LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
Accredited by NAAC & NBA (CSE, IT, ECE, EEE & ME)
Approved by AICTE, New Delhi and Affiliated to JNTUK, Kakinada
L.B.Reddy Nagar, Mylavaram-521230, Krishna Dist, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCINCE AND ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM :II B. Tech., I-Sem., CSE - A
ACADEMIC YEAR : 2022-23
COURSE NAME & CODE : PROBABILITY AND STATISTICS
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Y. P. C. S. Anil Kumar
COURSE COORDINATOR : M. Rami Reddy
PRE-REQUISITES : None

COURSE EDUCATIONAL OBJECTIVES (CEO): The objective of this course is to provide students with the foundations and applications of probabilistic and statistical methods mainly used in varied applications in engineering and science.

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

CO1: Understand various probabilistic situations using the laws of probability and Random variables. (Understand - L2)
CO2: Apply probability distributions like Binomial, Poisson, Normal and Exponential distributions in solving engineering problems. (Apply - L3)
CO3: Calculate the standard error of sampling distribution and confidence intervals for parameters like mean and proportion based on sample data. (Apply - L3)
CO4: Analyze the data scientifically with the appropriate statistical methodologies to apply the suitable test of hypothesis. (Analyze - L4)
CO5: Construct the regression lines to predict the dependent variables and calculate the Correlation Coefficient for a bivariate statistical data. (Apply - 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	2	1	2	-	-	-	-	-	-	-	2	-	-	-
CO2	3	2	2	3	-	-	-	-	-	-	-	2	-	-	-
CO3	3	2	2	2	-	-	-	-	-	-	-	2	-	-	-
CO4	3	3	3	3	-	-	-	-	-	-	-	2	-	-	-

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

BOS APPROVED TEXT BOOKS:

T1 Jay L.Devore "Probability and Statistics for engineering and the sciences." , 8th edition, Cengage Learning india, 2012
T2 S.C.Gupta, V.K.Kapoor, "Fundamentals of Mathematical Statistics", 11thEdition, Sultan Chand and sons, New Delhi,2014.

BOS APPROVED REFERENCE BOOKS:

R1 Miller & Freund's "Probability and Statistics for Engineers",8th edition. PHI, New Delhi,2011.
R2 B.V. Ramana, "Higher Engineering Mathematics", 1st Edition, TMH, New Delhi, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I :Probability and Random Variables

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction class, course outcomes	1	12-09-22		TLM1	
2.	Basic concepts of probability	1	13-09-22		TLM1	
3.	problems on basic probability	1	14-09-22		TLM1	
4.	problems on addition theorem	1	17-09-22		TLM1	
5.	Conditional probability	1	19-09-22		TLM1	
6.	Multiplication theorem, examples	1	20-09-22		TLM1	
7.	Independent events, theorems	1	21-09-22		TLM1	
8.	Problems on multiplication theorem, independent events	1	24-09-22		TLM1	
9.	Baye's theorem, problems	1	26-09-22		TLM1	
10.	Random variables, Expections	1	27-09-22		TLM1	
11.	Problems on PMF	1	28-09-22		TLM1	
12.	Problems on PDF	1	01-10-22		TLM1	
13.	Tutorial-1	1	10-10-22		TLM3	
No. of classes required to complete UNIT-I: 13				No. of classes taken:		

UNIT-II: Probability Distributions

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.	Binomial Distribution- mean & variance	1	11-10-22		TLM2	
2.	Problems on Binomial distribution	1	12-10-22		TLM2	
3.	Fitting of binomial distribution	1	15-10-22		TLM2	
4.	Poisson distribution, mean and variance	1	17-10-22		TLM2	
5.	Problems on Poisson distribution and fitting of Poisson distribution	1	18-10-22		TLM2	
6.	Normal distribution: mean &variance	1	19-10-22		TLM2	
7.	Problems on Normal Distribution	1	22-10-22		TLM3	
8.	Exponential distribution:	1	25-10-22		TLM2	
9.	Tutorial -2	1	26-10-22		TLM3	
No. of classes required to complete UNIT-II: 9				No. of classes taken:		

UNIT-III: Sampling distribution and Estimation

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.	Sampling distribution ,definitions	1	29-10-22		TLM2	

2.	Sampling distribution of mean, variance	1	31-10-22		TLM2	
3.	Problems	1	02-11-22		TLM2	
4.	Problems on central limit theorem	1	03-11-22		TLM2	
5.	Problems on Central limit theorem	1	05-11-22			
6.	I MID		07-11-22			
7.	I MID		08-11-22			
8.	I MID		09-11-22			
9.	I MID		12-11-22			
10.	Estimation	1	14-11-22		TLM2	
11.	Point and interval estimation	1	15-11-22		TLM3	
12.	Interval estimation of mean and proportions in large samples	1	16-11-22		TLM2	
13.	Interval estimation of mean in small samples	1	19-11-22		TLM2	
14.	Problems	1	21-11-22		TLM2	
15.	Tutorial-3	1	22-11-22		TLM3	
No. of classes required to complete UNIT-III: 11				No. of classes taken:		

UNIT-IV :Tests of Hypothesis

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.	Testing of Hypothesis , definitions	1	23-11-22		TLM2	
2.	Z-test for means	2	26-11-22 28-11-22		TLM2	
3.	Z-test for proportions	2	29-11-22 30-11-22		TLM2	
4.	t-test for means	2	03-11-22 05-12-22		TLM3	
5.	paired t-test	1	06-12-22		TLM2	
6.	F-test for variances	1	07-12-22		TLM2	
7.	χ^2-test for goodness of fit	1	10-12-22 12-12-22		TLM2	
8.	χ^2-test for independence of attributes	1	13-12-22 14-12-22		TLM2	
9.	Tutorial-8	1	17-12-22		TLM3	
No. of classes required to complete UNIT-IV: 12				No. of classes taken:		

UNIT-V :Correlation and Regression

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.	Simple Bi-variate Correlation	1	19-12-22		TLM2	

2.	Problems on Pearson's Correlation	1	20-12-22		TLM2	
3.	Regression lines	1	21-12-22		TLM2	
4.	Problems on Regression lines	1	24-12-22		TLM2	
5.	Properties of Regression coefficients	1	26-12-22		TLM2	
6.	Tutorial-9	1	27-12-22		TLM3	
7.	Problems on rank Correlation	1	28-12-22		TLM2	
8.	Problems on repeated rank Revision	1	31-12-22		TLM3	
9.	II MID		02-01-23			
10.	II MID		03-01-23			
11.	II MID		04-01-23			
12.	II MID		07-01-23			
No. of classes required to complete UNIT-V: 8				No. of classes taken:		

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 (R17 Regulations):

Evaluation Task	**Marks**
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Y.P.C.S.Anil Kumar)	(M.Rami Reddy)	(Dr.A.Rami Reddy)	(Dr.A.Rami Reddy)

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs. Swathi Buragadda
Course Name & Code : Discrete Mathematical Structures, 20CS04
L-T-P Structure : **3-0-0** **Credits:** 03
Program/Sem/Sec : B.Tech-CSE / III SEM / C
A.Y. : 2021-22

PRE-REQUISITE: Basic mathematical knowledge

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to perform the operations associated with relations and functions. Relate practical examples to the functions and relations and interpret the associated operations and terminology used in the context. Use formal logic proofs and/or informal but rigorous logical reasoning to, for example, predict the behavior of software or to solve problems such as puzzles.

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

CO1	Construct mathematical arguments using logical connectives and quantifiers and verify them.**(Apply -L3)**
CO2	Demonstrate the basic terminology of functions, relations, lattices and their operations. **(Understand - L2)**
CO3	Apply the properties of graphs to solve the graph theory problems in Computer science. **(Apply- L3)**
CO4	Illustrate the basic principles/techniques to solve different algebraic structures & combinatorial problems. **(Understand- L2)**
CO5	Solve linear recurrence relations by recognizing homogeneity using constant coefficients, characteristic roots and Generating functions. **(Apply – L3)**

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

CO	Program Outcomes (POs)												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	1													
CO2	3	2	1												
CO3	3	3	1												
CO4	3	3	1												
CO5	3	3	1												

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

TEXTBOOKS:

1. Tremblay, Manohar, "Discrete Mathematical Structures with Applications to Computer Science", TMH Publications, 2008

REFERENCE BOOKS:

1. Chandrasekaran, Umaparvathi, DiscreteMathematics,PHI, 2010.
2. Ralph. P.Grimaldi, Ramana, Discrete and Combinational Mathematics,Pearson,5th edition.
3. https://nptel.ac.in/courses/106/106/106106183/

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Mathematical Logic

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Mathematical Logic: Propositional Calculus	1	12-09-2022		**TLM1**	CO1	
2.	Statement and Notations, Connectives, Truth Tables	1	13-09-2022		**TLM1**	CO1	
3.	Tautologies	1	14-09-2022		**TLM1**	CO1	
4.	Equivalence of Formulas	1	16-09-2022		**TLM1**	CO1	
5.	Duality Law, Tautological Implications	1	19-09-2022		**TLM1**	CO1	
6.	Normal Forms, DNF	1	20-09-2022		**TLM2**	CO1	
7.	CNF	1	21-09-2022		**TLM2**	CO1	
8.	PCNF, PDNF	1	23-09-2022		**TLM2**	CO1	
9.	Theory of inference for statement Calculus	1	26-09-2022		**TLM2**	CO1	
10.	RULE CP	1	27-09-2022		**TLM2**	CO1	
11.	Consistency of Premises Indirect Method of Proof	1	28-09-2022		**TLM1**	CO1	
12.	Predicative Logic	1	30-09-2022		**TLM1**	CO1	
13.	Statement Functions, Variables, Free & Bound Variables, QUANTIFIERS	1	10-10-2022		**TLM1**	CO1	
No. of classes required to complete UNIT-I		13	No. of classes taken:				

UNIT-II: Sets, Relations & Functions

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Set Theory: Introduction,	1	11-10-2022		**TLM1**	CO2	
2.	Representation of Sets	1	12-10-2022		**TLM1**	CO2	

3.	Operations on Binary Sets	1	14-10-2022		**TLM2**	CO2	
4.	Relations: Properties of Binary Relations	1	17-10-2022		**TLM1**	CO2	
5.	Relation Matrix and Digraph Operations on Relations	1	18-02-2022		**TLM1**	CO2	
6.	Partition and Covering, Transitive Closure	1	19-02-2022		**TLM1**	CO2	
7.	Equivalence Relation	1	21-10-2022		**TLM2**	CO2	
8.	Compatible Relation, Partial Ordering Relation	1	25-10-2022		**TLM1**	CO2	
9.	Hasse Diagrams, Lattices	1	26-10-2022		**TLM1**	CO2	
10.	Functions: Bijective Functions	1	28-10-2022		**TLM1**	CO2	
11.	Composition of Functions, Inverse Functions	1	31-10-2022		**TLM1**	CO2	
No. of classes required to complete UNIT-2		11	No. of classes taken:				

UNIT – III: Graph Theory I & II

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Basic Concepts of Graphs	1	01-11-2022		**TLM1**	CO3	
2.	Matrix Representation of Graphs	1	02-11-2022		**TLM1**	CO3	
3.	Adjacency Matrices, Incidence Matrices	1	03-11-2022		**TLM1**	CO3	
4.	Isomorphic Graphs, Paths and circuits	1	04-11-2022		**TLM1**	CO3	
5.	Eulerian Graphs, Hamiltonian Graphs	1	05-11-2022		**TLM2**	CO3	
6.	Multigraphs, Planar Graphs, Euler‟s Formula	1	14-11-2022		**TLM1**	CO3	
7.	Graph Colouring and Covering, Chromatic Number	1	15-11-2022		**TLM1**	CO3	
8.	Trees Introduction	1	16-11-2022		**TLM1**	CO3	
9.	BFS, DFS	1	18-11-2022		**TLM2**	CO3	
10.	Spanning Trees: Properties	1	21-11-2022		**TLM2**	CO3	
11.	Algorithms for Minimum Spanning Trees	1	22-11-2022		**TLM2**	CO3	
No. of classes required to complete UNIT-3		11	No. of classes taken:				

UNIT-IV: Algebraic Structures & Combinatorics

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Algebraic Systems with one Binary Operation	1	23-11-2022		**TLM1**	CO4	
2.	Properties of Binary operations, Semi groups and Monoids	1	25-11-2022		**TLM1**	CO4	
3.	Homomorphism of Semi groups and Monoids, Groups	1	28-11-2022		**TLM1**	CO4	
4.	Abelian Group, Cosets, Subgroups	1	29-11-2022		**TLM1**	CO4	
5.	Langrage's Theorem	1	30-11-2022		**TLM1**	CO4	
6.	Basic of Counting, Permutations	1	02-12-2022		**TLM1**	CO4	
7.	Combinations	1	05-12-2022		**TLM1**	CO4	
8.	Circular Permutations, Restricted Permutations	1	06-12-2022		**TLM1**	CO4	
9.	Combinations with repetition Pigeonhole Principle and its Applications	2	07-12-2022 To 09-12-2022		**TLM1**	CO4	
10.	Principle of inclusion-exclusion	2	12-12-2022 To 13-12-2022		**TLM1**	CO4	
No. of classes required to complete UNIT-4		12	No. of classes taken:				

UNIT-V: Recurrence Relation

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Generating Functions of Permutations and Combinations	2	14-12-2022& 16-12-2022		**TLM1**	CO5	
2.	Calculating Coefficient of Generating Functions	2	19-12-2022& 20-12-2022		**TLM1**	CO5	
3.	Recurrence Relations	2	21-12-2022& 23-12-2022		**TLM1**	CO5	
4.	solving linear homogeneous recurrence Relations by substitution	2	26-12-2022 & 27-12-2022		**TLM1**	CO5	
5.	generating functions	2	28-12-2022& 30-12-2022		**TLM1**	CO5	
6.	The Method of Characteristic Roots	2	02-01-2023& 03-01-2023		**TLM1**	CO5	
No. of classes required to complete UNIT-5		10	No. of classes taken:				

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

EVALUATION PROCESS:

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mrs Swathi Buragadda	Mr. T.N.V.S.Praveen	Dr.S.Jaya Pradha	Dr. D Veeraiah
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. M. SITHA RAM
Course Name & Code : DATABASE MANAGEMENT SYSTEMS & 20CS07
L-T-P Structure : 3-0-0 **Credits:** 3
Program/Sem/Sec : B.Tech III Sem CSE – A Section **A.Y.:** 2022-23

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of this course is to know about basic concepts of DBMS, Database Languages, Database Design, Normalization Process, Transaction Processing, Indexing, and Interfacing with NOSQL using MongoDB.

