiFE - Wasteland reclamation. – Consumerism and waste products	1	15-03-2025		TLM1	CO3	T1,T2	
24.	Environmental Acts	1	18-03-2025		TLM1	CO3	T1,T2	

No. of classes required to complete UNIT-IV	05	No. of classes taken:

UNIT-V: Human population & Environment

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Population growth, variation among nations. Population explosion – Family Welfare Programmes.	1	22-03-2025		TLM1	CO4	T1,T2	
26.	Environment and human health –Human Rights – Value Education	1	25-03-2025		TLM1	CO4	T1,T2	
27.	HIV/AIDS – Women and Child Welfare	1	29-03-2025		TLM1	CO4	T1,T2	
28.	Role of information Technology in Environment and human health	1	01-04-2025		TLM1	CO4	T1,T2	
29.	Revision	1	05-04-2025		TLM1	CO4	T1,T2	
30.	II MID	1	08-04-2025					
31.	II MID	1	12-04-2025					
No. of classes required to complete UNIT-V		05			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
32.	Case studies	2	07-02-2025 15-03-2025		TLM2	CO2	T1,T2	
No. of classes		2			No. of classes taken:			
II MID EXAMINATIONS (07-04-2025 TO 12-04-2025)								

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

PART-C EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10

Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
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PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of the information to provide valid conclusions.
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PO 12	**Life-long learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dr. Shaheda Niloufer	Dr. Shaheda Niloufer	**Dr. Shaheda Niloufer**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: G.V.Suresh
Course Name & Code **:** 23CS55-OPERATING SYSTEMS LAB
L-T-P Structure **:** 0-0-3 **Credits:1.5**
Program/Sem/Sec : B.Tech. - CSE/III/C **A.Y.:**2024-25

PREREQUISITE: Knowledge of basic Computer Hardware & Software.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

Course Objectives: The main objectives of the course are to

- Provide insights into system calls, file systems, semaphores.
- Develop and debug CPU Scheduling algorithms, page replacement algorithms, thread implementation.
- Implement Bankers Algorithms to Avoid the Dead Lock.
- Acquire the generic software development skill through various stages of software life cycle
- Generate test cases for software testing

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

CO1	Implement and evaluate fundamental operating system concepts through programming exercises, including UNIX commands, system calls, and simulations of CPU scheduling algorithms. **(L3)**
CO2	Analyze synchronization mechanisms (semaphores and monitors) and memory allocation algorithms (first-fit, worst-fit, best-fit) through writing concurrent programs using the pthreads library. **(L4)**
CO3	Apply operating system concepts of memory management, deadlock avoidance, and file allocation strategies through simulations and experimentation with a real operating system. **(L3)**
CO4	Improve individual/ Teamwork skills, communication and report writing skills with ethical values

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

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

1 - Low	**2 –**Medium	**3 -** High

REFERENCE BOOKS:

R1	Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10th Edition, Wiley,2018.
R2	Modern Operating Systems, Tanenbaum A S, 4th Edition, Pearson, 2016.
R3	Operating Systems -Internals and Design Principles, Stallings W, 9th edition, Pearson, 2018.
R4	Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3rd Edition, McGraw Hill, 2013.

Online Learning Resources:

1. https://www.cse.iitb.ac.in/~mythili/os/
2. http://peterindia.net/OperatingSystems.html
3. www.cs.washington.edu/~tom/nachos

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Task-1:** Practicing of Basic UNIX Commands	3	09-12-2024		DM5	
2.	**Task-2:** Write programs using the following UNIX operating system calls. (fork, exec, getpid, exit, wait, close, stat, opendir and readdir.)	3	16-12-24		DM5	
3.	**Task-3:** Simulate UNIX commands like cp, ls, grep, etc.,	3	23-12-24		DM5	
4.	**Task-4:** Simulate the following CPU scheduling algorithms a) FCFS b) SJF c) Priority d) Round Robin	3	30-12-24		DM5	
5.	**Task-5:** Control the number of ports opened by	3	06-01-25		DM5	

	the operating system with a) Semaphore b) Monitors.					
6.	**Task-6:** Write a program to illustrate concurrent execution of threads using pthreads library.	3	20-01-25		DM5	
7.	**Task-7:** Write a program to solve producer-consumer problem using Semaphores.	3	03-02-25		DM5	
8.	**Task-8:** Implement the following memory allocation methods for fixed partition a) First fit b) Worst fit c) Best fit	3	10-02-25		DM5	
9.	**Task-9:** Simulate the following page replacement algorithms a) FIFO b) LRU c) LFU	3	17-02-25		DM5	
10.	**Task-10:** Simulate Paging Technique of memory management.	3	24-02-25		DM5	
11.	**Task-11:** Implement Bankers Algorithm for Dead Lock avoidance and prevention	3	03-03-25		DM5	
12.	**Task-12:** Simulate the following file allocation strategies a) Sequential b) Indexed c) Linked	3	10-03-25		DM5	
13.	**Task-13:**	3	17-03-25		DM5	

	Download and install nachos operating system and experiment with it					

PART-C

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
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PO 7	**Environment and sustainability**: Understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
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PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.

PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**G.V.Suresh**	**Dr.B. Siva Rama Krishna**	**Dr.D.Venkata Subbaiah**	**Dr.V.Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Mr. N V NAIK
Course Name & Code : Database Management Systems Lab (23CS56)
L-T-P Structure : 0-0-3 Credits: 1.5
Program/Sem/Sec : B.Tech., CSE., IV-Sem., Sec-C A.Y: 2024-25

Pre-Requisites : Data Structures and Operating Systems

COURSE EDUCATIONAL OBJECTIVES (CEOs):: This Course will enable students to

1. Populate and query a database using SQL DDL/DML Commands
2. Declare and enforce integrity constraints on a database
3. Writing Queries using advanced concepts of SQL
4. Programming PL/SQL including procedures, functions, cursors and triggers

COURSE OUTCOMES (COs): At the end of the course, students can

CO 1	Implement SQL queries using DDL/DML commands.(Apply-L3)
CO 2	Apply different Integrity constraints & Normalization techniques for effective database design. (Apply-L3)
CO 3	Implement PL/SQL including procedures, functions, cursors and triggers. .(Apply-L3)
CO 4	Improve individual / teamwork skills, communication & report writing skills with ethical values.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	-	2	-	-	-	-	-	-	-	-	3	-
CO2	3	2	2	-	2	-	-	-	-	-	-	-	-	3	-
CO3	3	2	2	-	2	-	-	-	-	-	-	-	-	3	-
C04	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using the SELECT command	3	11-12-2024		TLM4	
2	Queries (along with sub-Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints. Example: - Select the roll number and name of the student who secured fourth rank in the class	3	18-12-2024		TLM4	
3	Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views	3	08-01-2025		TLM4	
4	Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)	3	22-01-2025		TLM4	
5	Create a simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks	3	05-02-2025		TLM4	

	can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)					
6	Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block	3	12-02-2025		TLM4	
7	Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions	3	19-02-2025		TLM4	
8	Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE- APPLICATION ERROR	3	05-03-2025		TLM4	
9	Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES	3	12-03-2025		TLM4	
10	Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions	3	19-03-2025		TLM4	
11	Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.	3	26-03-2025		TLM4	
12	Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers	3	02-04-2025		TLM4	

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

PART-C

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Mr.N V NAIK**	**Dr. P. Bhagath**	**Dr. D. Venkata Subbaiah**	**Dr. D. Veeraiah**
Signature				

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L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr.M.Kiran Kumar
Course Name & Code : Full Stack Development-I & 23CSS2
L-T-P Structure : 0-1-2 **Credits:** 2
Program/Sem/Sec : B.Tech. - CSE/IV/C **A.Y.:** 2024-25

PREREQUISITE: Knowledge of basic Computer hardware & software.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objectives of the course are to
- Make use of HTML elements and their attributes for designing static web pages
- Build a web page by applying appropriate CSS styles to HTML elements
- Experiment with JavaScript to develop dynamic web pages and validate forms.

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

CO1	Design static web pages by using HTML elements. (Apply-L3)
CO2	Develop a web page by applying appropriate CSS styles to HTML elements. (Apply-L3)
CO3	Develop dynamic web pages and validate forms using JavaScript. (Apply-L3)
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values

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

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

REFERENCE BOOKS:

R1	Programming the World Wide Web, 7th Edition, Robet W Sebesta, Pearson, 2013.
R2	Web Programming with HTML5, CSS and JavaScript, John Dean, Jones & Bartlett Learning, 2019 (Chapters 1-11).
R3	Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node, Vasan Subramanian, 2nd edition, A Press, O'Reilly.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Lab Cycle-1**: Lists, Links and Images	4	09-12-2024 & 14-12-2024		**DM5**	
2.	**Lab Cycle-1:** Lists, Links and Images	4	16-12-2024 & 21-12-2024		**DM5**	
3.	**Lab Cycle-2**: HTML Tables, Forms and Frames	4	23-12-2024 & 28-12-2024		**DM5**	
4.	**Lab Cycle-2**: HTML Tables, Forms and Frames	4	30-12-2024 & 04-01-2024		**DM5**	
5.	**Lab Cycle-3**: HTML 5 and Cascading Style Sheets, Types of CSS	4	06-01-2024 & 11-01-2024		**DM5**	
6.	**Lab Cycle-3**: HTML 5 and Cascading Style Sheets, Types of CSS	4	20-01-2024 & 25-01-2024		**DM5**	
7.	**Lab Cycle-4:** Selector forms	4	03-02-2024 & 08-02-2024		**DM5**	
8.	**Lab Cycle-4:** Selector forms	4	10-02-2024 & 15-02-2024		**DM5**	
9.	**Lab Cycle-5**: CSS with Color, Background, Font, Text and CSS Box Model	4	17-02-2024 & 22-02-2024		**DM5**	
10.	**Lab Cycle-6:** Applying JavaScript - internal and external, I/O, Type Conversion	4	24-02-2024 & 01-03-2024		**DM5**	
11.	**Lab Cycle-6:** Applying JavaScript - internal and external, I/O, Type Conversion	4	03-03-2024 & 08-03-2024		**DM5**	
12.	**Lab Cycle-7:** Java Script Pre-defined and User-defined Objects	4	10-03-2024 & 15-03-2024		**DM5**	
13.	**Lab Cycle-8:** Java Script Conditional Statements and Loops	4	17-03-2024 & 22-03-2024		**DM5**	
14.	**Lab Cycle-9:** Java Script Functions and Events	4	24-03-2024 & 29-03-2024		**DM5**	

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

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Day to Day Work:	15
Internal Test	15
Continuous Internal Assessment	30
Procedure	20
Execution & Results	30
Viva-voce	20
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	**100**

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.M.Kiran Kumar	Mr.A.Sudhkar	Dr.Y.V.B.Reddy	Dr. D. Veeraiah
Signature				

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hodcse@lbrce.ac.in, cseoffice@lbrce.ac.in, Phone: 08659-222 933, Fax: 08659-22293
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. B. Siva Rama Krishna
Regulation : R23
L-T-P Structure : 1-0-2 **Credits:** 02
Program/Sem/Sec : B.Tech – IV Semester – C Section **A.Y.:** 2024-25

PREREQUISITE: None

COURSE OBJECTIVES:

The objectives of the course are to
- Bring awareness on innovative design and new product development.
- Explain the basics of design thinking.
- Familiarize the role of reverse engineering in product development.
- Train how to identify the needs of society and convert into demand.
- Introduce product planning and product development process

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

CO1	Apply fundamental design components, principles, and new materials to create and improve design projects. (Applying-L3)
CO2	Apply the design thinking process to develop and present innovative product solutions. (Applying-L3)
CO3	Analyze the relationship between creativity and innovation, evaluate their roles in organizations, and develop strategic plans for transforming creative ideas into innovative solutions. (Analyzing-L4)
CO4	Analyze to work in a multidisciplinary environment. (Analyzing-L4)
CO5	Apply design thinking principles to address business challenges, develop and test business models and prototypes, and evaluate the value of creativity. (Evaluating-L5)

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

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

Textbooks:

1. Tim Brown, Change by design, 1/e, Harper Bollins, 2009.
2. Idris Mootee, Design Thinking for Strategic Innovation, 1/e, Adams Media, 2014.

Reference Books:

1. David Lee, Design Thinking in the Classroom, Ulysses press, 2018.
2. Shrrutin N Shetty, Design the Future, 1/e, Norton Press, 2018.
3. William lidwell, Kritinaholden, &Jill butter, Universal principles of design, 2/e, Rockport Publishers, 2010.
4. Chesbrough.H, The era of open innovation, 2003

Online Learning Resources:

- https://nptel.ac.in/courses/110/106/110106124/
- https://nptel.ac.in/courses/109/104/109104109/
- https://swayam.gov.in/nd1_noc19_mg60/preview
- https://onlinecourses.nptel.ac.in/noc22_de16/preview

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

Schedule of Experiments: Saturday (from 9.00 AM – 12.00 PM)

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
01	**UNIT–I Introduction to Design Thinking,** Introduction to elements and principles of Design, basics of design-dot, line, shape, form as fundamental design components	3	12-12-2024		TLM2/ TLM4	
02	Principles of design	3	19-12-2024		TLM1	
03	Introduction to design thinking, history of Design Thinking, New materials in Industry	3	26-12-2024		TLM1/ TLM2	
04	**UNIT – II Design Thinking Process** Design thinking process (empathize, analyze, idea & prototype), implementing the process in driving inventions	3	02-01-2025		TLM1	
05	Design thinking in social innovations.	3	09-01-2025		TLM2	

	Tools of design thinking - person, costumer					
06	journey map, brainstorming, product development (Activity)	3	23-01-2025		TLM4	
07	**UNIT – III Innovation** Art of innovation, Difference between innovation and creativity, role of creativity and innovation in organizations	3	06-02-2025		TLM1/ TLM4	
I Mid Exams: 27-01-2025 to 01-02-2025						
08	Creativity to Innovation. Teams for innovation, Measuring the impact and value of creativity.	3	13-02-2025		TLM2/ TLM4	
09	**Activity:** Debate on innovation and creativity, Flow and planning from idea to innovation, Debate on value-based innovation	3	20-02-2025		TLM4	
10	**UNIT – IV Product Design** Problem formation, introduction to product design, Product strategies, Product value	3	27-02-2025		TLM1/ TLM4	
11	Product planning, product specifications. Innovation towards product design Case studies.	3	06-03-2025		TLM2	
12	**Activity:** Importance of modeling, how to set specifications,Explaining their own product design	3	13-03-2025		TLM4	
13	**UNIT – V Design Thinking in Business Processes** Design Thinking applied in Business & Strategic Innovation, Design Thinking principles that redefine business	3	20-03-2025		TLM1/ TLM4	

14	Business challenges: Growth, Predictability, Change, Maintaining Relevance, Extreme competition, Standardization	3	27-03-2025		TLM2/ TLM4	
15	Design thinking to meet corporate needs. Design thinking for Startups. Defining and testing Business Models and Business Cases. Developing & testing prototypes.	3	03-04-2025		TLM1/ TLM4	
16	**Activity:** How to market our own product, about maintenance, Reliability and plan for startup.	3	17-04-2025		TLM4	
II Mid Exams: 07-04-2025 to 12-04-2025						
No. of classes required to complete: 48				**No. of classes taken:**		

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

PART-B

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Internal Examination	30
Semester End Examination	70
Total Marks:	**100**

Academic calendar

Commencement of IV Semester Classwork	**09-12-2024**		
Description	**From**	**To**	**Weeks**
I Phase of Instructions	09-12-2024	25-01-2025	7 W
I Mid Examinations	27-01-2025	01-02-2025	1 W
II Phase of Instructions	03-02-2025	05-04-2025	9 W
II Mid Examinations	07-04-2025	12-04-2025	1 W
Preparation and Practicals	14-04-2025	19-04-2025	1 W
Semester End Examinations	21-04-2025	03-05-2025	2 W

Internship	05-05-2025	28-06-2025	8 W
Commencement of V Semester Classwork	**30 –06–2025**		

Lab Occupancy Time Table (B.Tech IV Sem: A Section)

↓Day/Date→	09.00 – 10.00	10.00 – 11.00	11.00 – 12.00	12.00-01.00	01.00 – 02.00	02.00 – 03.00	03.00 – 04.00
Monday				LUNCH BREAK			
Tuesday							
Wednesday							
Thursday							
Friday							
Saturday	DTI						

Faculty – In Charges:

S.No	Class	Section	Faculty – In Charge	Lab Technician
1	B.Tech – IV Semester	A,B,C,D	Dr. D. Venkata Subbaiah, Dr. P. Bhagath, Dr. J. Nageswara Rao, Dr .B. Siva Rama Krishna	Mr.V.Muthyalareddy

PART-C

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To build a professional career and pursue higher studies with sound knowledge in Mathematics, Science and Mechanical Engineering.
PEO 2	To inculcate strong ethical values and leadership qualities for graduates to become successful in multidisciplinary activities.
PEO 3	To develop inquisitiveness towards good communication and lifelong learning.

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Signature				
Name of the Faculty	Dr .B. Siva Rama Krishna	-	-	Dr. D.Veeraiah
Designation	**Course Instructors**	**Course Coordinator**	**Module Coordinator**	**HoD**

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : **K.RAVI KIRAN YASASWI**
Course Name & Code : Managerial Economics and Financial Analysis(23HS02)

L-T-P Structure : 2-0-0 Credits : 0
Program/Sem/Sec : B.Tech., CSE., IV-Sem., D A.Y: 2024-25

PRE-REQUISITE: Understand the Concept of Economic and Financial Accounting

Course Objectives:
- To inculcate the basic knowledge of Managerial economics and Financial Accounting
- To make the students learn how demand is estimated for different products, input output relationship for optimizing production and cost
- To Know the Various types of market structure and pricing methods and strategy
- To give an overview on investment appraisal methods to promote the students to learn how to plan long-term investment decisions.
- To provide fundamental skills on accounting and to explain the process of preparing financial statements.

Course Outcomes: At the end of the course, the student will be able to:
CO1: Define the concepts related to Managerial Economics, Financial accounting and management (L2)
CO2: Understand the Fundamentals of Economics viz., Demand, Production, Cost, Revenue and Markets (L2)
CO3: Apply the Concept of Production cost and Revenues for effective Business Decision (L3)
CO4: Evaluate the Capital Budgeting Techniques. (L3)
CO5: Develop the Accounting Statements and Evaluate the Financial Performance of Business Entity (L4)

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

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO 10	PO 11	PO 12
CO1	3											
CO2	3	2										
CO3			2									
CO4				2		2						
CO5					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).

Textbooks:
1. Varshney & Maheswari: Managerial Economics, Sultan Chand.
2. Aryasri: Business Economics and Financial Analysis, 4/e, MGH.

Reference Books:

1. Ahuja H Managerial economics S Chand.
2. S.A. Siddiqui and A.S. Siddiqui: Managerial Economics and Financial Analysis, New Age International.
3. Joseph G. Nellis and David Parker: Principles of Business Economics, Pearson, 2/e, New Delhi.
4. Domnick Salvatore: Managerial Economics in a Global Economy, Cengage.