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

CO1	State the Basic Components of Database Management System and data modelling using Entity-Relationship Diagrams.(Understand- L2)
CO2	Examine the relational model using Structured Query Language(SQL). (Apply - L3)
CO3	Employ principles of normalization for effective database design.(Apply - L3)
CO4	Demonstrate the necessity of transaction processing, Concurrency control mechanisms and recovery strategies in DBMS.(Understand- L2)
CO5	Describe file organization, indexing techniques and the competency in selecting NoSQL Database.(Understand- L2)

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

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

TEXTBOOKS:

T1 Henry F. Korth, Abraham Silberschatz, S.Sudarshan, "Database System Concepts", McGrawHill, 6th edition, 2009.
T2 Shashank Tiwari, " ProfessionalNoSql", John Wiely& Sons, 2011.

REFERENCE BOOKS:

R1 Raghu Ramakrishnan, JohanneseGehrke, —Database Management System‖, McGrawHill, 3rd edition, 2000.
R2 Date C J, —An Introduction to Database System, Pearson Education, 8th edition, 2003.
R3 RamezElmasri, ShamkanthB.Navathe, "Fundamentals of Database Systems", Addison Wesley, 6th edition, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: DBMS Introduction & Data Modelling using the 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
1.	CEOs and COs discussion, Introduction: An overview of Database Management System	1	13-09-22		1 & 2	
2.	Database System Vs File System, Database System Concepts	1	15-09-22		1 & 2	
3.	Three Schema Architecture, Data Models	1	16-09-22		1 & 2	
4.	Database Schema and Instances, Data Independence	1	17-09-22		1 & 2	
5.	Database Languages, Database Structure	1	20-09-22		1 & 2	
6.	ER model concepts, Notation for ER Diagram	1	22-09-22		1 & 2	
7.	Mapping Constraints, Keys	1	23-09-22		1 & 2	
8.	Concepts of Super Key, Candidate Key, Primary Key	1	24-09-22		1 & 2	
9.	Generalization, Aggregation	1	27-09-22		1 & 2	
10.	Reduction of an ER Diagrams to Tables, Relationships of Higher Degree.	1	29-09-22		1 & 2	
11.	Unit-1 Revision	1	30-09-22		1 & 2	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Relational Data Model and Language & 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
12.	Relational Data Model Concepts, Integrity Constraints	1	01-10-22		1 & 2	
13.	Entity Integrity, Referential Integrity	1	11-10-22		1 & 2	
14.	Key Constraints	1	13-10-22		1 & 2	
15.	Domain Constraints	1	14-10-22			
16.	Relational Algebra	1	15-10-22		1 & 2	
17.	Characteristics of SQL, Advantage of SQL	1	18-10-22		1 & 2	
18.	SQL Data types and Literals, Insert, Update and Delete Operations	1	20-10-22		1 & 2	
19.	Tables, Views and Indexes	1	21-10-22		1 & 2	
20.	Nested Queries, Aggregate Functions	1	22-10-22		1 & 2	
21.	Joins, Unions, Intersection, Minus	1	25-10-22		1 & 2	
22.	Cursors in SQL, Triggers in SQL	1	27-10-22		1 & 2	
23.	Unit-II revision	1	28-10-22		1 & 2	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

UNIT-III: Normalization

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

No.		Classes Required	Date of Completion	Date of Completion	Learning Methods	Sign Weekly
24.	Functional Dependencies	1	29-10-22		1 & 2	
25.	Normal Forms - First, Second	1	01-11-22		1 & 2	
26.	Third Normal Forms, BCNF	1	03-11-22		1 & 2	
27.	Inclusion Dependences	1	04-11-22		1 & 2	
28.	Loss Less Join Decompositions	1	05-11-22		1 & 2	
29.	Multi Valued Dependencies	1	15-11-22		1 & 2	
30.	Fourth Normal Form	1	17-11-22		1 & 2	
31.	Join Dependencies and Fifth Normal Form	1	18-11-22		1 & 2	
32.	Unit-III Revision	1	19-11-22		1 & 2	
No. of classes required to complete UNIT-III: 09				**No. of classes taken:**		

UNIT-IV: Transaction Processing Concepts, Concurrency Control Techniques & Crash Recovery

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Transaction System, Testing of Serializability	1	22-11-22		1 & 2	
34.	Serializability of Schedules	1	24-11-22		1 & 2	
35.	Conflict Serializability	1	25-11-22		1 & 2	
36.	View Serializability	1	26-11-22		1 & 2	
37.	Recoverability, Deadlock Handling	1	29-11-22		1 & 2	
38.	Concurrency Control	1	01-12-22		1 & 2	
39.	Locking Techniques for Concurrency Control	1	02-12-22		1 & 2	
40.	Time Stamping Protocols for Concurrency Control	1	03-12-22		1 & 2	
41.	Validation Based Protocol	1	06-12-22		1 & 2	
42.	Multiple Granularity	1	08-12-22		1 & 2	
43.	Recovery with Concurrent Transactions	1	09-12-22		1 & 2	
44.	Log Based Recovery, Checkpoints	1	10-12-22		1 & 2	
45.	ARIES Algorithm	1	13-12-22			
46.	Unit-IV revision	1	15-12-22			
No. of classes required to complete UNIT-IV: 14				**No. of classes taken:**		

UNIT-V: Physical Database Design & Interfacing and Interacting with NoSQL

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
47.	Storage and file structure	1	16-12-22		1 & 2	
48.	indexed files, hashed files	1	17-12-22		1 & 2	

49.	B+ trees	1	20-12-22		1 & 2	
50.	Files with dense index	1	22-12-22		1 & 2	
51.	files with variable length records	1	23-12-22		1 & 2	
52.	Introduction to NoSQL, Storing and Accessing Data	1	24-12-22		1 & 2	
53.	Storing Data In and Accessing Data from MongoDB	1	27-12-22		1 & 2	
54.	Querying MongoDB & Revision	1	29-12-22		1 & 2	
55.	Unit-5 revision	1	30-12-22		1 & 2	
56.	Discussion on External Exam	1	31-12-22		1 & 2	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PO 4	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to
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. M. Sitha Ram**	**Dr. M. Sitha Ram**	**Dr. K. Naga Prasanthi**	**Dr. D. Veeraiah**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. CH V NARAYANA
Course Name & Code : CO & 20CS08
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : II B.Tech., III-Sem, A-Sec **A.Y.: 2022-23**

PREREQUISITE: Fundamentals of Computer Science.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to learn about the functional blocks and data representation in computer system and understands the design principles of processor, organization and management of memory and peripheral devices.

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

CO1	Evaluate digital Number systems and use Boolean Algebra theorems ,properties and canonical forms for digital logic circuit design **(Undestand-L2)**
CO2	Design Combinational Logic circuits and sequential logic circuits **(Apply-L3)**
CO3	Understand Computer Architecture and data representation to perform computer arithmetic operations **(Understan-L2)**
CO4	Illustrate the design principles of control unit and pipelining **(Understand-L2)**
CO5	Analyze the memory hierarchy in a computer system **(Understan-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	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-
1 - Low **2 –**Medium **3 -** High															

TEXTBOOKS:

T1 Morris Mano Michel D Ciletti, “Digital Design”,4/e,2008,PEA

T2 Carl Hamacher, Zvonks Vransenic ,SafeaZaky, “Computer Oraganization”, TMH publications

REFERENCE BOOKS:

R1 M.Morris Mano, “Computer System Architecture”,Pearson Education Publishers[Unit-1,2]

R2 Leach, Malvino, saha,”Digital Logic design”, TMH,2006

R3 R.P.jain,”Modern Digital Electronics”, TMH,2011

R4 A.Anand Kumar,”Switching Theory and logic Design”, Prentice-hall Of India pvt..Limited,2010

R5 Kohavi,Jha,Cambridge,”Switching and Finite Automata Theory”,3/e

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Number systems, Logic gates and Boolean algebra

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 Digital Logic and Number systems	1	13-9-2022		TLM1	
2.	Conversions of Number systems from one radix to another	1	15-9-2022		TLM1	
3.	r' and (r-1)'complements	1	15-9-2022		TLM1	
4.	Binary codes	1	17-9-2022		TLM1	
5.	Logic gates	1	20-9-2022		TLM1	
6.	Logic gates	1	22-9-2022		TLM1	
7.	Introduction to Boolean Algebra with fundamental postulates, theorems and properties	2	22,24-9-2022		TLM1	
8.	Complement and dual of logical expressions, SOP, POS	2	27,29-9-2022		TLM1	
9.	Minimization of Boolean functions using Boolean theorems	2	29-9-22		TLM1	
10.	Karnaugh Map(K-map)	2	1-10-2022		TLM1	
No. of classes required to complete UNIT-I: 14				**No. of classes taken:**		

UNIT-II: Combinational Logic Circuits and Sequential Logic Circuits

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.	Introduction to combinational circuits, Adders	1	11-10-2022		TLM1	
12.	Half/Full Subtractors, Ripple carry adder	1	13-10-2022		TLM1	
13.	Design of Decoders and Encoders	1	13-9-2022		TLM1	
14.	Multiplexer and De-multiplexer	1	15-9-2022		TLM1	
15.	Priority encoder	1	18-10-2022		TLM1	
16.	Introduction to sequential circuits, Latch & flip-flops	1	20-10-2022		TLM1	
17.	Flip-flops(RS,J,T,D),	2	20,22-10-2022		TLM1	
18.	Master slave flip-flop	2	25,27-10-2022		TLM1	
19.	Conversion of flip-flops, Truth & excitation tables	1	27-10-2022		TLM1	
20.	Registers and counters	1	29-10-2022		TLM1	
No. of classes required to complete UNIT-II: 13				**No. of classes taken:**		

UNIT-III: Functional Blocks of a Computer & Data Representation

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.	Basic functional blocks of a computer	1	1-11-2022		TLM2	
22.	Set Architecture of CPU-registers	1	3-11-2022		TLM2	
23.	Instruction execution cycle	1	3-11-2022		TLM2	
24.	RTL Interpretation of instructions	1	5-11-22		TLM2	
25.	Addressing Modes	1	10-11-22		TLM2	

26.	Instruction set	1	10-11-2022		TLM2	
27.	Signed Number representation	1	12-11-2022		TLM2	
28.	Fixed & Floating point representation,	1	15-11-2022		TLM2	
29.	Character representation	1	17-11-2022		TLM2	
30.	Computer arithmetic-Int. addition & subtraction	1	17-11-2022		TLM2	
31.	Multiplication shift-AND Add, Booth multiplier	1	19-11-2022		TLM2	
32.	Division restoring & non-restoring techniques	1	22-11-2022		TLM2	
33.	Floating Point arithmetic	1	24-11-2022		TLM2	
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

UNIT-IV: CPU Control design & Parallel Processors

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.	Introduction to CPU control unit design	1	24-11-022		TLM2	
35.	Hardwired design	1	26-11-022		TLM2	
36.	Microprogrammed design approach	2	1-11-022		TLM2	
37.	Basic concepts of pipelining	1	3-12-2022		TLM2	
38.	Throughput and speed	1	6-12-2022		TLM2	
39.	Pipeline hazards	1	8-12-2022		TLM2	
40.	Parallel processors	3	8,10,13-12-2022		TLM2	
No. of classes required to complete UNIT-IV: 10				**No. of classes taken:**		

UNIT-V: Memory system design & Peripheral devices and their characteristics

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
41.	Memory organization	1	15-12-2022		TLM2	
42.	Memory interleaving	1	15-12-2022		TLM2	
43.	Concept of memory hierarchical organization	1	17-12-2022		TLM2	
44.	Cache memory	1	20-12-2022		TLM2	
45.	Peripheral devices –I/O sub-systems	2	22-12-2022		TLM2	
46.	I/O device interface	1	24-12-2022		TLM2	
47.	I/O transfers-program controlled	1	27-12-2022		TLM2	
48.	Interrupt driven	2	29-12-2022		TLM2	
49.	DMA	2	31-12-2022,3/1/23		TLM2	
50.	Revision	1	7-01-2023		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 (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

	engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineer**ing and management principles and apply these to one's own work, as a member and** leader in a team, to manage projects and in multidisciplinary environments.
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.Venkata Narayana Chejarla**	**Dr.Venkata Narayana Chejarla**	**Dr .D.Venkata Subbaiah**	**Dr.V.Veeraiah**
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade & NBA (Under Tier - I), ISO 9001:2015 Certified Institution

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

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

hodcse@lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: N. SRINIVASARAO
Course Name & Code : OBJECT ORIENTED PROGRAMMING & 20CS09
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/III/A **A.Y.:** 2022-23

PREREQUISITE: Programming for Problem Solving using C

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to learn the constructs of the Java programming language along with built-in facilities to create different applications such as console & graphical user interfaces. In the process of learning the language, they will be applying knowledge of object-oriented programming; they will get the fundamental knowledge reason collection framework.