Online Learning Resources:

1.https://www.slideshare.net/123ps/managerial-economics-ppt 2.https://www.slideshare.net/rossanz/production-and-cost-45827016
3. https://www.slideshare.net/darkyla/business-organizations-19917607 4.https://www.slideshare.net/balarajbl/market-and-classification-of-market
5.https://www.slideshare.net/ruchi101/capital-budgeting-ppt-59565396 6.https://www.slideshare.net/ashu1983/financial-accounting

COURSE DELIVERY PLAN (LESSON PLAN): Section D

UNIT-I : Introduction to Managerial Economics

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome Cos	Text Book followed	HOD Sign Weekly
1.	Economics-Definitions and importance with other disciplines	1	10-12-2024		TLM2	CO1	T1 / T2	
2.	Managerial Economics - Nature & Scope of ME	1	12-12-2024		TLM2	CO1	T1 / T2	
3.	Assignment -II	1	14-12-2024		TLM2	CO1	T1 / T2	
4.	Demand -Laws of Demand	1	17-12-2024		TLM2	CO1	T1 / T2	
5.	Elasticity of Demand	1	19-12-2024		TLM2	CO1	T1 / T2	
6.	Types of Elasticity of demand	1	21-12-2024		TLM2	CO1	T1 / T2	
7.	Demand Forecasting Methods	1	24-12-2024		TLM2	CO1	T1 / T2	
No. of classes required to complete UNIT-I		**07**			**No. of classes taken:**			

UNIT-II: Theory of Production and Cost Analysis

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
8	Production Function	1	26-12-2024		TLM2	CO2	T1 / T2	
9	ISO quant and ISO Cost Least Cost-Combination of inputs	1	28-12-2024		TLM2	CO2	T1 / T2	
10	Assignment -II	1	02-01-2025		TLM2	CO2	T1 / T2	
11	Law of Returns	1	04-01-2025		TLM2	CO2	T1 / T2	

12	Internal and External Economies of Scale	1	07-01-2025		TLM2	CO2	T1 / T2	
13	Cost Concepts	1	09-01-2025		TLM2	CO2	T1 / T2	
14	Break Even Analysis	1	11-01-2025		TLM2			
No. of classes required to complete UNIT-II		**07**			**No. of classes taken:**			

UNIT-III: Markets & Pricing Policies

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15	Market Structures	1	16-01-2025		TLM2	CO3	T1 / T2	
I MID EXAMINATIONS 27-01-2025 to 01-02-2025								
16	Types of Markets	1	18-01-2025		TLM2	CO3	T1 / T2	
17	Features and Price out determination under perfect competition	1	21-01-2025		TLM2	CO3	T1 / T2	
18	Monopoly	1	23-01-2025		TLM2	CO3	T1 / T2	
19	Monopolistic Competition	1	25-01-2025		TLM2	CO3	T1 / T2	
20	Assignment-III	1	28-01-2025		TLM2			
21	Pricing Policies & its Objectives	1	30-01-2025		TLM2			
22	Pricing Methods	1	01-02-2025		TLM2			
23	Pricing Methods and its applications in business	1	04-02-2025		TLM2			
No. of classes required to complete UNIT-III		**09**			**No. of classes taken:**			

UNIT-IV: Capital and Capital Budgeting

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
24	Capital budgeting Nature and its significance	1	06-02-2025		TLM2	CO4	T1 / T2	
25	Types of Capital	1	08-02-2025		TLM2	CO4	T1 / T2	
26	Sources of raising capital	1	11-02-2025		TLM2	CO4	T1 / T2	
27	Assignment-IV	1	13-02-2025		TLM2	CO4	T1 / T2	
28	Significance of capital budgeting	1	15-02-2025		TLM2	CO4	T1 / T2	

29	Process of Capital budgeting	1	18-02-2025		TLM2	CO4	T1 / T2	
30	Techniques of Capital budgeting (non-discounted cash flow techniques and discounted cash flow of techniques)	1	20-02-2025		TLM2	CO4	T1 / T2	
31	Problems of capital budgeting	1	22-02-2025		TLM2	CO4	T1 / T2	
No. of classes required to complete UNIT-IV		**08**			**No. of classes taken:**			

UNIT-V: Financial Accounting and Analysis

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
32	Introduction to Accounting-History Book keeping	1	25-02-2025		TLM2	CO5	T1 / T2	
33	Scope and Objectives of Accounting-Double entry system of accounting	1	27-02-2025		TLM2	CO5	T1 / T2	
34	Accounting Concepts and Conventions	1	01-03-2025		TLM2	CO5	T1 / T2	
35	Journal entries	1	04-03-2025		TLM2	CO5	T1 / T2	
36	Ledger	1	06-03-2025		TLM2	CO5	T1 / T2	
37	Trial Balance-Final accounts	1	08-03-2025		TLM2	CO5	T1 / T2	
38	Final accounts with adjustments problems	1	11-03-2025		TLM2	CO5	T1 / T2	
39	Final accounts with adjustments problems	1	13-03-2025		TLM2	CO5	T1 / T2	
40	Final accounts with adjustments problems	1	15-03-2025		TLM2	CO5	T1 / T2	
41	Final accounts with adjustments problems	1	18-03-2025		TLM2	CO5	T1 / T2	
42	Assignment -V	1	20-03-2025		TLM2	CO5	T1 / T2	
43	Financial Statements through Ratio analysis	1	22-03-2025		TLM2	CO5	T1 / T2	
44	Problems on Ratio analysis	1	25-03-2025		TLM2	CO5	T1 / T2	
45	Problems on Ratio analysis	1	27-03-2025		TLM2	CO5	T1 / T2	
46	Problems on Ratio analysis	1	03-04-2025		TLM2	CO5	T1 / T2	
47	Problems on Ratio analysis	1	05-04-2025		TLM2	CO5	T1 / T2	

II MID EXAMINATIONS 07-04-2025 to 12-04-2025		
No. of classes required to complete UNIT-V	**16**	**No. of classes taken:**

Content Beyond the Syllabus

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
48	Crowd funding FinTechs 5.O	3	29-03-2025 & 01-04-2025		TLM2/ TLM5		Fintech 5.o	

Teaching Learning Methods			
TLM1	Chalk and Talk	**TLM4**	Demonstration (Lab/Field Visit)
TLM2	PPT	**TLM5**	ICT (NPTEL/Swayam Prabha/MOOCS)
TLM3	Tutorial	**TLM6**	Group Discussion/Project
TLM 7	Assignment /Quiz		

PART-C

EVALUATION PROCESS (R23 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I , Unit-II)	A1=5
Assignment-II (Unit-III , Unit-IV , Unit-V)	A2=5
I-Mid Examination (Units-I & II)	M1=15
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=15
II-Quiz Examination (Units-III, IV & V)	Q2=10
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=15
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

Course Instructor	Course Coordinator	Module Coordinator	HOD
K.Ravi Kiran Yasaswi	K.Ravi Kiran Yasaswi	Dr A Adisesha Reddy	Dr A Adisesha Reddy

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Phone: 08659-222933, Fax: 08659-222931

FRESHMAN ENGINEERING DEPARTMENT

COURSE HANDOUT

Part-A

PROGRAM : II B. Tech., II-Sem., CSE-C
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : PROBABILITY & STATISTICS
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS 3
COURSE INSTRUCTOR : Dr.D. VIJAY KUMAR
COURSE COORDINATOR: Dr. M. Rami Reddy
PRE-REQUISITES : Basics of Mathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs):

- To familiarize the students with the foundations of probability and statistical methods
- To impart probability concepts and statistical methods in various applications Engineering

COURSE OUTCOMES (COs): Upon successful completion of this course, the student should be able to

CO1: Classify the concepts of data science and its importance (L2)
CO2: Interpret the association of characteristics and through correlation and regression tools (L3)
CO3: Apply discrete and continuous probability distributions (L3)
CO4: Design the components of a classical hypothesis test (L4)
CO5: Infer the statistical inferential methods based on small and large sampling tests (L4)

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

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

1. **Miller and Freund's,** Probability and Statistics for Engineers,7/e, Pearson, 2008.
2. S. **C. Gupta and V.K. Kapoor,** Fundamentals of Mathematical Statistics, 11/e, Sultan Chand & Sons Publications, 2012.

BOS APPROVED REFERENCE ROOKS:

1. **Shron L. Myers, Keying Ye, Ronald E Walpole,** Probability and Statistics for Engineers and the Scientists, 8th Edition. Pearson 2007.
2. **Jay 1. Devore,** Probability and Statistics for Engineering and the Sciences, 8th Edition, Cengage.
3. **Sheldon M. Ross,** Introduction to probability and statistics Engineers and the Scientists, 4th Edition, Academic Foundation, 2011.
4. **Johannes Ledolter and Robert V. Hogg,** Applied statistics for Engineers and Physical Scientists, 3rd Edition, Pearson, 2010.

Part-B

COURSE DELIVERY PLAN (LESSON PLAN)

UNIT-I: Descriptive Statistics and methods for Data Science

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 class	1	9/12/2024		TLM1	CO1	T1,T2	
2.	Syllabus Co's, PO's	1	10/12/2024		TLM1	CO1	T1,T2	
3.	Unit-1, Introduction to data science	1	13/12/2024		TLM2	CO1	T1,T2	
4.	Statistics- Population and sample, Collection of data	1	14/12/2024		TLM1	CO1	T1,T2	
5.	Types of variables, Data Visualization	1	16/12/2024		TLM1	CO1	T1,T2	
6.	Measures of central tendency, A.M	1	17/12/2024		TLM1	CO1	T1,T2	
7.	Median, Mode problems	1	20/12/2024		TLM1	CO1	T1,T2	
8.	Measures of variability Range, Mean deviation	1	21/12/2024		TLM3	CO1	T1,T2	
9.	S.D. & Q D	1	23/12/2024		TLM1	CO1	T1,T2	
10.	Skewness, Kurtosis	1	24/12/2024		TLM1	CO1	T1,T2	
11.	TUTORIAL - I	1	27/12/2024		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		11			No. of classes taken:			

UNIT-II: Correlation and Regression

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.	Correlation, types	1	28/12/2024		TLM1	CO2	T1,T2	
2.	Coefficient of correlation	1	30/12/2024		TLM1	CO2	T1,T2	
3.	Problems	1	31/12/2024		TLM1	CO2	T1,T2	
4.	Rank correlation	1	03/01/2025		TLM3	CO2	T1,T2	
5.	Linear regression (lines)	1	04/01/2025		TLM1	CO2	T1,T2	
6.	Multiple regression	1	07/01/2025		TLM1	CO2	T1,T2	
7.	Regression coefficients	1	08/01/2025		TLM1	CO2	T1,T2	
8.	Properties, problems	1	10/01/2025		TLM1	CO2	T1,T2	
9.	Fitting of parabola	2	11/01/2025 20/01/2025		TLM1	CO2	T1,T2	
10.	Fitting of power curve, Exponential curve	2	21/01/2025 24/01/2025		TLM1	CO2	T1,T2	
11.	TUTORIAL - II	1	25/01/2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-II		13			No. of classes taken:			

I MID EXAMINATIONS (27-01-2025 TO 01-02-2025)

UNIT-III: Probability and Distributions

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.	Probability, Introduction	1	03/02/2025		TLM1	CO3	T1,T2	
2.	Conditional probability	1	04/02/2025		TLM1	CO3	T1,T2	
3.	Bayes' theorem	1	07/02/2025		TLM1	CO3	T1,T2	
4.	Random variables, Expectations	1	08/02/2025		TLM1	CO3	T1,T2	
5.	Problems on PMF, PDF	1	10/02/2025		TLM1	CO3	T1,T2	
6.	Mathematical Expectations and Variance	1	11/02/2025		TLM1	CO3	T1,T2	
7.	Binomial distribution	1	14/02/2025		TLM1	CO3	T1,T2	
8.	Poisson distribution	1	15/02/2025		TLM1	CO3	T1,T2	
9.	Uniform distribution	1	17/02/2025		TLM1	CO3	T1,T2	
10.	Normal distribution	1	18/02/2025		TLM1	CO3	T1,T2	
11.	TUTORIAL - III	1	21/02/2025		TLM3	CO3	T1,T2	
No. of classes required to complete UNIT-III		11			No. of classes taken:			

UNIT-IV: Sampling Theory

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	22/02/2025		TLM1	CO4	T1,T2	
2.	Sampling distribution, definitions	1	24/02/2025		TLM1	CO4	T1,T2	
3.	Sampling distribution of mean, variance	1	25/02/2025		TLM1	CO4	T1,T2	
4.	Problems	1	28/02/2025		TLM1	CO4	T1,T2	
5.	Problems on central limit theorem	1	01/03/2025		TLM1	CO4	T1,T2	
6.	Estimation	1	03/03/2025		TLM1	CO4	T1,T2	
7.	Normal theory distributions	1	04/03/2025		TLM1	CO4	T1,T2	
8.	Estimation using t distribution	1	07/03/2025		TLM1	CO4	T1,T2	
9.	Estimation using χ^2 distribution	1	08/03/2025		TLM1	CO4	T1,T2	
10.	Estimation using F-distributions	1	10/03/2025		TLM1	CO4	T1,T2	
11.	TUTORIAL - IV	1	11/03/2025		TLM3			
No. of classes required to complete UNIT-IV		11			No. of classes taken:			

UNIT-V: Tests of Hypothesis

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.	Testing of Hypothesis definitions	1	14/03/2025		TLM1	CO5	T1,T2	
2.	Z-test for means	1	15/03/2025		TLM1	CO5	T1,T2	
3.	Z-test for means	1	17/03/2025		TLM1	CO5	T1,T2	

4.	Z-test for proportions	1	18/03/2025		TLM1	CO5	T1,T2	
5.	Z-test for proportions	1	21/03/2025		TLM1	CO5	T1,T2	
6.	t-test for means	1	22/03/2025		TLM1	CO5	T1,T2	
7.	t-test for means	1	24/03/2025		TLM1	CO5	T1,T2	
8.	F-test for variances	2	25/03/2025 25/03/2025		TLM3	CO5	T1,T2	
9.	χ^2-test for goodness of fit	2	29/03/2025 31/03/2025		TLM1	CO5	T1,T2	
10.	χ^2-test for independence of attributes	2	01/04/2025 04/04/2025		TLM1	CO5	T1,T2	
11.	TUTORIAL - V	1	05/04/2025		TLM3	CO5	T1,T2	
No. of classes required to complete UNIT-V		11			No. of classes taken:			

II MID EXAMINATIONS (07-04-2025 TO 12-04-2025)

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 (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PO 6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethic**s: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Dr. D.VIJAY KUMAR	**Dr. M. RAMI REDDY**	**Dr. A. RAMI REDDY**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr B Sivaramakrishna
Course Name & Code **:** 23CS06-OPERATING SYSTEMS
L-T-P Structure **: 3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/III/D **A.Y.:** 2024-25
Regulations : R23

PREREQUISITE: Knowledge of Computer Fundamentals & Data Structures

COURSE EDUCATIONAL OBJECTIVES (CEOs):
The main objectives of the course is to make student

- Understand the basic concepts and principles of operating systems, including process management, memory management, file systems, and Protection.
- Make use of process scheduling algorithms and synchronization techniques to achieve better performance of a computer system.
- Illustrate different conditions for deadlock and their possible solutions.

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

CO1	Understand the fundamental concepts, functions, and structures of operating systems, including their design, implementation, and the various types of system calls and services.(Understand-L2).
CO2	Understand process concepts, multithreading models, and CPU scheduling algorithms to effectively manage operations on processes, inter-process communication, and threading issues in operating systems. (Understand-L2).
CO3	Analyze synchronization tools, deadlock handling methods to solve critical section problems and ensure efficient process synchronization in operating systems. (Apply-L3)
CO4	Analyze different memory management techniques paging and segmentation to understand their suitability for various memory allocation scenarios. (Apply-L3)
CO5	Apply knowledge of file system structures and protection mechanisms to design and implement secure file management systems. (Apply-L3)

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

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

CO4		**2**	**1**												
CO5		**2**	**1**												
1 - Low					**2 –**Medium						**3 -** High				

REFERENCE BOOKS:

T1	Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10th Edition, Wiley, 2018.
T2	Modern Operating Systems, Tanenbaum A S, 4th Edition, Pearson , 2016.
R1	Operating Systems -Internals and Design Principles, Stallings W, 9th edition, Pearson, 2018
R2	Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3rd Edition, McGraw Hill, 2013

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction to Operating Systems

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Operating systems	1	11-12-24		TLM2	
2.	Introduction to Operating systems	1	12-12-24		TLM2	
3.	Introduction to Operating systems	1	13-12-24		TLM2	
4.	Introduction to Operating systems	1	18-12-24		TLM2	
5.	Operating System Functions	1	19-12-24		TLM2	
6.	Operating Systems Operations	1	20-12-24		TLM2	
7.	Computing Environments	1	21-12-24		TLM2	
8.	Free and Open-Source Operating Systems.	1	26-12-24		TLM2	
9.	Operating System Services	1	27-12-24		TLM2	
10.	User and Operating-System Interface	1	28-12-24		TLM2	
11.	System Calls, Types of System Calls	1	02-01-25		TLM2	
12.	System Programs	1	03-01-25		TLM2	
13.	Operating System Design and Implementation	1	04-01-25		TLM2	
14.	Operating System Structure	1	08-01-25		TLM2	
15.	Operating System Debugging	1	09-01-25		TLM2	
No. of classes required to complete UNIT-I: 15				**No. of classes taken:**		

UNIT-II: Process Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
16.	Process Concept	1	10-01-25		TLM2	
17.	Process Scheduling	1	15-01-25		TLM2	
18.	Operations on Processes	1	16-01-25		TLM2	

19.	Inter-process Communication	1	17-01-25		TLM2	
20.	Multithreading Models	1	18-01-25		TLM2	
21.	Thread Libraries	1	22-01-25		TLM2	
22.	Threading Issues	1	23-01-25		TLM2	
23.	CPU Scheduling: Basic concepts	1	24-01-25		TLM2	
24.	Scheduling Criteria	1	25-01-25		TLM2	
25.	Scheduling Algorithms	1	05-02-25		TLM2	
26.	Multiple Processor Scheduling	1	06-02-25			
No. of classes required to complete UNIT-II: 10				**No. of classes taken:**		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
27.	The Critical section problem, Peterson's solutions	1	07-02-25		TLM1	
28.	Synchronization hardware	1	12-02-25		TLM1	
29.	Semaphores	1	13-02-25		TLM1	
30.	Classic problems of Synchronization	1	14-02-25		TLM1	
31.	Monitors	1	15-02-25		TLM1	
32.	Synchronization examples	1	19-02-25		TLM1	
33.	Atomic transactions	1	20-02-25		TLM1	
34.	System model and deadlock characterization	1	21-02-25		TLM1	
35.	Methods for Handling deadlocks and deadlock prevention	1	22-02-25		TLM1	
36.	Deadlock Avoidance	1	27-02-25		TLM1	
37.	Deadlock detection	1	28-02-25		TLM1	
38.	Recovery from deadlock	1	01-03-25		TLM1	
No. of classes required to complete UNIT-III: 12						

UNIT-IV: Memory Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
39.	Memory-Management Strategies: Introduction	1	05-03-25		TLM1	
40.	Contiguous Memory Allocation	1	06-03-25		TLM1	
41.	Paging, Structure of the Page Table, Swapping.	1	07-03-25		TLM1	
42.	Virtual Memory Management: Introduction	1	12-03-25		TLM1	
43.	Demand Paging	1	13-03-25		TLM1	
44.	Copy-on-Write	1	15-03-25		TLM1	
45.	Page replacement Algorithms	1	19-03-25		TLM1	
46.	Allocation of frames, Thrashing	1	20-03-25		TLM1	
47.	Storage Management: Overview	1	21-03-25			

	of Mass Storage Structure					
48.	HDD Scheduling	1	22-03-25			
No. of classes required to complete UNIT-IV: 10				**No. of classes taken:**		