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

CO1	Demonstrate the fundamentals of object-oriented programming and basic building blocks of Java. **(Understand- L2)**
CO2	Apply object-oriented programming principles for the development of reusable applications. **(Apply - L3)**
CO3	Understand the importance of abstraction, user defined package creation and handling different exceptions. **(Understand- L2)**
CO4	Develop multitasking applications using JAVA multithreaded programming and perform different operations upon various data structures by using collection framework. **(Apply– L3)**
CO5	Develop GUI applications using AWT (Abstract Window Toolkit). **(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	3	2											2		
CO2	3	2											2		
CO3	3	2											2		
CO4	3	3											2		
CO5	3	2											2		
1 - Low				**2** –Medium						**3** - High					

TEXTBOOKS:

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

T2 Cay S. Horstmann, "Core Java Volume I – Fundamentals", Pearson, Eleventh edition, 2018

REFERENCE BOOKS:

R1 Dr.R.NageswaraRao, "Core JAVA: An Integrated Approach", Dreamtech Press, 1st Edition2008.

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Textbook Followed	HOD Sign Weekly
1.	Programming Paradigms	1	12-09-2022		TLM1	T1 & R1	
2.	Difference Between OOP vs POP	1	13-09-2022		TLM1	T1 & R1	
3.	Principles of OOP	1	15-09-2022		TLM1	T1 & R1	
4.	Java Introduction- History, Buzzwords	1	16-09-2022		TLM1	T1 & R1	
5.	Data Types	1	19-09-2022		TLM1	T1 & R1	
6.	Keywords, Variables	1	20-09-2022		TLM1	T1 & R1	
7.	Operators	1	22-09-2022		TLM1	T1 & R1	
8.	Control Statements	1	23-09-2022		TLM1	T1 & R1	
9.	Class Definition, Variables and Methods	1	26-09-2022		TLM1	T1 & R1	
10.	Declaring Objects, this Keyword	1	27-09-2022		TLM1	T1 & R1	
11.	Constructors	1	29-09-2022		TLM1	T1 & R1	
No. of classes required to complete UNIT-I: 11					**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Textbook Followed	HOD Sign Weekly
12.	Overloading Methods and Constructors	1	30-09-2022		TLM1	T1 & R1	
13.	Parameter Passing and Returning Objects	1	10-10-2022		TLM1	T1 & R1	
14.	Recursion and Access Control	1	11-10-2022		TLM1	T1 & R1	
15.	Nested and Inner Classes	1	13-10-2022		TLM1	T1 & R1	
16.	Final Keyword & Static	1	14-10-2022		TLM1	T1 & R1	
17.	Variable and Command Line Arguments	1	17-10-2022		TLM1	T1 & R1	
18.	Inheritance Introduction	1	18-10-2022		TLM1	T1 & R1	
19.	Types of Inheritance	1	20-10-2022		TLM1	T1 & R1	
20.	Super Keyword	1	21-10-2022		TLM1	T1 & R1	
21.	Overriding and Dynamic Method Dispatch	1	25-10-2022		TLM1	T1 & R1	
22.	Abstract Class and Final with Inheritance	1	27-10-2022		TLM1	T1 & R1	
23.	String	1	28-10-2022		TLM1	T1 & R1	
24.	StringBuffer and StringTokenizer	1	31-10-2022		TLM1	T1 & R1	
No. of classes required to complete UNIT-II: 13					**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	Textbook Followed	HOD Sign Weekly
25.	Interfaces, Inheritance in interfaces	1	01-11-2022		TLM1	T1 & R1	
26.	Packages -Introduction, Creation	1	03-11-2022		TLM1	T1 & R1	
27.	Java Built in Packages	1	04-11-2022		TLM1	T1 & R1	
28.	Exception Hierarchy	1	14-11-2022		TLM1	T1 & R1	
29.	Try,catch,throw	1	15-11-2022		TLM1	T1 & R1	
30.	Throws and finally	1	17-11-2022		TLM1	T1 & R1	
31.	User Defined Exception	1	18-11-2022		TLM1	T1 & R1	
32.	Assertions	1	21-11-2022		TLM1	T1 & R1	
No. of classes required to complete UNIT-III: 08					**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	Textbook Followed	HOD Sign Weekly
33.	Multi Threading -Introduction	1	22-11-2022		TLM1	T1 & R1	
34.	Thread Life Cycle	1	24-11-2022		TLM1	T1 & R1	
35.	Creation of Thread	1	25-11-2022		TLM1	T1 & R1	
36.	Naming a Thread, Joining a Thread	1	28-11-2022		TLM1	T1 & R1	
37.	Thread Priorities, Daemon Thread	1	29-11-2022		TLM1	T1 & R1	
38.	Thread Pool, Thread Group	1	01-12-2022		TLM1	T1 & R1	
39.	Thread Synchronization	1	02-12-2022		TLM1	T1 & R1	
40.	Inter Thread Communications	1	05-12-2022		TLM1	T1 & R1	
41.	Collections Framework	1	06-12-2022		TLM1	T1 & R1	
42.	Hierarchy, Generics	1	08-12-2022		TLM1	T1 & R1	
43.	List, Set	1	09-12-2022		TLM1	T1 & R1	
44.	Queue and Map	1	12-12-2022		TLM1	T1 & R1	
No. of classes required to complete UNIT-IV: 12					**No. of classes taken:**		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Textbook Followed	HOD Sign Weekly
45.	AWT Hierarchy	1	13-12-2022		TLM1	T1 & R1	
46.	Components & Containers	1	15-12-2022		TLM1	T1 & R1	
47.	Button, Label, Text Field	1	16-12-2022		TLM2	T1 & R1	
48.	Checkbox, Choice, List	1	19-12-2022		TLM2	T1 & R1	
49.	Canvas, Scrollbar, Menus	1	20-12-2022		TLM2	T1 & R1	
50.	Layout Managers	1	22-12-2022		TLM2	T1 & R1	
51.	Event Delegation Model, Event Classes	1	23-12-2022		TLM2	T1 & R1	
52.	Listener Interfaces	1	26-12-2022		TLM2	T1 & R1	
53.	Key Listener and Window Listener	1	27-12-2022		TLM2	T1 & R1	
54.	Adapter Classes, close AWS Window	1	29-12-2022		TLM2	T1 & R1	
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	Textbook Followed	HOD Sign Weekly
1.	Java Arrays	1	30-12-2022		TLM1	T1 & R1	
2.	Applets	1	30-12-2022		TLM1	T1 & R1	

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor : Dr. M. Sitha Ram
Course Name & Code : DataBase Management SystemsLab(20CS56)
L-T-P Structure : 0-0-3 Credits: 1.5
Program/Sem/Sec : B.Tech., CSE., III-Sem., Sec-A A.Y: 2022-23

PRE-REQUISITE : Programminglanguage, Discrete Mathematical Structures, and Data Structures.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this lab is to provide a strong formal foundation in database concepts, technology, and practice to the participants to groom them into well-informed database application developers.

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

CO 1	Create & manipulate the relational database using SQL**.(Apply- L3)**
CO 2	Implement Views, procedures, triggers, and cursors on relational database. **(Apply- L3)**
CO 3	Create Unstructured Databases using MongoDB**.(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	-	2	2	-	2	-	-	-	-	-	-	-	-	-	3
CO2	-	1	1	1	1	-	-	-	-	-	-	-	-	-	3
CO3	3	-	1	1	1	-	-	-	-	-	-	-	-	-	3
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	Introduction to SQL, syntax	3	07-09-22		TLM4	
2	Experiment - 1	3	14-09-22		TLM4	

			& 21-09-22			
3	Experiment - 2	3	28-09-22 & 12-10-.22		TLM4	
4	Experiment - 3	3	19-10-.22		TLM4	
5	Experiment - 4	3	26-10-22		TLM4	
6	Experiment – 5,6,7,8	3	02-11-22 & 16-11-22		TLM4	
7	Experiment – 9,10,11	3	23-11-22		TLM4	
8	Experiment – 12,13	3	30-11-22		TLM4	
9	Experiment – 14	3	07-12-22		TLM4	
10	Experiment – 15	3	14-12-22		TLM4	
11	Design database for Case study	3	21-12-22		TLM4	
12	Internal Exam	3	28-12-22		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.
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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 modelling to complex engineering activities with an understanding of the limitations

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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. M. Sitha Ram**	**Dr. M. Sitha Ram**	**Dr.K. Naga Prasanthi**	**Dr.D.Veeraiah**
Signature				

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hodcse@lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: N. SRINIVASARAO

Course Name & Code **:** OBJECT ORIENTED PROGRAMMING LAB & 20CS57

L-T-P Structure **: 0-0-3** **Credits:** 1.5

Program/Sem/Sec : B.Tech /III/A **A.Y.:** 2022-23

PREREQUISITE: Programming for Problem Solving Using C and Data Structures

COURSE EDUCATIONAL OBJECTIVE(CE0):

The objective of the course is to apply the constructs of Java programming language along with built-in facilities to create different applications such as console & graphical user interfaces. They will be applying knowledge of object-oriented programming and collection framework to perform all operations on data.

COURSE OUTCOMES (CO):

CO1: Solve basic mathematical problems using fundamentals of Java and its object-oriented principles **(Apply - L3)**

CO2: Implement multithreading and exception handling mechanisms. (**Apply - L3**)

CO3: Develop GUI applications and basic data structures using collection framework. (**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		3	2										3		
CO2		3	2										3		
CO3		3	3										3		
CO4								2	2	2					

Note: 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
1.	Introduction Lab	3	14-09-2022		TLM4	
2.	Java Basic Programs	3	21-09-2022		TLM4	
3.	Classes and Objects	3	28-09-2022		TLM4	
4.	Constructors & Parameter Passing	3	12-10-2022		TLM4	
5.	Static Keyword Strings	3	19-10-2022		TLM4	
6.	Inheritance & Polymorphism	3	26-10-2022		TLM4	
7.	Dynamic Method Dispatch & Interfaces	3	02-11-2022		TLM4	
8.	Packages & Exception Handling	3	16-11-2022		TLM4	
9.	Multithreading Programs	3	23-11-2022		TLM4	
10.	Collections Framework	3	30-11-2022		TLM4	
11.	AWT Controls	3	07-12-2022		TLM4	
12.	AWT Controls	3	14-12-2022		TLM4	
13.	Event Handling	3	21-12-2022		TLM4	
14.	Lab Internal Exam	3	28-12-2022		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 (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.
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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.
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Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	**Mr. N. SrinivasaRao**	**Mr. N. SrinivasaRao**	**Dr. Y.V.B Reddy**	**Dr. D. Veeraiah**
Signature				

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

COURSE HANDOUT

Part-A

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

ACADEMIC YEAR : 2022-23

COURSE NAME & CODE : R Programming Lab (20IT53)

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

COURSE CREDITS : 1

COURSE INSTRUCTOR : **Mr. G.V.Suresh**

COURSE COORDINATOR : **Y Vijaya Bhaskar Reddy**

PRE-REQUISITES: Basics of Mathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course student will learn about the fundamentals of R programming, standard R libraries, solid understanding of R functions, write programs using the R and gain skills in R programming language, get acquaintances with Arrays, files, strings, packages and distributions using R

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

CO1: : Implement basic concepts of R programming and its different module that includes conditional, looping, lists, strings, functions, frames, arrays and file programming

CO2: Implement the concepts of R Script to extract the data from data frames and file operations.