UNIT-V: File System Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
49.	File System: File System Interface:	1	26-03-25		TLM2	
50.	Access methods	1	26-03-25		TLM2	
51.	Directory Structure	1	27-03-25		TLM2	
52.	File System Implementation: File-System Structure	1	27-03-25		TLM2	
53.	File-system Operations	1	28-03-25		TLM2	
54.	Directory implementation	1	28-03-25		TLM2	
55.	Allocation Method	1	29-03-25		TLM2	
56.	Free Space Management	1	29-03-25		TLM2	
57.	File-System Mounting, Partitions and Mounting, File Sharing	1	02-04-25		TLM2	
58.	Protection: Goals of protection	1	03-04-25		TLM2	
59.	Principles of Protection	1	04-04-25		TLM2	
60.	Protection Rings	1	05-04-25		TLM2	
61.	Domain of Protection, Access Matrix	1	02-04-25		TLM2	
No. of classes required to complete UNIT-V: 13				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Assignment-I (Units-I,II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (Unit-III, IV & V)	M2=15
II-Quiz Examination (Unit-III, IV & V)	Q2=10

Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE): M	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department

Name of the Faculty	Dr.B.Siva Rama Krishna	Dr. D. Venkata Narayana	Dr. D. Venkata Subbaiah	Dr. D. Veeraiah
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. P. Bhagath
Course Name & Code : Database Management Systems & 23CS03
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B. Tech/IV/D **A.Y.:** 2024-25
PREREQUISITES : **Data Structures**

COURSE EDUCATIONAL OBJECTIVES (CEOs): The main objective of this course is

- Introduce database management systems and to give a good formal foundation on the relational model of data and usage of Relational Algebra
- Introduce the concepts of basic SQL as a universal Database language
- Demonstrate the principles behind systematic database design approaches by covering conceptual design, logical design through normalization
- Provide an overview of physical design of a database system, by discussing Database indexing techniques and storage techniques

COURSE OUTCOMES (COs): After successful completion of the course the students are able to

CO1	**Understand the foundation of database management system and various data models. (Understand- L2)**
CO2	**Identify relational model concepts, implement various constraints, perform SQL queries and DML operations. (Understand-L2)**
CO3	**Apply SQL queries, functions, and work with nested queries, grouping, joins, views, and set operations. (Apply-L3)**
CO4	**Apply various normalization techniques for efficient data handling. (Apply-L3)**
CO5	**Understand Transaction management, recovery & indexing techniques. (Understand-L2)**

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

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

TEXTBOOKS:

T1	Database Management Systems, 3rd edition, Raghu Rama Krishnan, Johannes Gehrke, TMH (For Chapters 2, 3, 4)
T2	Database System Concepts,5th edition, Silberschatz, Korth, Sudarsan, TMH (For Chapter 1 and Chapter 5)

REFERENCE BOOKS:

R1	Introduction to Database Systems, 8thedition, C J Date, Pearson.
R2	Database Management System, 6th edition, Ramez Elmasri, Shamkant B. Navathe, Pearson
R3	Database Principles Fundamentals of Design Implementation and Management, Corlos Coronel, Steven Morris, Peter Robb, Cengage Learning.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Database System characteristics	1	09-12-2024		TLM1,2	
2.	Database users	1	11-12-2024		TLM1,2	
3.	Advantages of database systems	1	12-12-2024		TLM1,2	
4.	Database applications	1	13-12-2024		TLM1,2	
5.	Data Models	2	16-12-2024 18-12-2024		TLM1,2	
6.	Schema	1	19-12-2024		TLM1,2	
7	Three tier schema architecture	2	20-12-2024 23-12-2024		TLM1,2	
8	Database structure	2	26-12-2024 27-12-2024		TLM1,2	
9	Centralized and Client server architecture for the database	2	30-12-2024 02-01-2025		TLM1,2	
No. of classes required to complete UNIT-I: 13				**No. of classes taken:**		

UNIT-II: Entity Relationship Model and Relational Model

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction	1	03-01-2025		TLM1,2	
2.	Representation of entities	1	05-01-2025		TLM1,2	
3.	Attributes, Entity set, Relationship, Relationship set	2	07-01-2025 08-01-2025		TLM1,2	
4.	Constraints, Sub classes, Super class, Inheritance, Specialization	1	09-01-2025		TLM1,2	
5.	Generalization using ER Diagrams	1	10-01-2025		TLM1,2	
6.	Introduction to relational model	1	17-01-2025		TLM1,2	
7.	Concepts of domain, attribute, tuple, relation, importance of null values	1	20-01-2025		TLM1,2	
8.	Constraints (Domain, Key constraints, integrity constraints) and their importance	1	21-01-2025		TLM1,2	
9.	Relational Algebra Relational Calculus	3	23-01-2025 24-01-2025 23-01-2025		TLM1,2	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

UNIT-III: SQL

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	BASIC SQL: Simple Database schema, data types, table definitions (create, alter), different DML operations (insert, delete, update)	2	03-02-2025 05-02-2025		TLM1,2	
2.	SQL querying (select and project) using where clause, arithmetic & logical operations	2	06-02-2025 07-02-2025		TLM1,2	
3.	SQL functions (Date and Time, Numeric, String conversion)	2	10-02-2025 12-02-2025		TLM1,2	
4.	Creating tables with relationship, implementation of key and integrity constraints	2	13-02-2025 14-02-2025		TLM1,2	
5.	Nested queries, sub queries, grouping, aggregation, ordering, implementation of different types of joins, view(updatable and non-updatable), relational set operations.	4	17-02-2025 19-02-2025 20-02-2025 21-02-2025		TLM1,2	
No. of classes required to complete UNIT-III: 12				**No. of classes taken:**		

UNIT-IV: Schema Refinement (Normalization)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Purpose of Normalization or schema refinement	1	23-02-2025		TLM1,2	
2.	Concept of functional dependency	2	25-02-2025 26-02-2025		TLM1,2	
3.	Normal forms based on functional dependency Lossless join and dependency preserving decomposition	2	27-02-2025 28-02-2025		TLM1,2	
4.	1NF, 2NF and 3 NF, concept of surrogate key, Boyce- Codd normal form (BCNF)	2	03-03-2025 05-03-2025		TLM1,2	
5.	MVD, Fourth normal form(4NF)	2	06-03-2025 07-03-2025			
6.	Fifth Normal Form (5NF)	2	10-03-2025 12-03-2025			
No. of classes required to complete UNIT-IV: 11				**No. of classes taken:**		

UNIT-V: Transaction Processing and Concurrency Control

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Transaction State, ACID properties	1	13-03-2025		TLM1,2	
2.	Concurrent Executions, Serializability, Recoverability	2	14-03-2025 17-03-2025		TLM1,2	
3.	Implementation of Isolation, Testing for Serializability	1	19-03-2025		TLM1,2	
4.	Two-Phase Locking Techniques for concurrency control: Types of Locks, Time stamp-based locking	2	20-03-2025 21-03-2025		TLM1,2	
5.	Recovery Concepts	1	24-03-2025		TLM1,2	
6.	No-UNDO/REDO Recovery Based on Deferred Update	1	26-03-2025		TLM1,2	
7.	Recovery Techniques Based on Immediate Update	1	27-03-2025		TLM1,2	

8.	Shadow Paging, ARIES	2	28-03-2025 31-03-2025		TLM1,2	
9.	Hash based Indexing	2	02-04-2025 03-04-2025		TLM1,2	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate

	consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO 4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	**The engineer and society**: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
PO 7	**Environment and sustainability**: Understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
PO 9	**Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr. P Bhagath**	**Dr. P. Bhagath**	**Dr. D. Venkata Subbaiah**	**Dr. D. Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. J. Nageswara Rao
Course Name & Code : SOFTWARE ENGINEERING & 23IT02
L-T-P Structure : 3-0-0 **Credits: 3**
Program/Sem/Sec : B.Tech/IV SEM /D **A.Y.: 2024-25**
Regulations : R23

PREREQUISITE: Object Oriented Programming
COURSE EDUCATIONAL OBJECTIVES (CEOs):

- **The objective of the course is to provide an understanding of different s/w process models and how to choose one among them by gathering the requirements from a client and specifying them.**
- **Using those requirements in the design of the software architecture based on the choices with the help of modules and interfaces.**
- **To enable s/w development, by using different testing techniques like unit, integration and functional testing, quality assurance can be achieved.**

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

CO1	**Understanding the Evolution in Software Development and Implementation of Modern Software Development Practices (Understand - L2)**
CO2	**Understand Software Project Management and Requirements Analysis Techniques. (Understand - L2)**
CO3	**Demonstrate Effective Software Design and Agile Practices. (Apply - L3)**
CO4	**Apply Coding, Testing, and Quality Management Practices.(Apply - L3)**
CO5	**Apply the usage of CASE tools, Software Maintenance process and Software Reuse. (Apply - L3)**

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

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

TEXTBOOKS:

T1	**Fundamentals of Software Engineering, Rajib Mall, 5th Edition**
T2	**Software Engineering A practitioner's Approach, Roger S. Pressman, 9th Edition, Mc- Graw Hill International Edition**

REFERENCE BOOKS:

R1	**Software Engineering, Ian Sommerville, 10thEdition, Pearson**
R2	**Software Engineering, Principles and Practices, Deepak Jain, Oxford University Press.**
R3	**https://nptel.ac.in/courses/106/105/106105182/**
R4	**https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_012605895063871 48827_shared/overview**
R5	**https://infyspringboard.onwingspan.com/web/en/app/toc/lex_auth_013382690411003 904735_shared/overview**

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Introduction & Software Life Cycle Models

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to Software Engineering & Evolving role of Software	1	09/12/24		TLM1, 2	
2.	Software Development projects	1	10/12/24		TLM1, 2	
3.	Exploratory style of software developments	1	10/12/24		TLM1, 2	
4.	Emergence of software engineering	1	14/12/24		TLM1, 2	
5.	Notable changes in software development practices	1	16/12/24		TLM1, 2	
6.	Computer system engineering.	1	17/12/24		TLM1, 2	
7.	Software Life Cycle Models. Basic concepts	1	17/12/24		TLM1, 2	
8.	Waterfall model and its extensions.	1	21/12/24		TLM1, 2	
9.	Rapid application development	1	23/12/24		TLM1, 2	
10.	Agile development model.	1	24/12/24		TLM1, 2	
11.	Spiral Model.	1	24/12/24		TLM1, 2	
No. of classes required to complete UNIT-I: 11				No. of classes taken:		

UNIT-II: Software Project Management

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Software project management complexities	1	28/12/24		TLM1,2	
13.	Responsibilities of a software project manager	1	30/12/24		TLM1,2	

14.	Metrics for project size estimation Project estimation techniques	2	31/01/25 31/01/25		TLM1,2	
15.	Empirical Estimation techniques, COCOMO	2	04/01/25 06/01/25		TLM1,2	
16.	Halstead's software science, risk management.	1	07/01/25		TLM1,2	
17.	Requirements Analysis and Specification	2	07/01/25 08/01/25		TLM1,2	
18.	Software Requirements Specification (SRS)	1	11/01/25		TLM1,2	
19.	Axiomatic specification, Algebraic specification	1	18/01/25		TLM1,2	
20.	Executable specification and 4GL.	1	20/01/25		TLM1,2	
21.	Tutorial	1	21/01/25		TLM1,2	
No. of classes required to complete UNIT-II: 13				No. of classes taken:		

UNIT-III: Software Design:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
22.	Software Design Overview of the design process	1	21/01/25		TLM1,2	
23.	How to characterize a good software design?	1	25/01/25		TLM1,2	
24.	Layered arrangement of modules, Cohesion and Coupling	1	03/02/25		TLM1,2	
25.	Approaches to software design	1	04/02/25		TLM1,2	
26.	Agility and the Cost of Change, Agile Process	1	04/02/25		TLM1,2	
27.	Extreme Programming (XP), Other Agile Process Models	1	08/02/25		TLM1,2	
28.	Tool Set for the Agile Process	1	10/02/25		TLM1,2	
29.	Function-Oriented Software Design: Overview of SA/SD methodology	1	11/02/25		TLM1,2	
30.	Structured analysis, Developing the DFD model of a system	1	11/02/25		TLM1,2	
31.	Structured design, Detailed design, and Design Review	1	15/02/25		TLM1,2	
32.	User Interface Design: Characteristics of a good user interface	1	17/02/25		TLM1,2	
33.	Basic concepts, Types of user interfaces	1	18/02/25		TLM1,2	
34.	Fundamentals of component-based GUI development	1	18/02/25			
35.	user interface design methodology.	1	22/02/25			
36.	ASSIGNMENT-3		24/02/25			
No. of classes required to complete UNIT-III: 14				No. of classes taken:		

UNIT-IV: Coding and Testing:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
37.	Coding, Code review	1	25/02/25		TLM1,2	
38.	Software documentation, Testing.	1	25/02/25		TLM1,2	
39.	Black-box testing	1	01/03/25		TLM1,2	
40.	White-Box testing	1	03/03/25		TLM1,2	
41.	Debugging, Program analysis tools	1	04/03/25		TLM1,2	
42.	Integration testing	1	04/03/25		TLM1,2	
43.	Testing object-oriented programs	1	08/03/25		TLM1,2	
44.	Smoke testing, and some general issues associated with testing.	1	10/03/25		TLM1,2	
45.	Software Reliability and Quality Management: Software reliability	1	11/03/25		TLM1,2	
46.	Software quality management system	1	11/03/25		TLM1,2	
47.	ISO 9000.SEI Capability maturity model	1	15/03/25		TLM1,2	
48.	Few other important quality standards, and Six Sigma.	1	17/03/25		TLM1,2	
No. of classes required to complete UNIT-IV: 12				No. of classes taken:		

UNIT-V: Computer-Aided Software Engineering(CASE)

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
49.	Computer-Aided Software Engineering (Case): CASE and its scope, CASE environment	1	18/03/25		TLM1,2	
50.	CASE support in the software life cycle and other characteristics of CASE tools	1	18/03/25		TLM1,2	
51.	Towards second generation CASE Tool, Architecture of a CASE Environment.	1	22/03/25		TLM1,2	
52.	Software Maintenance: Characteristics of software maintenance, Software reverse engineering	1	24/03/25		TLM1,2	
53.	Software maintenance process models and Estimation of maintenance cost.	1	25/03/25		TLM1,2	

54.	Software Reuse: reuse-definition, Introduction.	1	25/03/25		TLM1,2	
55.	Reason behind no reuse so far, Basic issues in any reuse program	1	29/03/25		TLM1,2	
56.	A reuse approach and Reuse at organization level.	1	31/03/25		TLM1,2	
57.	ASSIGNMENT-5	1	01/04/25		TLM3	
No. of classes required to complete UNIT-V: 08				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	HOD Sign Weekly
1.	Emerging Technologies in Software Engineering	1	05/04/25		TLM6	

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 (R23 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr. J. Nageswara Rao	Dr. J. Nageswara Rao	Dr. Y. V. Bhaskara Reddy	Dr. D. Veeraiah
Signature				

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FRESHMAN ENGINEERING DEPARTMENT
COURSE HANDOUT
Part-A

PROGRAM : II B. Tech., IV-Sem., CSE-D
ACADEMIC YEAR : 2024-25
COURSE NAME & CODE : **Environmental Science**
L-T-P STRUCTURE : 2-0-0
COURSE CREDITS 0
COURSE INSTRUCTOR : Dr. Shaheda Niloufer
COURSE COORDINATOR : Dr. Shaheda Niloufer
PRE-REQUISITES : biology, chemistry, geology, mathematics or physics

Course Objectives:

1	To enlighten the learners in the concept of differential equations and multivariable calculus
2	To furnish the learners with basic concepts and techniques at intermediate level to lead them into advanced level by handling various real-world applications.

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

CO 1	The necessity of resources, their exploitation and sustainable management	L2
CO 2	The interactions of human and ecosystems and their role in the food web in the natural world and the global biodiversity, threats to biodiversity and its conservation.	L2
CO 3	Environmental problems like pollution, disasters and possible solutions.	L1
CO 4	The importance of environmental decision making in organizations through understanding the environmental law and environmental audits.	L2
CO 5	Environmental issues like over population, human health etc related to local, regional and global levels.	L2

Course Articulation Matrix - Correlation between COs, POs & PSOs

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

Correlation Levels: **1**-Slight (Low), **2**-Moderate (Medium), **3**-Substantial (High) and No correlation: **'-'**

Textbooks (T) and References (R):

T1: Erach Bharucha,Text book of Environmental Studies for Undergraduate Courses,Universities Press (India) Private Limited, 2019.

T2: Palaniswamy, Environmental Studies, 2/e, Pearson education, 2014.

T3: S.Azeem Unnisa, Environmental Studies, Academic Publishing Company, 2021.

T4: K.Raghavan Nambiar, "Text book of Environmental Studies for Undergraduate Courses as per UGC model syllabus", SciTech Publications (India), Pvt. Ltd, 2010.

R1. KVSG Murali Krishna, The Book of Environmental Studies, 2/e, VGS Publishers, 2011.

R2. Deeksha Dave and E.Sai Baba Reddy, Textbook of Environmental Science, 2/e, Cengage Publications, 2012.

R3. M.Anji Reddy, "Textbook of Environmental Sciences and Technology", BS Publication, 2014.

R4. J.P. Sharma, Comprehensive Environmental studies, Laxmi publications, 2006.

R5. J. Glynn Henry and Gary W. Heinke, Environmental Sciences and Engineering, Prentice Hall of India Private limited, 1988.

R6. G.R. Chatwal, A Text Book of Environmental Studies, Himalaya Publishing House, 2018.

R7. Gilbert M. Masters and Wendell P. Ela, Introduction to Environmental Engineering and Science, 1/e, Prentice Hall of India Private limited, 1991.

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
1.	Introduction to the course	1	10-12-2024		TLM2			
2.	Multidisciplinary Nature of Environmental Studies	1	11-12-2024		TLM2			

UNIT-I: Multidisciplinary Nature of Environmental Studies

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
3.	Natural Resources – Forest resources	1	17-12-2024		TLM1	CO1	T1,T2	
4.	Water resources	1	18-12-2024		TLM1	CO1	T1,T2	
5.	Mineral resources & Food resources	1	24-12-2024		TLM1	CO1	T1,T2	
6.	Energy resources	1	31-12-2024		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-I		06			No. of classes taken:			

UNIT-II: Ecosystem & Biodiversity

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
7.	Ecosystems – Structure & Functions	1	07-01-2025		TLM1	CO1	T1,T2	
8.	Ecological succession & Food chains, Food webs & Ecological Pyramids	1	08-01-2025		TLM1	CO1	T1,T2	
9.	Types of ecosystems	1	21-01-2025		TLM1	CO1	T1,T2	

10.	Biodiversity – introduction, levels, biogeographic classification,	1	22-01-2025		TLM1	CO1	T1,T2	
11.	I MID		28-01-2025					
12.	I MID		29-01-2025					
13.	Values of Biodiversity, India as mega diversity nation	1	04-02-2025		TLM1	CO1	T1,T2	
14.	Threats to biodiversity & Conservation of biodiversity	1	05-02-2025		TLM1	CO1	T1,T2	
No. of classes required to complete UNIT-II		06			No. of classes taken:			

I MID EXAMINATIONS (27-01-2025 TO 01-02-2025)

UNIT-III: Environmental pollution

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
15.	Environmental pollution -Air pollution	1	11-02-2025		TLM1	CO2	T1,T2	
16.	Water pollution, Marine pollution, Thermal pollution	1	12-02-2025		TLM1	CO2	T1,T2	
17.	Soil pollution	1	18-02-2025		TLM1	CO2	T1,T2	
18.	Noise pollution & Nuclear Hazards	1	19-02-2025		TLM1	CO2	T1,T2	
19.	Solid waste management. Disaster Management	1	25-02-2025		TLM1	CO2	T1,T2	
No. of classes required to complete UNIT-III		05			No. of classes taken:			