CO3: Implement the various statistical techniques using R

C04: Extend the functionality of R by using the addon packages

CO5: Use R Graphics and Tables to visualize results of various statistical operations on data

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

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-C

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1	Cycle1: Installing R and basic functionality of R	3	12/09/2022		TLM4/TLM5	CO1	
2	Cycle 2: R Script on operators, if and else programs	3	19/09/2022		TLM4/TLM5	CO1	
3	Cycle 3: R Script on list	3	26/09/2022		TLM4/TLM5	CO1	
4	Cycle 4: Implement R Script on vectors	3	10/10/2022		TLM4/TLM5	CO1	
5	Cycle 5: Implement R Script on matrices and data frames	3	17/10/2022		TLM4/TLM5	CO1	
6	Cycle 6: Implement R Script on Descriptive statistics	3	31/10/2022		TLM4/TLM5	CO4	
7	Cycle7: Reading different types of data sets into files	3	14/11/2022		TLM4/TLM5	CO2	
8	Cycle8: implement different charting methods	3	21/11/2022		TLM4/TLM5	CO2	
9	Cycle9: implement the different distributions	3	28/11/2022 05/12/2022		TLM4/TLM5	CO3	
10	Cycle 10 : implement the Non tabular data types and data transformations	3	12/12/2022 19/12/2022		TLM4/TLM5	CO4	
11	Cycle 11: Introduction to dirty data problems	3	26/12/2022		TLM4/TLM5	CO5	
12	Cycle 12 : implement different data sources	3	02/09/2022		TLM4/TLM5	CO5	
13	**LAB INTERNAL**	3					

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

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: Design and develop innovative products and services in the field of Electrical and Electronics Engineering and allied engineering disciplines.

PEO2: Apply the knowledge of Electrical and Electronics Engineering to solve problems of social relevance, pursue higher education and research.

PEO3: Work effectively as individuals and as team members in multidisciplinary projects.
PEO4: Engage in lifelong learning, career enhancement and adapt to changing professional and societal needs.

PROGRAM OUTCOMES

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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9. **Individual and teamwork**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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

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

PROGRAM SPECIFIC OUTCOMES

PSO1: The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.

PSO2: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.

PSO3: To inculcate an ability to analyze, design and implement database applications.

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. Jagadeeswara Rao P
Course Name & Code : Web Application Development using Full Stack - Module-I (Frontend Development) & 20CSS1
L-T-P Structure : 1-0-2 **Credits:** 2
Program/Sem/Sec : B.Tech. - CSE/III/A **A.Y.:** 2022-23

PREREQUISITE: Knowledge of basic Computer hardware & software.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to understand the design of HTML web pages, Styling of HTML pages using CSS, web forms validation using JavaScript and developing responsive web page using jQuery.

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

CO1	Understand the basic UI/UX design and styling of web pages **(Understand- L2)**
CO2	Understand the DOM of web design, markup language and client-side scripting. **(Understand- L2)**
CO3	Understand the responsive web design using DHTML. **(Understand- L2)**
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values. **(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	-	-	2	-	2	-	-	-	-	-	-	-	-	3	-
CO2	-	-	2	-	2	-	-	-	-	-	-	-	-	3	-
CO3	-	-	2	-	2	-	-	-	-	-	-	-	-	3	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 - Low **2 –**Medium **3 -** High															

REFERENCE BOOKS:

R1	HTML & CSS: The Complete Reference, 5thEditionby Thomas Powell, McGrawHill, 2017.
R2	Beginning HTML, XHTML, CSS, and JavaScript by Jon Duckett, Wiley India, 2010.
R3	jQuery Cookbook by Cody Lindley, O'Reilly Media, 2009
R4	HTML, XHTML, and CSS Bible, 5th Edition by Steven M. Schafer, Wiley India, 2011.
R5	Web Development with jQuery by Richard York, Wiley India, 2015
R6	Headfirst HTML & CSS 2nd Edition by Elisabeth Robson, Eric Freeman, 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	3	15-09-2022		**DM5**	
2.	Lab Cycle-1	3	22-09-2022		**DM5**	
3.	Lab Cycle-1	3	29-09-2022		**DM5**	
4.	Lab Cycle-2	3	13-10-2022		**DM5**	
5.	Lab Cycle-2	3	20-10-2022		**DM5**	
6.	Lab Cycle-3	3	27-10-2022		**DM5**	
7.	Lab Cycle-3	3	03-11-2022		**DM5**	
8.	Lab Cycle-4	3	17-11-2022		**DM5**	
9.	Lab Cycle-4	3	24-11-2022		**DM5**	
10.	Lab Cycle-5	3	01-12-2022		**DM5**	
11.	Lab Cycle-5	3	08-12-2022		**DM5**	
12.	Lab Cycle-6	3	15-12-2022		**DM5**	
13.	Lab Cycle-6	3	22-12-2022		**DM5**	
14.	Lab Cycle-6	3	29-12-2022		**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 Regulation):

Evaluation Task	Marks
Report	10
Quality of work	10
Presentation	20
Interaction / Queries	10
Total	**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	(Mr. Jagadeeswara Rao P)	(Ms. K. Devi Priya)	(Dr. Y.V.B. Reddy)	(Dr. D. Veeraiah)
Signature				

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hodcse@lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM :II B. Tech., I-Sem., CSE - B
ACADEMIC YEAR : 2022-23
COURSE NAME & CODE : PROBABILITY AND STATISTICS
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : Y. P. C. S. Anil Kumar
COURSE COORDINATOR : M. Rami Reddy
PRE-REQUISITES : None

COURSE EDUCATIONAL OBJECTIVES (CEO): The objective of this course is to provide students with the foundations and applications of probabilistic and statistical methods mainly used in varied applications in engineering and science.

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

CO1: Understand various probabilistic situations using the laws of probability and Random variables. (Understand - L2)
CO2: Apply probability distributions like Binomial, Poisson, Normal and Exponential distributions in solving engineering problems. (Apply - L3)
CO3: Calculate the standard error of sampling distribution and confidence intervals for parameters like mean and proportion based on sample data. (Apply - L3)
CO4: Analyze the data scientifically with the appropriate statistical methodologies to apply the suitable test of hypothesis. (Analyze - L4)
CO5: Construct the regression lines to predict the dependent variables and calculate the Correlation Coefficient for a bivariate statistical data. (Apply - 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	2	1	2	-	-	-	-	-	-	-	2	-	-	-
CO2	3	2	2	3	-	-	-	-	-	-	-	2	-	-	-
CO3	3	2	2	2	-	-	-	-	-	-	-	2	-	-	-
CO4	3	3	3	3	-	-	-	-	-	-	-	2	-	-	-

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

BOS APPROVED TEXT BOOKS:

T1 Jay L.Devore "Probability and Statistics for engineering and the sciences." , 8th edition, Cengage Learning india, 2012
T2 S.C.Gupta, V.K.Kapoor, "Fundamentals of Mathematical Statistics", 11thEdition, Sultan Chand and sons, New Delhi,2014.

BOS APPROVED REFERENCE BOOKS:

R1 Miller & Freund's "Probability and Statistics for Engineers",8th edition. PHI, New

Delhi,2011.
R2 B.V. Ramana, "Higher Engineering Mathematics", 1st Edition, TMH, New Delhi, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I :Probability and Random Variables

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction class, course outcomes	1	13-09-22		TLM1	
2.	Basic concepts of probability	1	15-09-22		TLM1	
3.	problems on basic probability	1	16-09-22		TLM1	
4.	problems on addition theorem	1	17-09-22		TLM1	
5.	Conditional probability	1	20-09-22		TLM1	
6.	Multiplication theorem, examples	1	22-09-22		TLM1	
7.	Independent events, theorems	1	23-09-22		TLM1	
8.	Problems on multiplication theorem, independent events	1	24-09-22		TLM1	
9.	Baye's theorem, problems	1	27-09-22		TLM1	
10.	Random variables, Expections	1	29-09-22		TLM1	
11.	Problems on PMF	1	30-09-22		TLM1	
12.	Problems on PDF	1	01-10-22		TLM1	
13.	Tutorial-1	1	11-10-22		TLM3	
No. of classes required to complete UNIT-I: 13				No. of classes taken:		

UNIT-II: Probability Distributions

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.	Binomial Distribution- mean & variance	1	13-10-22		TLM2	
2.	Problems on Binomial distribution	1	14-10-22		TLM2	
3.	Fitting of binomial distribution	1	15-10-22		TLM2	
4.	Poisson distribution, mean and variance	1	18-10-22		TLM2	
5.	Problems on Poisson distribution and fitting of Poisson distribution	1	20-10-22		TLM2	
6.	Normal distribution: mean &variance	1	21-10-22		TLM2	
7.	Problems on Normal Distribution	1	22-10-22		TLM3	
8.	Exponential distribution:	1	25-10-22		TLM2	
9.	Tutorial -2	1	27-10-22		TLM3	
No. of classes required to complete UNIT-II: 9				No. of classes taken:		

UNIT-III: Sampling distribution and Estimation

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

		Required	Completion	Completion	Methods	Weekly
1.	Sampling distribution ,definitions	1	28-10-22		TLM2	
2.	Sampling distribution of mean, variance	1	29-10-22		TLM2	
3.	Problems	1	01-11-22		TLM2	
4.	Problems	1	03-11-22			
5.	Problems on central limit theorem	1	04-11-22		TLM2	
6.	Problems on Central limit theorem	1	05-11-22			
7.	I MID		08-11-22			
8.	I MID		10-11-22			
9.	I MID		11-11-22			
10.	I MID		12-11-22			
11.	Estimation	1	15-11-22		TLM2	
12.	Point and interval estimation	1	17-11-22		TLM3	
13.	Interval estimation of mean and proportions in large samples	1	18-11-22		TLM2	
14.	Interval estimation of mean in small samples	1	19-11-22		TLM2	
15.	Problems	1	22-11-22		TLM2	
16.	Tutorial-3	1	24-11-22		TLM3	
No. of classes required to complete UNIT-III: 12				No. of classes taken:		

UNIT-IV :Tests of Hypothesis

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.	Testing of Hypothesis , definitions	1	25-11-22		TLM2	
2.	Z-test for means	2	26-11-22 29-11-22		TLM2	
3.	Z-test for proportions	2	01-12-22 02-12-22		TLM2	
4.	t-test for means	2	03-12-22 06-12-22		TLM3	
5.	paired t-test	1	08-12-22		TLM2	
6.	F-test for variances	1	09-12-22		TLM2	
7.	χ^2-test for goodness of fit	1	10-12-22 13-12-22		TLM2	
8.	χ^2-test for independence of attributes	1	15-12-22 16-12-22		TLM2	
9.	Tutorial-8	1	17-12-22		TLM3	
No. of classes required to complete UNIT-IV: 12				No. of classes taken:		

UNIT-V :Correlation and Regression

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

		Classes Required	Date of Completion	Date of Completion	Learning Methods	Sign Weekly
1.	Simple Bi-variate Correlation	1	20-12-22		TLM2	
2.	Problems on Pearson's Correlation	1	22-12-22		TLM2	
3.	Regression lines	1	23-12-22		TLM2	
4.	Problems on Regression lines	1	24-12-22		TLM2	
5.	Properties of Regression coefficients	1	27-12-22		TLM2	
6.	Tutorial-9	1	29-12-22		TLM3	
7.	Problems on rank Correlation	1	30-12-22		TLM2	
8.	Problems on repeated rank Revision	1	31-12-22		TLM3	
9.	II MID		03-01-23			
10.	II MID		05-01-23			
11.	II MID		06-01-23			
12.	II MID		07-01-23			
No. of classes required to complete UNIT-V: 8				No. of classes taken:		

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 (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

Course Instructor	Course Coordinator	Module Coordinator	HOD
(Y.P.C.S.Anil Kumar)	(M.Rami Reddy)	(Dr.A.Rami Reddy)	(Dr.A.Rami Reddy)

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. Meriga Kiran Kumar
Course Name & Code **:** Discrete Mathematical Structures & 20CS04
L-T-P Structure **: 3-0-0** **Credits:** 03
Program/Sem/Sec : B.Tech-CSE / III SEM / B
A.Y. **:** 2022-23

PRE-REQUISITE: Basic mathematical knowledge

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to perform the operations associated with relations and functions. Relate practical examples to the functions and relations and interpret the associated operations and terminology used in the context. Use formal logic proofs and/or informal but rigorous logical reasoning to, for example, predict the behavior of software or to solve problems such as puzzles.