UNIT-IV: Social issues & Environment

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
20.	From Unsustainable to Sustainable development	1	04-03-2025		TLM1	CO3	T1,T2	
21.	Urban problems related to energy – Resettlement and rehabilitation of people; its problems and concerns	1	05-03-2025		TLM1	CO3	T1,T2	
22.	Environmental ethics, Climate change	1	11-03-2025		TLM1	CO3	T1,T2	
23.	Carbon credits & Mission LiFE - Wasteland reclamation. – Consumerism and waste products	1	12-03-2025		TLM1	CO3	T1,T2	
24.	Environmental Acts	1	18-03-2025		TLM1	CO3	T1,T2	

No. of classes required to complete UNIT-IV	05	No. of classes taken:

UNIT-V: Human population & Environment

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
25.	Population growth, variation among nations. Population explosion – Family Welfare Programmes.	1	19-03-2025		TLM1	CO4	T1,T2	
26.	Environment and human health –Human Rights – Value Education	1	25-03-2025		TLM1	CO4	T1,T2	
27.	HIV/AIDS – Women and Child Welfare	1	26-03-2025		TLM1	CO4	T1,T2	
28.	Role of information Technology in Environment and human health	1	01-04-2025		TLM1	CO4	T1,T2	
29.	Revision	1	02-04-2025		TLM1	CO4	T1,T2	
30.	II MID	1	08-04-2025					
31.	II MID	1	09-04-2025					
No. of classes required to complete UNIT-V		05			No. of classes taken:			

Content beyond the Syllabus

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	Text Book followed	HOD Sign Weekly
32.	Case studies	2	08-02-2025 11-03-2025		TLM2	CO2	T1,T2	
No. of classes		2			No. of classes taken:			
II MID EXAMINATIONS (07-04-2025 TO 12-04-2025)								

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

PART-C EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Assignment-I (Units-I, II)	A1=5
I-Descriptive Examination (Units-I, II)	M1=15
I-Quiz Examination (Units-I, II)	Q1=10
Assignment-II (Unit-III, IV & V)	A2=5
II- Descriptive Examination (UNIT-III, IV & V)	M2=15
II-Quiz Examination (UNIT-III, IV & V)	Q2=10

Mid Marks =80% of Max ((M1+Q1+A1), (M2+Q2+A2)) + 20% of Min ((M1+Q1+A1), (M2+Q2+A2))	M=30
Cumulative Internal Examination (CIE):	30
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	100

PART-D PROGRAMME OUTCOMES (POs):

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

Dr. Shaheda Niloufer	Dr. Shaheda Niloufer	**Dr. Shaheda Niloufer**	**Dr. A. RAMI REDDY**
Course Instructor	Course Coordinator	Module Coordinator	HOD

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr B Sivaramakrishna
Course Name & Code : 23CS55-OPERATING SYSTEMS LAB
L-T-P Structure : 0-0-3 **Credits:1.5**
Program/Sem/Sec : B.Tech. - CSE/III/D **A.Y.:**2024-25

PREREQUISITE: Knowledge of basic Computer Hardware & Software.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

Course Objectives: The main objectives of the course are to

- Provide insights into system calls, file systems, semaphores.
- Develop and debug CPU Scheduling algorithms, page replacement algorithms, thread implementation.
- Implement Bankers Algorithms to Avoid the Dead Lock.
- Acquire the generic software development skill through various stages of software life cycle
- Generate test cases for software testing

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

CO1	Implement and evaluate fundamental operating system concepts through programming exercises, including UNIX commands, system calls, and simulations of CPU scheduling algorithms. **(L3)**
CO2	Analyze synchronization mechanisms (semaphores and monitors) and memory allocation algorithms (first-fit, worst-fit, best-fit) through writing concurrent programs using the pthreads library. **(L4)**
CO3	Apply operating system concepts of memory management, deadlock avoidance, and file allocation strategies through simulations and experimentation with a real operating system. **(L3)**
CO4	Improve individual/ Teamwork skills, communication and report writing skills with ethical values

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

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

1 - Low	**2 –**Medium	**3 -** High

REFERENCE BOOKS:

R1	Operating System Concepts, Silberschatz A, Galvin P B, Gagne G, 10th Edition, Wiley,2018.
R2	Modern Operating Systems, Tanenbaum A S, 4th Edition, Pearson, 2016.
R3	Operating Systems -Internals and Design Principles, Stallings W, 9th edition, Pearson, 2018.
R4	Operating Systems: A Concept Based Approach, D.M Dhamdhere, 3rd Edition, McGraw Hill, 2013.

Online Learning Resources:

1. https://www.cse.iitb.ac.in/~mythili/os/
2. http://peterindia.net/OperatingSystems.html
3. www.cs.washington.edu/~tom/nachos

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Task-1:** Practicing of Basic UNIX Commands	3	09-12-2024		DM5	
2.	**Task-2:** Write programs using the following UNIX operating system calls. (fork, exec, getpid, exit, wait, close, stat, opendir and readdir.)	3	16-12-24		DM5	
3.	**Task-3:** Simulate UNIX commands like cp, ls, grep, etc.,	3	23-12-24		DM5	
4.	**Task-4:** Simulate the following CPU scheduling algorithms a) FCFS b) SJF c) Priority d) Round Robin	3	30-12-24		DM5	
5.	**Task-5:** Control the number of ports opened by	3	06-01-25		DM5	

	the operating system with a) Semaphore b) Monitors.					
6.	**Task-6:** Write a program to illustrate concurrent execution of threads using pthreads library.	3	20-01-25		DM5	
7.	**Task-7:** Write a program to solve producer-consumer problem using Semaphores.	3	03-02-25		DM5	
8.	**Task-8:** Implement the following memory allocation methods for fixed partition a) First fit b) Worst fit c) Best fit	3	10-02-25		DM5	
9.	**Task-9:** Simulate the following page replacement algorithms a) FIFO b) LRU c) LFU	3	17-02-25		DM5	
10.	**Task-10:** Simulate Paging Technique of memory management.	3	24-02-25		DM5	
11.	**Task-11:** Implement Bankers Algorithm for Dead Lock avoidance and prevention	3	03-03-25		DM5	
12.	**Task-12:** Simulate the following file allocation strategies a) Sequential b) Indexed c) Linked	3	10-03-25		DM5	
13.	**Task-13:**	3	17-03-25		DM5	

	Download and install nachos operating system and experiment with it					

PART-C

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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PO 7	**Environment and sustainability**: Understand the impact of professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO 12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

PROGRAMME SPECIFIC OUTCOMES (PSOs):

PSO 1	The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.
PSO 2	The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.

PSO 3	To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Dr.B. Siva Rama Krishna**	**Dr. D. Venkata Narayana**	**Dr.D.Venkata Subbaiah**	**Dr.V.Veeraiah**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. P. Bhagath
Course Name & Code : Database Management Systems Lab (20CS56)
L-T-P Structure : 0-0-3 Credits: 1.5
Program/Sem/Sec : B.Tech., CSE., IV-Sem., Sec-D A.Y: 2024-25

Pre-Requisites : Data Structures and Operating Systems

COURSE EDUCATIONAL OBJECTIVES (CEOs):: This Course will enable students to

1. Populate and query a database using SQL DDL/DML Commands

2. Declare and enforce integrity constraints on a database

3. Writing Queries using advanced concepts of SQL

4. Programming PL/SQL including procedures, functions, cursors and triggers

COURSE OUTCOMES (COs): At the end of the course, students can

CO 1	Implement SQL queries using DDL/DML commands.(Apply-L3)
CO 2	Apply different Integrity constraints & Normalization techniques for effective database design. (Apply-L3)
CO 3	Implement PL/SQL including procedures, functions, cursors and triggers. .(Apply-L3)
CO 4	Improve individual / teamwork skills, communication & report writing skills with ethical values.

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

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	-	2	-	-	-	-	-	-	-	-	3	-
CO2	3	2	2	-	2	-	-	-	-	-	-	-	-	3	-
CO3	3	2	2	-	2	-	-	-	-	-	-	-	-	3	-
C04	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-B

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using the SELECT command	6	13-12-2024 20-12-2024		TLM4	
2	Queries (along with sub-Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints. Example: - Select the roll number and name of the student who secured fourth rank in the class	6	27-12-2024 03-01-2025		TLM4	
3	Queries using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views	3	10-01-2025		TLM4	
4	Queries using Conversion functions (to_char, to_number and to_date), string functions (Concatenation, lpad, rpad, ltrim, rtrim, lower, upper, initcap, length, substr and instr), date functions (Sysdate, next_day, add_months, last_day, months_between, least, greatest, trunc, round, to_char, to_date)	3	24-01-2025		TLM4	
5	Create a simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those	3	31-01-2025		TLM4	

	who secured first class and an exception can be raised if no records were found)					
6	Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block	3	07-02-2025		TLM4	
7	Develop a program that includes the features NESTED IF, CASE and CASE expression. The program can be extended using the NULLIF and COALESCE functions	3	14-02-2025		TLM4	
8	Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT –IN Exceptions, USE defined Exceptions, RAISE- APPLICATION ERROR	3	21-02-2025		TLM4	
9	Programs development using creation of procedures, passing parameters IN and OUT of PROCEDURES	3	28-02-2025		TLM4	
10	Program development using creation of stored functions, invoke functions in SQL Statements and write complex functions	3	07-03-2025		TLM4	
11	Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.	3	14-03-2025		TLM4	
12	Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers	3	21-03-2025		TLM4	

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

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

PART-C

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**Dr. P. Bhagath**	**Dr. P. Bhagath**	**Dr. D. Venkata Subbaiah**	**Dr. D. Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. R. Ashok
Course Name & Code : Full Stack Development-I & 23CSS2
L-T-P Structure : 0-1-2 **Credits:** 2
Program/Sem/Sec : B.Tech. - CSE/IV/D **A.Y.:** 2024-25

PREREQUISITE: Knowledge of basic Computer hardware & software.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The main objectives of the course are to
- Make use of HTML elements and their attributes for designing static web pages
- Build a web page by applying appropriate CSS styles to HTML elements
- Experiment with JavaScript to develop dynamic web pages and validate forms.

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

CO1	Design static web pages by using HTML elements. (Apply-L3)
CO2	Develop a web page by applying appropriate CSS styles to HTML elements. (Apply-L3)
CO3	Develop dynamic web pages and validate forms using JavaScript. (Apply-L3)
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values

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

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

REFERENCE BOOKS:

R1	Programming the World Wide Web, 7th Edition, Robet W Sebesta, Pearson, 2013.
R2	Web Programming with HTML5, CSS and JavaScript, John Dean, Jones & Bartlett Learning, 2019 (Chapters 1-11).
R3	Pro MERN Stack: Full Stack Web App Development with Mongo, Express, React, and Node, Vasan Subramanian, 2nd edition, A Press, O'Reilly.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	**Lab Cycle-1**: Lists, Links and Images	4	10-12-2024 & 11-12-2024		**DM5**	
2.	**Lab Cycle-1:** Lists, Links and Images	4	17-12-2024 & 18-12-2024		**DM5**	
3.	**Lab Cycle-2**: HTML Tables, Forms and Frames	4	24-12-2024 & 31-12-2024		**DM5**	
4.	**Lab Cycle-2**: HTML Tables, Forms and Frames	4	07-01-2025 & 08-01-2025		**DM5**	
5.	**Lab Cycle-3**: HTML 5 and Cascading Style Sheets, Types of CSS	4	21-01-2025 & 22-01-2025		**DM5**	
6.	**Lab Cycle-3**: HTML 5 and Cascading Style Sheets, Types of CSS	4	28-01-2025 & 29-01-2025		**DM5**	
7.	**Lab Cycle-4:** Selector forms	4	04-02-2025 & 05-02-2025		**DM5**	
8.	**Lab Cycle-4:** Selector forms	4	11-02-2025 & 12-02-2025		**DM5**	
9.	**Lab Cycle-5**: CSS with Color, Background, Font, Text and CSS Box Model	4	18-02-2025 & 19-02-2025		**DM5**	
10.	**Lab Cycle-6:** Applying JavaScript - internal and external, I/O, Type Conversion	4	25-02-2025 & 26-02-2025		**DM5**	
11.	**Lab Cycle-6:** Applying JavaScript - internal and external, I/O, Type Conversion	4	04-03-2025 & 05-03-2025		**DM5**	
12.	**Lab Cycle-7:** Java Script Pre-defined and User-defined Objects	4	11-03-2025 & 12-03-2025		**DM5**	
13.	**Lab Cycle-8:** Java Script Conditional Statements and Loops	4	18-03-2025 & 19-03-2025		**DM5**	
14.	**Lab Cycle-9:** Java Script Functions and Events	4	25-03-2025 & 26-03-2025		**DM5**	

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

PART-C

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	Marks
Day to Day Work:	15
Internal Test	15
Continuous Internal Assessment	30
Procedure	20
Execution & Results	30
Viva-voce	20
Semester End Examination (SEE)	70
Total Marks = CIE + SEE	**100**

PART-D

PROGRAMME OUTCOMES (POs):

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr. R. Ashok	Mr. A. Sudhakar	Dr. Y. V. B. Reddy	Dr. D. Veeraiah
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor : Dr. D.Venkata Subbaiah,Dr. P. Bhagath,Dr. J.Nageswara Rao, Dr. B. Siva Rama Krishna
Regulation : R23
L-T-P Structure **:** 1-0-2 **Credits:** 02
Program/Sem/Sec : B.Tech – IV Semester – A Section **A.Y.:** 2024-25

PREREQUISITE: None

COURSE OBJECTIVES:

The objectives of the course are to
• Bring awareness on innovative design and new product development.
• Explain the basics of design thinking.
• Familiarize the role of reverse engineering in product development.
• Train how to identify the needs of society and convert into demand.
• Introduce product planning and product development process

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

CO1	Apply fundamental design components, principles, and new materials to create and improve design projects. (Applying-L3)
CO2	Apply the design thinking process to develop and present innovative product solutions. (Applying-L3)
CO3	Analyze the relationship between creativity and innovation, evaluate their roles in organizations, and develop strategic plans for transforming creative ideas into innovative solutions. (Analyzing-L4)
CO4	Analyze to work in a multidisciplinary environment. (Analyzing-L4)
CO5	Apply design thinking principles to address business challenges, develop and test business models and prototypes, and evaluate the value of creativity. (Evaluating-L5)

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

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

Textbooks:

1. Tim Brown, Change by design, 1/e, Harper Bollins, 2009.
2. Idris Mootee, Design Thinking for Strategic Innovation, 1/e, Adams Media, 2014.

Reference Books:

1. David Lee, Design Thinking in the Classroom, Ulysses press, 2018.
2. Shrrutin N Shetty, Design the Future, 1/e, Norton Press, 2018.
3. William lidwell, Kritinaholden, &Jill butter, Universal principles of design, 2/e, Rockport Publishers, 2010.
4. Chesbrough.H, The era of open innovation, 2003

Online Learning Resources:

- https://nptel.ac.in/courses/110/106/110106124/
- https://nptel.ac.in/courses/109/104/109104109/
- https://swayam.gov.in/nd1_noc19_mg60/preview
- https://onlinecourses.nptel.ac.in/noc22_de16/preview

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

Schedule of Experiments: Thursday (from 9.00 AM – 12.00 PM)

S. No.	Topics to be covered (Experiment Name)	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
01	**UNIT–I Introduction to Design Thinking,** Introduction to elements and principles of Design, basics of design-dot, line, shape, form as fundamental design components	3	12-12-2024		TLM2/ TLM4	
02	Principles of design	3	19-12-2024		TLM1	
03	Introduction to design thinking, history of Design Thinking, New materials in Industry	3	26-12-2024		TLM1/ TLM2	
04	**UNIT – II Design Thinking Process** Design thinking process (empathize, analyze, idea & prototype), implementing the process in driving inventions	3	02-01-2025		TLM1	
05	Design thinking in social innovations. Tools of design thinking - person, costumer	3	09-01-2025		TLM2	

06	journey map, brainstorming, product development (Activity)	3	23-01-2025		TLM4	
I Mid Exams: 27-01-2025 to 01-02-2025						
07	**UNIT – III Innovation** Art of innovation, Difference between innovation and creativity, role of creativity and innovation in organizations	3	06-02-2025		TLM1/ TLM4	
08	Creativity to Innovation. Teams for innovation, Measuring the impact and value of creativity.	3	13-02-2025		TLM2/ TLM4	
09	**Activity:** Debate on innovation and creativity, Flow and planning from idea to innovation, Debate on value-based innovation	3	20-02-2025		TLM4	
10	**UNIT – IV Product Design** Problem formation, introduction to product design, Product strategies, Product value	3	27-02-2025		TLM1/ TLM4	
11	Product planning, product specifications. Innovation towards product design Case studies.	3	06-03-2025		TLM2	
12	**Activity:** Importance of modelling, how to set specifications, Explaining their own product design	3	13-03-2025		TLM4	
13	**UNIT – V Design Thinking in Business Processes** Design Thinking applied in Business & Strategic Innovation, Design Thinking principles that redefine business	3	20-03-2025		TLM1/ TLM4	
14	Business challenges: Growth, Predictability, Change, Maintaining Relevance, Extreme competition,	3	27-03-2025		TLM2/ TLM4	

	Standardization					
15	Design thinking to meet corporate needs. Design thinking for Startups. Defining and testing Business Models and Business Cases. Developing & testing prototypes.	3	03-04-2025		TLM1/ TLM4	
16	**Activity:** How to market our own product, about maintenance, Reliability and plan for startup.	3	17-04-2025		TLM4	
II Mid Exams: 07-04-2025 to 12-04-2025						
No. of classes required to complete: 48				**No. of classes taken:**		

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

PART-B

EVALUATION PROCESS (R23 Regulation):

Evaluation Task	**Marks**
Internal Examination	30
Semester End Examination	70
Total Marks:	**100**

Academic calendar

Commencement of IV Semester Classwork	**09-12-2024**		
Description	**From**	**To**	**Weeks**
I Phase of Instructions	09-12-2024	25-01-2025	7 W
I Mid Examinations	27-01-2025	01-02-2025	1 W
II Phase of Instructions	03-02-2025	05-04-2025	9 W
II Mid Examinations	07-04-2025	12-04-2025	1 W
Preparation and Practicals	14-04-2025	19-04-2025	1 W
Semester End Examinations	21-04-2025	03-05-2025	2 W
Internship	05-05-2025	28-06-2025	8 W
Commencement of V Semester Classwork	**30 –06–2025**		

Lab Occupancy Time Table (B.Tech IV Sem: A Section)

↓Day/Date→	09.00 – 10.00	10.00 – 11.00	11.00 – 12.00	12.00-01.00	01.00 – 02.00	02.00 – 03.00	03.00 – 04.00
Monday				LUNCH BREAK			
Tuesday							
Wednesday							
Thursday	DTI						
Friday							

Faculty – In Charges:

S.No	Class	Section	Faculty – In Charge	Lab Technician
1	B.Tech – IV Semester	A,B,C,D	Dr. D. Venkata Subbaiah, Dr. P. Bhagath, Dr. J. Nageswara Rao, Dr .B. Siva Rama Krishna	Mr.B.Ravi Kiran

PART-C

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs):

PEO 1	To build a professional career and pursue higher studies with sound knowledge in Mathematics, Science and Mechanical Engineering.
PEO 2	To inculcate strong ethical values and leadership qualities for graduates to become successful in multidisciplinary activities.
PEO 3	To develop inquisitiveness towards good communication and lifelong learning.

PROGRAMME OUTCOMES (POs):

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

	responsibilities relevant to the professional engineering practice.
PO 7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

Signature				
Name of the Faculty	Dr. D. Venkata Subbaiah, Dr. P. Bhagath, Dr. J. Nageswara Rao, Dr .B. Siva Rama Krishna			Dr. D.Veeraiah
Designation	**Course Instructors**	**Course Coordinator**	**Module Coordinator**	**HoD**