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

CO1	Construct mathematical arguments using logical connectives and quantifiers and verify them.**(Apply -L3)**
CO2	Demonstrate the basic terminology of functions, relations, lattices and their operations. **(Understand - L2)**
CO3	Apply the properties of graphs to solve the graph theory problems in Computer science. **(Apply- L3)**
CO4	Illustrate the basic principles/techniques to solve different algebraic structures & combinatorial problems. **(Understand- L2)**
CO5	Solve linear recurrence relations by recognizing homogeneity using constant coefficients, characteristic roots and Generating functions. **(Apply – L3)**

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

CO	Program Outcomes (POs)												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	1													
CO2	3	2	1												
CO3	3	3	1												
CO4	3	3	1												
CO5	3	3	1												

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

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

TEXTBOOKS:

1. Tremblay, Manohar, "Discrete Mathematical Structures with Applications to Computer Science", TMH Publications, 2008

REFERENCE BOOKS:

1. Chandrasekaran, Umaparvathi, DiscreteMathematics,PHI, 2010.
2. Ralph. P.Grimaldi, Ramana, Discrete and Combinational Mathematics,Pearson,5th edition.
3. https://nptel.ac.in/courses/106/106/106106183/

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Mathematical Logic

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Mathematical Logic: Propositional Calculus	1	12-09-2022		**TLM1**	CO1	
2.	Statement and Notations, Connectives, Truth Tables	1	14-09-2022		**TLM1**	CO1	
3.	Tautologies	1	15-09-2022		**TLM1**	CO1	
4.	Equivalence of Formulas	1	16-09-2022		**TLM1**	CO1	
5.	Duality Law, Tautological Implications	1	19-09-2022		**TLM1**	CO1	
6.	Normal Forms, DNF	1	21-09-2022		**TLM2**	CO1	
7.	CNF	1	22-09-2022		**TLM2**	CO1	
8.	PCNF, PDNF	1	23-09-2022		**TLM2**	CO1	
9.	Theory of inference for statement Calculus	1	26-09-2022		**TLM2**	CO1	
10.	RULE CP	1	28-09-2022		**TLM2**	CO1	
11.	Consistency of Premises Indirect Method of Proof	1	29-09-2022		**TLM1**	CO1	
12.	Predicative Logic	1	30-09-2022		**TLM1**	CO1	
13.	Statement Functions, Variables, Free & Bound Variables, QUANTIFIERS	1	10-10-2022		**TLM1**	CO1	
No. of classes required to complete UNIT-I		13	No. of classes taken:				

UNIT-II: Sets, Relations & Functions

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Set Theory: Introduction,	1	12-10-2022		**TLM1**	CO2	
2.	Representation of Sets	1	13-10-2022		**TLM1**	CO2	

3.	Operations on Binary Sets	1	14-10-2022		**TLM2**	CO2	
4.	Relations: Properties of Binary Relations	1	17-10-2022		**TLM1**	CO2	
5.	Relation Matrix and Digraph Operations on Relations	1	19-02-2022		**TLM1**	CO2	
6.	Partition and Covering, Transitive Closure	1	20-02-2022		**TLM1**	CO2	
7.	Equivalence Relation	1	21-10-2022		**TLM2**	CO2	
8.	Compatible Relation, Partial Ordering Relation	1	26-10-2022		**TLM1**	CO2	
9.	Hasse Diagrams, Lattices	1	27-10-2022		**TLM1**	CO2	
10.	Functions: Bijective Functions	1	28-10-2022		**TLM1**	CO2	
11.	Composition of Functions, Inverse Functions	1	31-10-2022		**TLM1**	CO2	
No. of classes required to complete UNIT-2		11	No. of classes taken:				

UNIT – III: Graph Theory I & II

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Basic Concepts of Graphs	1	02-11-2022		**TLM1**	CO3	
2.	Matrix Representation of Graphs	1	03-11-2022		**TLM1**	CO3	
3.	Adjacency Matrices, Incidence Matrices	1	04-11-2022		**TLM1**	CO3	
4.	Isomorphic Graphs, Paths and circuits	1	05-11-2022		**TLM1**	CO3	
5.	Eulerian Graphs, Hamiltonian Graphs	1	05-11-2022		**TLM2**	CO3	
6.	Multigraphs, Planar Graphs, Euler‟s Formula	1	14-11-2022		**TLM1**	CO3	
7.	Graph Colouring and Covering, Chromatic Number	1	16-11-2022		**TLM1**	CO3	
8.	Trees Introduction	1	17-11-2022		**TLM1**	CO3	
9.	BFS, DFS	1	18-11-2022		**TLM2**	CO3	
10.	Spanning Trees: Properties	1	21-11-2022		**TLM2**	CO3	
11.	Algorithms for Minimum Spanning Trees	1	23-11-2022		**TLM2**	CO3	
No. of classes required to complete UNIT-3		11	No. of classes taken:				

UNIT-IV: Algebraic Structures & Combinatorics

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Algebraic Systems with one Binary Operation	1	24-11-2022		**TLM1**	CO4	
2.	Properties of Binary operations, Semi groups and Monoids	1	25-11-2022		**TLM1**	CO4	
3.	Homomorphism of Semi groups and Monoids, Groups	1	28-11-2022		**TLM1**	CO4	
4.	Abelian Group, Cosets, Subgroups	1	30-11-2022		**TLM1**	CO4	
5.	Langrage's Theorem	1	01-12-2022		**TLM1**	CO4	
6.	Basic of Counting, Permutations	1	02-12-2022		**TLM1**	CO4	
7.	Combinations	1	05-12-2022		**TLM1**	CO4	
8.	Circular Permutations, Restricted Permutations	1	07-12-2022		**TLM1**	CO4	
9.	Combinations with repetition Pigeonhole Principle and its Applications	2	08-12-2022 & 09-12-2022		**TLM1**	CO4	
10.	Principle of inclusion-exclusion	2	12-12-2022 & 14-12-2022		**TLM1**	CO4	
No. of classes required to complete UNIT-4		12	No. of classes taken:				

UNIT-V: Recurrence Relation

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Generating Functions of Permutations and Combinations	2	15-12-2022 & 16-12-2022		**TLM1**	CO5	
2.	Calculating Coefficient of Generating Functions	2	19-12-2022 & 21-12-2022		**TLM1**	CO5	
3.	Recurrence Relations	2	22-12-2022 & 23-12-2022		**TLM1**	CO5	
4.	solving linear homogeneous recurrence Relations by substitution	2	26-12-2022 & 28-12-2022		**TLM1**	CO5	
5.	generating functions	2	29-12-2022 & 30-12-2022		**TLM1**	CO5	
6.	The Method of Characteristic Roots	2	02-01-2023 & 04-01-2023		**TLM1**	CO5	
No. of classes required to complete UNIT-5		12	No. of classes taken:				

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

EVALUATION PROCESS:

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mr.M.Kiran Kumar	Mr. T.N.V.S.Praveen	Dr.S.Jaya Pradha	Dr. D Veeraiah
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade & NBA (Under Tier - I), ISO 9001:2015 Certified Institution

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

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

hodcse@lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. M. SITHA RAM

Course Name & Code : DATABASE MANAGEMENT SYSTEMS & 20CS07

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

Program/Sem/Sec : B.Tech III Sem CSE – B Section **A.Y.:** 2022-23

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of this course is to know about basic concepts of DBMS, Database Languages, Database Design, Normalization Process, Transaction Processing, Indexing, and Interfacing with NOSQL using MongoDB.

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

CO1	State the Basic Components of Database Management System and data modelling using Entity-Relationship Diagrams.(Understand- L2)
CO2	Examine the relational model using Structured Query Language(SQL). (Apply - L3)
CO3	Employ principles of normalization for effective database design.(Apply - L3)
CO4	Demonstrate the necessity of transaction processing, Concurrency control mechanisms and recovery strategies in DBMS.(Understand- L2)
CO5	Describe file organization, indexing techniques and the competency in selecting NoSQL Database.(Understand- L2)

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

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

TEXTBOOKS:

T1 Henry F. Korth, Abraham Silberschatz, S.Sudarshan, "Database System Concepts", McGrawHill, 6th edition, 2009.

T2 Shashank Tiwari, " ProfessionalNoSql", John Wiely& Sons, 2011.

REFERENCE BOOKS:

R1 Raghu Ramakrishnan, JohanneseGehrke, —Database Management System‖, McGrawHill, 3rd edition, 2000.

R2 Date C J, —An Introduction to Database System, Pearson Education, 8th edition, 2003.

R3 RamezElmasri, ShamkanthB.Navathe, "Fundamentals of Database Systems", Addison Wesley, 6th edition, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: DBMS Introduction & Data Modelling using the 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
1.	CEOs and COs discussion, Introduction: An overview of Database Management System	1	12-09-22		1 & 2	
2.	Database System Vs File System, Database System Concepts	1	14-09-22		1 & 2	
3.	Three Schema Architecture, Data Models	1	15-09-22		1 & 2	
4.	Database Schema and Instances, Data Independence	1	17-09-22		1 & 2	
5.	Database Languages, Database Structure	1	19-09-22		1 & 2	
6.	ER model concepts, Notation for ER Diagram	1	21-09-22		1 & 2	
7.	Mapping Constraints, Keys	1	22-09-22		1 & 2	
8.	Concepts of Super Key, Candidate Key, Primary Key	1	24-09-22		1 & 2	
9.	Generalization, Aggregation	1	26-09-22		1 & 2	
10.	Reduction of an ER Diagrams to Tables, Relationships of Higher Degree.	1	28-09-22		1 & 2	
11.	Unit-1 Revision	1	29-09-22		1 & 2	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Relational Data Model and Language & 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
12.	Relational Data Model Concepts, Integrity Constraints	1	01-10-22		1 & 2	
13.	Entity Integrity, Referential Integrity	1	10-10-22		1 & 2	
14.	Key Constraints	1	12-10-22		1 & 2	
15.	Domain Constraints	1	13-10-22			
16.	Relational Algebra	1	15-10-22		1 & 2	
17.	Characteristics of SQL, Advantage of SQL	1	17-10-22		1 & 2	
18.	SQL Data types and Literals, Insert, Update and Delete Operations	1	19-10-22		1 & 2	
19.	Tables, Views and Indexes	1	20-10-22		1 & 2	
20.	Nested Queries, Aggregate Functions	1	22-10-22		1 & 2	
21.	Joins, Unions, Intersection, Minus	1	26-10-22		1 & 2	
22.	Cursors in SQL, Triggers in SQL	1	27-10-22		1 & 2	
23.	Unit-II revision	1	29-10-22		1 & 2	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

UNIT-III: 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

24.	Functional Dependencies	1	31-10-22		1 & 2	
25.	Normal Forms - First, Second	1	02-11-22		1 & 2	
26.	Third Normal Forms, BCNF	1	03-11-22		1 & 2	
27.	Inclusion Dependences	1	05-11-22		1 & 2	
28.	Loss Less Join Decompositions	1	14-11-22		1 & 2	
29.	Multi Valued Dependencies	1	16-11-22		1 & 2	
30.	Fourth Normal Form	1	17-11-22		1 & 2	
31.	Join Dependencies and Fifth Normal Form	1	19-11-22		1 & 2	
32.	Unit-III Revision	1	21-11-22		1 & 2	
No. of classes required to complete UNIT-III: 09				**No. of classes taken:**		

UNIT-IV: Transaction Processing Concepts, Concurrency Control Techniques & Crash Recovery

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Transaction System, Testing of Serializability	1	23-11-22		1 & 2	
34.	Serializability of Schedules	1	24-11-22		1 & 2	
35.	Conflict Serializability	1	26-11-22		1 & 2	
36.	View Serializability	1	28-11-22		1 & 2	
37.	Recoverability, Deadlock Handling	1	30-11-22		1 & 2	
38.	Concurrency Control	1	01-12-22		1 & 2	
39.	Locking Techniques for Concurrency Control	1	03-12-22		1 & 2	
40.	Time Stamping Protocols for Concurrency Control	1	05-12-22		1 & 2	
41.	Validation Based Protocol	1	07-12-22		1 & 2	
42.	Multiple Granularity	1	08-12-22		1 & 2	
43.	Recovery with Concurrent Transactions	1	10-12-22		1 & 2	
44.	Log Based Recovery, Checkpoints	1	12-12-22		1 & 2	
45.	ARIES Algorithm	1	10-12-22		1 & 2	
46.	Unit-IV revision	1	14-12-22			
No. of classes required to complete UNIT-IV: 14				**No. of classes taken:**		

UNIT-V: Physical Database Design & Interfacing and Interacting with NoSQL

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
47.	Storage and file structure	1	15-12-22		1 & 2	
48.	indexed files, hashed files	1	17-12-22		1 & 2	
49.	B+ trees	1	19-12-22		1 & 2	

50.	Files with dense index	1	21-12-22		1 & 2	
51.	files with variable length records	1	22-12-22		1 & 2	
52.	Introduction to NoSQL, Storing and Accessing Data	1	24-12-22		1 & 2	
53.	Storing Data In and Accessing Data from MongoDB	1	26-12-22		1 & 2	
54.	Querying MongoDB & Revision	1	28-12-22		1 & 2	
55.	Unit-5 revision	1	29-12-22		1 & 2	
56.	Discussion on External Exam	1	31-12-22		1 & 2	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

	research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations
PO 6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to
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. M. Sitha Ram**	**Dr. M. Sitha Ram**	**Dr. K. Naga Prasanthi**	**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

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Dr. CH V NARAYANA
Course Name & Code : CO & 20CS08
L-T-P Structure : **3-0-0** **Credits:** 3
Program/Sem/Sec : II B.Tech., III-Sem, B-Sec **A.Y.: 2022-23**

PREREQUISITE: Fundamentals of Computer Science.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to learn about the functional blocks and data representation in computer system and understands the design principles of processor, organization and management of memory and peripheral devices.

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

CO1	Evaluate digital Number systems and use Boolean Algebra theorems ,properties and canonical forms for digital logic circuit design **(Undestand-L2)**
CO2	Design Combinational Logic circuits and sequential logic circuits **(Apply-L3)**
CO3	Understand Computer Architecture and data representation to perform computer arithmetic operations **(Understan-L2)**
CO4	Illustrate the design principles of control unit and pipelining **(Understand-L2)**
CO5	Analyze the memory hierarchy in a computer system **(Understan-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	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-
1 - Low **2 –**Medium **3 -** High															

TEXTBOOKS:

T1 Morris Mano Michel D Ciletti, "Digital Design",4/e,2008,PEA

T2 Carl Hamacher, Zvonks Vransenic ,SafeaZaky, "Computer Oraganization", TMH publications

REFERENCE BOOKS:

R1 M.Morris Mano, "Computer System Architecture",Pearson Education Publishers[Unit-1,2]

R2 Leach, Malvino, saha,"Digital Logic design", TMH,2006

R3 R.P.jain,"Modern Digital Electronics", TMH,2011

R4 A.Anand Kumar,"Switching Theory and logic Design", Prentice-hall Of India pvt..Limited,2010

R5 Kohavi,Jha,Cambridge,"Switching and Finite Automata Theory",3/e

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Number systems, Logic gates and Boolean algebra

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 Digital Logic and Number systems	1	12-9-2022		TLM1	
2.	Conversions of Number systems from one radix to another	1	14-9-2022		TLM1	
3.	r' and (r-1)'complements	1	16-9-2022		TLM1	
4.	Binary codes	1	17-9-2022		TLM1	
5.	Logic gates	1	19-9-2022		TLM1	
6.	Logic gates	1	21-9-2022		TLM1	
7.	Introduction to Boolean Algebra with fundamental postulates, theorems and properties	2	23,24-9-2022		TLM1	
8.	Complement and dual of logical expressions, SOP, POS	2	26,28-9-2022		TLM1	
9.	Minimization of Boolean functions using Boolean theorems	2	01-10-2022,10\10		TLM1	
10.	Karnaugh Map(K-map)	2	11-10-2022		TLM1	
No. of classes required to complete UNIT-I: 14				**No. of classes taken:**		

UNIT-II: Combinational Logic Circuits and Sequential Logic Circuits

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.	Introduction to combinational circuits, Adders	1	14-10-2022		TLM1	
12.	Half/Full Subtractors, Ripple carry adder	1	15-10-2022		TLM1	
13.	Design of Decoders and Encoders	1	17-9-2022		TLM1	
14.	Multiplexer and De-multiplexer	1	19-9-2022		TLM1	
15.	Priority encoder	1	15-10-2022		TLM1	
16.	Introduction to sequential circuits, Latch & flip-flops	1	21-10-2022		TLM1	
17.	Flip-flops(RS,J,T,D),	2	22,23-10-2022		TLM1	
18.	Master slave flip-flop	2	25,26-10-2022		TLM1	
19.	Conversion of flip-flops, Truth & excitation tables	1	28-10-2022		TLM1	
20.	Registers and counters	1	29-10-2022		TLM1	
No. of classes required to complete UNIT-II: 13				**No. of classes taken:**		

UNIT-III: Functional Blocks of a Computer & Data Representation

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.	Basic functional blocks of a computer	1	1-11-2022		TLM2	
22.	Set Architecture of CPU-registers	1	4-11-2022		TLM2	
23.	Instruction execution cycle	1	5-11-2022		TLM2	
24.	RTL Interpretation of instructions	1			TLM2	
25.	Addressing Modes	1			TLM2	

26.	Instruction set	1	15-11-2022		TLM2	
27.	Signed Number representation	1	16-11-2022		TLM2	
28.	Fixed & Floating point representation,	1	18-11-2022		TLM2	
29.	Character representation	1	19-11-2022		TLM2	
30.	Computer arithmetic-Int. addition & subtraction	1	22-11-2022		TLM2	
31.	Multiplication shift-AND Add, Booth multiplier	1	23-11-2022		TLM2	
32.	Division restoring & non-restoring techniques	1	25-11-2022		TLM2	
33.	Floating Point arithmetic	1	26-11-2022		TLM2	
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

UNIT-IV: CPU Control design & Parallel Processors

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.	Introduction to CPU control unit design	1	29-11-2022		TLM2	
35.	Hardwired design	1	3-12-2022		TLM2	
36.	Microprogrammed design approach	2	6-12-2022		TLM2	
37.	Basic concepts of pipelining	1	7-12-2022		TLM2	
38.	Throughput and speed	1	9-12-2022		TLM2	
39.	Pipeline hazards	1	14-12-2022		TLM2	
40.	Parallel processors	3	15-12-2022		TLM2	
No. of classes required to complete UNIT-IV: 10				**No. of classes taken:**		

UNIT-V: Memory system design & Peripheral devices and their characteristics

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
41.	Memory organization	1	14-12-2022		TLM2	
42.	Memory interleaving	1	15-12-2022		TLM2	
43.	Concept of memory hierarchical organization	1	17-12-2022		TLM2	
44.	Cache memory	1	20-12-2022		TLM2	
45.	Peripheral devices –I/O sub-systems	1	21-12-2022		TLM2	
46.	I/O device interface	1	23-12-2022		TLM2	
47.	I/O transfers-program controlled	2	26,28-12-2022		TLM2	
48.	Interrupt driven	2	30,31-12-2022		TLM2	
49.	DMA	2	2,4-1-2023		TLM2	
50.	Revision	1	7-1-2023		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 (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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

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hodcse@lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. B. Usha Rani

Course Name & Code : Object Oriented Programming , 20CS09

L-T-P Structure : **3-0-0** **Credits:** 03

Program/Sem/Sec : B.Tech-CSE / III SEM / B SEC

A.Y. : 2022-23

PREREQUISITE : **Programming for Problem solving using C**

COURSE OBJECTIVE The objective of the course is to learn the constructs of the Java programming language along with built-in facilities to create different applications such as console & graphical user interfaces. In the process of learning the language, they will be applying knowledge of object-oriented programming; they will get the fundamental knowledge reason collection framework.

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

CO 1	Demonstrate the fundamentals of object-oriented programming and basic building blocks of Java. **(Understand- L2)**
CO 2	Apply object-oriented programming principles for the development of reusable applications. **(Apply - L3)**
CO 3	Understand the importance of abstraction, user defined package creation and handling different exceptions. **(Understand- L2)**
CO 4	Develop multitasking applications using JAVA multithreaded programming and perform different operations upon various data structures by using collection framework. **(Apply – L3)**
CO 5	Develop GUI applications using AWT (Abstract Window Toolkit). **(Apply- L3)**

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

CO	Program Outcomes(POs)												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3												1		
CO2		3												2	
CO3	3												1		
CO4		2												2	
CO5		2	1											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. Herbert Schildt, "Java: The complete reference", TMH Publications, 7th edition, 2006.
2. Cay S. Horstmann, "Core Java Volume I – Fundamentals", Pearson, Eleventh edition, 2018.

REFERENCE BOOKS:

1. Dr.R.NageswaraRao, "Core JAVA: An Integrated Approach", Dreamtech Press, 1st Edition2008.
2. E. Balaguruswamy, "Programming with JAVA", TMH Publications, 2ndEdition, 2000.
3. Patrick Niemeyer & Jonathan Knudsen, "Learning Java", O'REILLY Publications, 3rd Edition, 2005.
4. Benjamin J Evans & David Flanagan, "Java–in a Nutshell – A desktop quick reference", O'REILLY Publications, 6th Edition, 2014.

COURSE DELIVERY PLAN (LESSON PLAN): Section-B
UNIT-I:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1.	Introduction : Need of Object oriented Paradigm and it's history	1	12-09-2022		TLM2	CO1	
2.	Programming Paradigms : Procedure vs OOP	1	13-09-2022		TLM2	CO1	
3.	Principles of OOP	1	16-09-2022		TLM2	CO1	
4.	Introduction to JAVA : JAVA - installation & set up of program execution Environment	1	17-09-2022		TLM2	CO1	
5.	Data types, variables and Keywords	1	19-09-2022		TLM2	CO1	
6.	Operators and expression Evaluation	2	20-09-2022		TLM2	CO1	
7.	Control statements	1	23-09-2022		TLM2	CO1	
8.	Class definition: Variables and Methods	1	24-09-2022		TLM2	CO1	
9.	Object creation – sample programs	1	26-09-2022		TLM2	CO1	
10.	Constructors and this keyword	1	27-09-2022		TLM2	CO1	
No. of classes required to complete UNIT-I		11					

UNIT-II:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
11.	Overloading methods and constructors	1	30-09-2022		TLM2	CO2	
12.	Parameter passing and returning objects and recursion	1	01-10-2022		TLM2	CO2	
13.	Access specifiers	1	10-10-2022		TLM2	CO2	
14.	Nested and inner classes	1	11-10-2022		TLM2	CO2	
15.	Final and static keyword	1	14-10-2022		TLM2	CO2	
16.	Variable and command line arguments	1	15-10-2022		TLM2	CO2	
17.	Inheritance and types of inheritance.	1	17-10-2022		TLM2	CO2	
18.	Polymorphism – compile-time and run-time	1	18-10-2022		TLM2	CO2	
19.	Abstract class	1	21-10-2022		TLM2	CO2	
20.	String ,StringBuffer, and StringTokenizer	2	22-10-2022		TLM2	CO2	
No. of classes required to complete UNIT-II		11					

UNIT-III:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
21.	Interfaces -definition and creation	1	25-10-2022		TLM2	CO3	
22.	Inheritance in interfaces	1	28-10-2022		TLM2	CO3	
23.	Packages : Built-in and user-defined	1	29-10-2022		TLM2	CO3	
24.	Exception Handling – Exception class hierarchy	1	31-10-2022		TLM2	CO3	
25.	Use of try, catch, throw, throws, and finally	2	01-11-2022		TLM2	CO3	
26.	Creation of user-defined exceptions	1	04-11-2022		TLM2	CO3	
27.	Assertions	1	05-11-2022		TLM2	CO3	
No. of classes required to complete UNIT-III		09					

UNIT-IV: Trees, Traversals, Search Trees

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
28.	Multithreading – Introduction and	1	14-11-2022		TLM2	CO4	

	thread life-cycle						
29.	Creation of threads, naming and joining a thread	1	15-11-2022		TLM2	CO4	
30.	Daemon thread and thread pool	1	18-11-2022		TLM2	CO4	
31.	Thread synchronization	2	19-11-2022		TLM2	CO4	
32.	Inter-thread communication	1	21-11-2022		TLM2	CO4	
33.	Collection framework – Introduction	1	22-11-2022		TLM2	CO4	
34.	List interface	1	25-11-2022		TLM2	CO4	
35.	Set interface	1	26-11-2022		TLM2	CO4	
36.	Queue and Map Interface	1	28-11-2022		TLM2	CO4	
No. of classes required to complete UNIT-IV		10					

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
37.	AWT hierarchy – components and containers- Button, Label, text field, checkbox	2	02-12-2022, 03-12-2022		TLM2	CO5	
38.	Choice,list, canvas, scrollbar, menu Item & Menu	2	05-12-2022, 06-12-2022		TLM2	CO5	
39.	Layout Managers	1	09-12-2022		TLM2	CO5	
40.	Event Delegation model & Action Event class	1	10-12-2022		TLM2	CO5	
41.	Key Events and Mouse Events	1	12-12-2022		TLM2	CO5	
42.	Window Events and Action listener interface	1	13-12-2022		TLM2	CO5	
43.	Key, Mouse, and Mouse Motion Listener.	1	16-12-2022		TLM2	CO5	
44.	Window Listener and adapter classes.	1	17-12-2022		TLM2	CO5	
No. of classes required to complete UNIT-V		10					

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
45.	Introduction to Swings	1	19-12-2022		TLM2	CO5	

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

EVALUATION PROCESS :

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Ms. B. Usha Rani	Mr. N. Srinivasa Rao	Dr. K. Naga Prasanthi	Dr. D Veeraiah
Signature				

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

hodcse@lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor : Dr. M. Sitha Ram
Course Name & Code : DataBase Management Systems Lab(20CS56)
L-T-P Structure : 0-0-3 Credits: 1.5
Program/Sem/Sec : B.Tech., CSE., III-Sem., Sec-B A.Y: 2022-23

PRE-REQUISITE : Programminglanguage, Discrete Mathematical Structures, and Data Structures.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this lab is to provide a strong formal foundation in database concepts, technology, and practice to the participants to groom them into well-informed database application developers.

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

CO 1	Create & manipulate the relational database using SQL**.(Apply- L3)**
CO 2	Implement Views, procedures, triggers, and cursors on relational database. **(Apply- L3)**
CO 3	Create Unstructured Databases using MongoDB**.(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	-	2	2	-	2	-	-	-	-	-	-	-	-	-	3
CO2	-	1	1	1	1	-	-	-	-	-	-	-	-	-	3
CO3	3	-	1	1	1	-	-	-	-	-	-	-	-	-	3
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-A

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1	Introduction to SQL, syntax	3	13-09-22		TLM4	
2	Experiment - 1	3	20-09-22		TLM4	

			& 27-09-22			
3	Experiment - 2	3	04-10-22 & 11-10-.22		TLM4	
4	Experiment - 3	3	18-10-.22		TLM4	
5	Experiment - 4	3	25-10-22		TLM4	
6	Experiment – 5,6,7,8	3	01-11-22 & 15-11-22		TLM4	
7	Experiment – 9,10,11	3	22-11-22		TLM4	
8	Experiment – 12,13	3	29-11-22		TLM4	
9	Experiment – 14	3	06-12-22		TLM4	
10	Experiment – 15	3	13-12-22		TLM4	
11	Design database for Case study	3	20-12-22		TLM4	
12	Internal Exam	3	27-12-22		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 the 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	**Dr. M. Sitha Ram**	**Dr. M. Sitha Ram**	**Dr.K. Naga Prasanthi**	**Dr.D.Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ms. B. Usha Rani

Course Name & Code : Object Oriented Programming lab , 20CS57

L-T-P Structure : **0-0-3** **Credits:** 1.5

Program/Sem/Sec : B.Tech-CSE / III SEM / B SEC

A.Y. : 2021-22

PREREQUISITE : **C Programming Language**

Course Educational Objectives:

The objective of the course is to apply the constructs of Java programming language along with built-in facilities to create different applications such as console & graphical user interfaces. They will be applying knowledge of object-oriented programming, collection framework to perform all operations on data.

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

- **CO1:** Solve Basic mathematical problems using fundamentals of Java and its object-oriented principles. **(Apply – L3)**
- **CO2:** Implement multithreading and exception handling mechanisms. **(Apply – L3)**
- **CO3:** Develop GUI applications and basic data structures using collection framework. **(Apply – L3)**
- **CO4:** Improve individual / teamwork skills, communication & report writing skills with ethical values.

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

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

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

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	Learning Outcome COs	HOD Sign Weekly
1	Introduction to OOP using C++ - Sample programs	3	15-09-2022		TLM4	CO1	
2	JAVA Installation & Module-1: Understand the language constructs of JAVA	3	22-09-2022		TLM4	CO1	
3	Module-2 : Parameter passing, static and non-static methods	3	29-09-2022		TLM4	CO1	
4	Module-3: String class & Inheritence	3	13-10-2022		TLM4	CO1	
5	Module-4 : Poly morphism , Packages & Interfaces	6	20-10-2022 27-10-2022		TLM4	CO1	
6	Module-5 : Abstract classes and interfaces	3	03-11-2022		TLM4	CO1	
7	Module-6: Multithreaded programming	6	17-11-2022 24-11-2022		TLM4	CO2	
8	Module-7 : Exception – handling	3	01-12-2022		TLM4	CO2	
9	Module-8 : Applet Programming & Develop simple applications using AWT	3	08-12-2022		TLM4	CO3	
10	Module-9 : Collections framework	3	15-12-2022		TLM4	CO3	
11	Module-10: Collections framework	3	22-12-2022		TLM4	CO3	
12	**Lab Internal Examination**		29-12-2022				

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

PART-C

EVALUATION PROCESS (R17 Regulation):

Evaluation Task	**Marks**
Day-to-Day Work	A1 = 5
Record & Observation	B1 = 5
Internal Exam	C1 = 5
Cumulative Internal Examination (CIE): (A1+B1+C1)	15
Semester End Examination (SEE)	35
Total Marks = CIE + SEE	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 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 engineer**ing and management principles and apply these to one's own work, as a member and** leader in a team, to manage projects and in multidisciplinary environments
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	**A**n ability to apply software engineering practices and strategies in software project development using open-source programming environment for the success of organization
PSO 2	**An** Ability to design and develop computer programs in networking, web applications and IoT as per the society needs.
PSO 3	To inculcate an ability to analyze, design and implement database applications.

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Ms. B. Usha Rani	Mr. N. Srinivasa Rao	Dr. K. Naga Prasanthi	Dr. D Veeraiah
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade & NBA (Under Tier - I), ISO 9001:2015 Certified

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

L.B. REDDY NAGAR, MYLAVARAM, N T R DIST., A.P.-521 230.

hodcse@lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

COURSE HANDOUT

Part-A

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

ACADEMIC YEAR : 2022-23

COURSE NAME & CODE : R Programming Lab (20IT53)

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

COURSE CREDITS : 1.5

COURSE INSTRUCTOR : Dr S Jayaprada

COURSE COORDINATOR : Dr K Naga Prashanthi

PRE-REQUISITES: Basics of Mathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course student will learn about the fundamentals of R programming, standard R libraries, solid understanding of R functions, write programs using the R and gain skills in R programming Language, get acquaintances with Arrays, Files, Strings, Packages, and distributions using R

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

CO1: Implement basic concepts of R programming, and its different module that includes conditional, looping, lists, Strings, Functions, Frames, Arrays, and File programming. **(Understand - L2)**

CO2: Implement the concepts of R Script to extract the data from data frames and file operations. **(Apply – L3)**

CO3: Implement the various statistical techniques with visualization using R add-on packages. **(Apply – L3)**

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

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 LearningMethods	Learning utcomeCOs	HOD Sign Weekly
1	**Week 1:** a) Installing R and RStudio b) Basic functionality of R, variable, data types in R	3	14-09-22		TLM4/TLM5	CO1	
2	**Week 2:** a) Implement R script to show the usage of various operators available in R language. b) Implement R script toread person‘s age from keyboard and display whether he is eligible forvoting or not. c) Implement R script tofind biggest number between two numbers. d) Implement R script to check the given year is leap year or not.	3	21-09-22		TLM4/TLM5	CO1	
3	**Week 3:** a) Implement R Script to create a list. b) Implement R Script to access elements in the list. c) Implement R Script to merge two or more lists. d) Implement R Script to perform matrix operation	3	28-09-22		TLM4/TLM5	CO1	
4	**Week 4:** Implement R script to perform following operations: a) various operations on vectors b) Finding the sum and average of given numbers using arrays. c) To display elements of list in reverse order. d) Finding the minimum and maximum elements in the array.	3	12-10-22		TLM4/TLM5	CO2	

5	**Week 5:** a) Implement R Script to perform various operations on matrices b) Implement R Script to extract the data from data frames. c) Write R script to display file contents. d) Write R script to copy file contents from one file to another	3	19-10-22		TLM4/TLM5	CO2	
6	**Week 6:** Write an R script to find basic descriptive statistics using summary(), str(), quartile() function on mtcars datasets. b) Write an R script to find subset of dataset by using subset (), aggregate () functions on iris dataset	3	26-10-22		TLM4/TLM5	CO2	
7	**Week 7:** a) Reading different types of data sets (.txt, .csv) from Web or disk and writing in file in specific disk location. b) Reading Excel data sheet in R. c) Reading XML dataset in R	3	2-11-22		TLM4/TLM5	CO2	
8	**Week 8:** a) Implement R Script to create a Pie chart, Bar Chart, Scatter Plot and Histogram (Introduction to ggplot2 graphics) b) Implement R Script to perform mean, median, mode, range, summary, variance, standard deviation operations.	3	16-11-22		TLM4/TLM5	CO2	

9	**Week 9:** a) Implement R Script to perform Normal, and Binomial distributions. b) Implement R Script to perform correlation, Linear and multiple regression.	3	23-11-22		TLM4/TLM5	CO3	
10	**Week 10:** Introduction to Non- Tabular Data Types: Timeseries, spatial data, Network data. Data Transformations: Converting Numeric Variables into Factors, Date Operations, String Parsing, Geo coding.	6	30-11-22		TLM4/TLM5	CO3	
11	**Week 11:** Introduction Dirty data problems: Missing values, data manipulation, duplicates, forms of data dates, outliers, spelling.	3	07-12-22		TLM4/TLM5	CO3	
12	**Week 12:** Data sources: SQLite examples for relational databases, Loading SPSS and SAS files, Reading from Google Spreadsheets,API and web scraping examples	3	14-12-22		TLM4/TLM5	CO3	
	LAB INTERNAL						

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

PROGRAM EDUCATIONAL OBJECTIVES (PEOs):

PEO-I: Pursue higher education, entrepreneurship, and research to compete at globallevel.

PEO-II: Design and develop products innovatively in the area of computer science andengineering and in other allied fields.

PEO-III: Function effectively as individuals and as members of a team in the conduct of interdisciplinary projects; and even at all the levels with ethics and necessary attitude.

PEO-IV: Serve ever-changing needs of the society with a pragmatic perception.

PROGRAM OUTCOMES (POs):

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

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

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

Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

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.

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.

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.

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

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

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, andgive and receive clear instructions.

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.

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

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: The ability to apply Software Engineering practices and strategies in software project development using open source programming environment for the success of organization.

PSO2: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.

PSO3: To inculcate an ability to analyze, design and implement database applications.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Dr S Jayaprada	Dr S Jayaprada	Dr K Naga Prashanthi	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 : Web Application Development using Full Stack - Module-I (Frontend Development) & 20CSS1
L-T-P Structure : 1-0-2 **Credits:** 2
Program/Sem/Sec : B.Tech. - CSE/III/B **A.Y.:** 2022-23

PREREQUISITE: Knowledge of basic Computer hardware & software.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to understand the design of HTML web pages, Styling of HTML pages using CSS, web forms validation using JavaScript and developing responsive web page using jQuery.

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

CO1	Understand the basic UI/UX design and styling of web pages **(Understand- L2)**
CO2	Understand the DOM of web design, markup language and client-side scripting. **(Understand- L2)**
CO3	Understand the responsive web design using DHTML. **(Understand- L2)**
CO4	Improve individual / teamwork skills, communication & report writing skills with ethical values. **(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	-	-	2	-	2	-	-	-	-	-	-	-	-	3	-
CO2	-	-	2	-	2	-	-	-	-	-	-	-	-	3	-
CO3	-	-	2	-	2	-	-	-	-	-	-	-	-	3	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 - Low **2** –Medium **3** - High															

REFERENCE BOOKS:

R1	HTML & CSS: The Complete Reference, 5thEditionby Thomas Powell, McGrawHill, 2017.
R2	Beginning HTML, XHTML, CSS, and JavaScript by Jon Duckett, Wiley India, 2010.
R3	jQuery Cookbook by Cody Lindley, O'Reilly Media, 2009
R4	HTML, XHTML, and CSS Bible, 5th Edition by Steven M. Schafer, Wiley India, 2011.
R5	Web Development with jQuery by Richard York, Wiley India, 2015
R6	Headfirst HTML & CSS 2nd Edition by Elisabeth Robson, Eric Freeman, 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	3	12-09-2022		**DM5**	
2.	Lab Cycle-1	3	19-09-2022		**DM5**	
3.	Lab Cycle-1	3	26-09-2022		**DM5**	
4.	Lab Cycle-2	3	10-10-2022		**DM5**	
5.	Lab Cycle-2	3	17-10-2022		**DM5**	
6.	Lab Cycle-3	3	31-10-2022		**DM5**	
7.	Lab Cycle-3	3	07-11-2022		**DM5**	
8.	Lab Cycle-4	3	14-11-2022		**DM5**	
9.	Lab Cycle-4	3	21-11-2022		**DM5**	
10.	Lab Cycle-5	3	28-11-2022		**DM5**	
11.	Lab Cycle-5	3	05-12-2022		**DM5**	
12.	Lab Cycle-6	3	12-12-2022		**DM5**	
13.	Lab Cycle-6	3	19-12-2022		**DM5**	
14.	Lab Cycle-6	3	26-12-2022		**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 Regulation):

Evaluation Task	Marks
Report	10
Quality of work	10
Presentation	20
Interaction / Queries	10
Total	**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	(Mr. R.Ashok)	(Mr. A Raja Gopal)	(Dr. K. Naga Prasanthi)	(Dr. D. Veeraiah)
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Ch Nagamani
Course Name & Code **:** 20CS08
L-T-P Structure **: 3-0-0** **Credits:** 3
Program/Sem/Sec : II B.Tech.,III-Sem-C **A.Y.:2022-23**

PREREQUISITE: Fundamentals of Computer Science.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to learn about the fumctional blocks and data representation of computer system and understands the design principles of processor, organization and management of memory and peripheral devices.

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

CO1	Evaluate digital Number systems and use Boolean Algebra theorems ,properties and canonical forms for digital logic circuit design **(Undestand-L2)**
CO2	Design Combinational Logic circuits and sequential logic circuits **(Apply-L3)**
CO3	Understand Computer Architecture and data representation to perform computer arithmetic operations **(Understan-L2)**
CO4	Illustrate the design principles of control unit and pipelining **(Understand-L2)**
CO5	Analyse the memory hierarchy in a computer system **(Understan-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	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CO2	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-
CO3	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO4	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CO5	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-
1 - Low **2 –**Medium **3 -** High															

TEXTBOOKS:

T1 Morris Mano Michel D Ciletti, “Digital Design”,4/e,2008,PEA

T2 Carl Hamacher, Zvonks Vransenic ,SafeaZaky, “Computer Oraganization”, TMH publications

REFERENCE BOOKS:

R1 M.Morris Mano, “Computer System Architecture”,Pearson Education Publishers[Unit-1,2]

R2 Leach, Malvino, saha,”Digital Logic design”, TMH,2006

R3 R.P.jain,”Modern Digital Electronics”, TMH,2011

R4 A.Anand Kumar,”Switching Theory and logic Design”, Prentice-hall Of India pvt..Limited,2010

R5 Kohavi,Jha,Cambridge,”Switching and Finite Automata Theory”,3/e

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Number sytems,Logic gates and Boolean Algebra

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 Digital Logic and Number systems	1	13-9-2022		TLM1	
2.	Conversions of Number systems from one radix to another	1	14-9-2022		TLM1	
3.	r' and (r-1)'complements	1	16-9-2022		TLM1	
4.	Binary codes	1	17-9-2022		TLM1	
5.	Logic gates	1	19-9-2022		TLM1	
6.	Logic gates	1	20-9-2022		TLM1	
7.	Introduction to Boolean Algebra with fundamental posthulates,theorems and properties	2	21-9-2022		TLM1	
8.	Complement and dual of logical expressions,SOP,POS	2	24-9-2022		TLM1	
9.	Minimization of Boolean functions using Boolean theoroms	2	28-9-2022		TLM1	
10.	Karnaugh Map(K-map)	2	30-9-2022		TLM1	
No. of classes required to complete UNIT-I: 14				**No. of classes taken:**		

UNIT-II: Combinational Logic Circuits and Sequential Logic Circuits

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.	Introduction to combinational circuits,Adders	1	1-10-2022		TLM1	
12.	Half/Full Subtractors,Ripple carry adder	1	11-10-2022		TLM1	
13.	Design of Decoders and Encoders	1	12-9-2022		TLM1	
14.	Multiplexer and De-multiplexer	1	14-9-2022		TLM1	
15.	Priority encoder	1	15-10-2022		TLM1	
16.	Introduction to sequential circuits,Latch & flip-flops	1	18-10-2022		TLM1	
17.	Flip-flops(RS,J,T,D),	2	20-10-2022		TLM1	
18.	Master slave flip-flop	2	23-10-2022		TLM1	
19.	Conversion of flip-flops,Truth & excitation tables	1	25-10-2022		TLM1	
20.	Registers and counters	2	26-10-2022		TLM1	
No. of classes required to complete UNIT-II: 13				**No. of classes taken:**		

UNIT-III: Functional Blocks of a Computer & Data Representation

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.	Basic functional blocks of a computer	1	28-10-2022		TLM2	
22.	Set Architecture of CPU-registers	1	29-10-2022		TLM2	
23.	Instruction execution cycle	1	1-11-2022		TLM2	
24.	RTL Interpretation of instructions	1	4-11-2022		TLM2	
25.	Addressing Modes	1	5-11-2022		TLM2	
26.	Instruction set	1	15-11-2022		TLM2	
27.	Signed Number representation	1	16-11-2022		TLM2	

28.	Fixed & Floating point representation,	1	18-11-2022		TLM2	
29.	Character representation	1	19-11-2022		TLM2	
30.	Computer arithmetic-Int. addition & subtraction	1	22-11-2022		TLM2	
31.	Multiplication shift-AND Add,Booth multiplier	1	23-11-2022		TLM2	
32.	Division restoring & non-restoring techniques	1	25-11-2022		TLM2	
33.	Floating Point arithmetic	1	26-11-2022		TLM2	
No. of classes required to complete UNIT-III: 13				**No. of classes taken:**		

UNIT-IV:CPU Control design & Parallel Processors

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.	Introduction to CPU control unit design	1	29-11-2022		TLM2	
35.	Hardwired design	1	3-12-2022		TLM2	
36.	Microprogrammed design approach	2	6-12-2022		TLM2	
37.	Basic concepts of pipelining	1	7-12-2022		TLM2	
38.	Throughput and speed	1	9-12-2022		TLM2	
39.	Pipeline hazards	1	14-12-2022		TLM2	
40.	Prallel processors	3	15-12-2022		TLM2	
No. of classes required to complete UNIT-IV: 10				**No. of classes taken:**		

UNIT-V: Memory system design & Pheriperal devices and their charateristics

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
41.	Memory organization	1	14-12-2022		TLM2	
42.	Memory interleaving	1	15-12-2022		TLM2	
43.	Concept of memory hierarchical organization	1	17-12-2022		TLM2	
44.	Cache memory	1	20-12-2022		TLM2	
45.	Peripheral devices –I/O sub-systems	1	21-12-2022		TLM2	
46.	I/O device interface	1	23-12-2022		TLM2	
47.	I/O trancfers-program controlled	1	27-12-2022		TLM2	
48.	Interrupt driven	1	28-12-2022		TLM2	
49.	DMA	1	30-12-2022		TLM2	
50.	Revision	1	31-12-2022		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 (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PO 8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	**Project management and finance**: Demonstrate knowledge and understanding of the engineer**ing and management principles and apply these to one's own work, as a member and** leader in a team, to manage projects and in multidisciplinary environments.
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	**Ch Nagamani**	**Dr.Venkata Narayana Chejarla**	**Dr .D.Venkata Subbaiah**	**Dr.V.Veeraiah**
Signature				

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Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: MrN.Srikanth
Course Name & Code : DATABASE MANAGEMENT SYSTEMS & 20CS07
L-T-P Structure : 3-0-0 **Credits:** 3
Program/Sem/Sec : B.Tech III Sem CSE – C Section **A.Y.:** 2022-23

PREREQUISITE:

COURSE EDUCATIONAL OBJECTIVES (CEOs): The Objective of this course is to know about basic concepts of DBMS, Database Languages, Database Design, Normalization Process, Transaction Processing, Indexing, and Interfacing with NOSQL using MongoDB.

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

CO1	State the Basic Components of Database Management System and data modelling using Entity-Relationship Diagrams.(Understand- L2)
CO2	Examine the relational model using Structured Query Language(SQL). (Apply - L3)
CO3	Employ principles of normalization for effective database design.(Apply - L3)
CO4	Demonstrate the necessity of transaction processing, Concurrency control mechanisms and recovery strategies in DBMS.(Understand- L2)
CO5	Describe file organization, indexing techniques and the competency in selecting NoSQL Database.(Understand- L2)

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

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

TEXTBOOKS:

T1 Henry F. Korth, Abraham Silberschatz, S.Sudarshan, "Database System Concepts", McGrawHill, 6th edition, 2009.
T2 Shashank Tiwari, " ProfessionalNoSql", John Wiely& Sons, 2011.

REFERENCE BOOKS:

R1 Raghu Ramakrishnan, JohanneseGehrke, —Database Management System‖, McGrawHill, 3rd edition, 2000.
R2 Date C J, —An Introduction to Database System, Pearson Education, 8th edition, 2003.
R3 RamezElmasri, ShamkanthB.Navathe, "Fundamentals of Database Systems", Addison Wesley, 6th edition, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: DBMS Introduction & Data Modelling using the 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
1.	CEOs and COs discussion, Introduction: An overview of Database Management System	1	13-09-22		1 & 2	
2.	Database System Vs File System, Database System Concepts	1	14-09-22		1 & 2	
3.	Three Schema Architecture, Data Models	1	15-09-22		1 & 2	
4.	Database Schema and Instances, Data Independence	1	16-09-22		1 & 2	
5.	Database Languages, Database Structure	1	20-09-22		1 & 2	
6.	ER model concepts, Notation for ER Diagram	1	21-09-22		1 & 2	
7.	Mapping Constraints, Keys	1	22-09-22		1 & 2	
8.	Concepts of Super Key, Candidate Key, Primary Key	1	23-09-22		1 & 2	
9.	Generalization, Aggregation	1	27-09-22		1 & 2	
10.	Reduction of an ER Diagrams to Tables, Relationships of Higher Degree.	1	28-09-22		1 & 2	
11.	Unit-1 Revision	1	29-09-22		1 & 2	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II: Relational Data Model and Language & 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
12.	Relational Data Model Concepts, Integrity Constraints	1	30-09-22		1 & 2	
13.	Entity Integrity, Referential Integrity	1	11-10-22		1 & 2	
14.	Key Constraints	1	12-10-22		1 & 2	
15.	Domain Constraints	1	13-10-22			
16.	Relational Algebra	1	14-10-22		1 & 2	
17.	Characteristics of SQL, Advantage of SQL	1	18-10-22		1 & 2	
18.	SQL Data types and Literals, Insert, Update and Delete Operations	1	19-10-22		1 & 2	
19.	Tables, Views and Indexes	1	20-10-22		1 & 2	
20.	Nested Queries, Aggregate Functions	1	21-10-22		1 & 2	
21.	Joins, Unions, Intersection, Minus	1	25-10-22		1 & 2	
22.	Cursors in SQL, Triggers in SQL	1	26-10-22		1 & 2	
23.	Unit-II revision	1	27-10-22		1 & 2	
No. of classes required to complete UNIT-II: 12				**No. of classes taken:**		

UNIT-III: 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
24.	Functional Dependencies	1	28-10-22		1 & 2	
25.	Normal Forms - First, Second	1	01-11-22		1 & 2	
26.	Third Normal Forms, BCNF	1	02-11-22		1 & 2	
27.	Inclusion Dependences	1	03-11-22		1 & 2	
28.	Loss Less Join Decompositions	1	04-11-22		1 & 2	
29.	Multi Valued Dependencies	1	15-11-22		1 & 2	
30.	Fourth Normal Form	1	16-11-22		1 & 2	
31.	Join Dependencies and Fifth Normal Form	1	17-11-22		1 & 2	
32.	Unit-III Revision	1	18-11-22		1 & 2	
No. of classes required to complete UNIT-III: 09				**No. of classes taken:**		

UNIT-IV: Transaction Processing Concepts, Concurrency Control Techniques & Crash Recovery

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Transaction System, Testing of Serializability	1	22-11-22		1 & 2	
34.	Serializability of Schedules	1	23-11-22		1 & 2	
35.	Conflict Serializability	1	24-11-22		1 & 2	
36.	View Serializability	1	25-11-22		1 & 2	
37.	Recoverability, Deadlock Handling	1	29-11-22		1 & 2	
38.	Concurrency Control	1	30-11-22		1 & 2	
39.	Locking Techniques for Concurrency Control	1	01-12-22		1 & 2	
40.	Time Stamping Protocols for Concurrency Control	1	02-12-22		1 & 2	
41.	Validation Based Protocol	1	06-12-22		1 & 2	
42.	Multiple Granularity	1	07-12-22		1 & 2	
43.	Recovery with Concurrent Transactions	1	08-12-22		1 & 2	
44.	Log Based Recovery, Checkpoints	1	09-12-22		1 & 2	
45.	ARIES Algorithm	1	13-12-22			
46.	Unit-IV revision	1	14-12-22			
No. of classes required to complete UNIT-IV: 14				**No. of classes taken:**		

UNIT-V: Physical Database Design & Interfacing and Interacting with NoSQL

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
47.	Storage and file structure	1	15-12-22		1 & 2	
48.	indexed files, hashed files	1	16-12-22		1 & 2	
49.	B+ trees	1	20-12-22		1 & 2	
50.	Files with dense index	1	21-12-22		1 & 2	
51.	files with variable length records	1	22-12-22		1 & 2	
52.	Introduction to NoSQL, Storing and Accessing Data	1	23-12-22		1 & 2	
53.	Storing Data In and Accessing Data from MongoDB	1	27-12-22		1 & 2	
54.	Querying MongoDB & Revision	1	28-12-22		1 & 2	
55.	Unit-5 revision	1	29-12-22		1 & 2	
56.	Discussion on External Exam	1	30-12-22		1 & 2	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

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

PART-C

EVALUATION PROCESS (R20 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT
PART-A

Name of Course Instructor : N.Srikanth
Course Name & Code : DataBase Management SystemsLab(20CS56)
L-T-P Structure : 0-0-3 Credits: 1.5
Program/Sem/Sec : B.Tech., CSE., III-Sem., Sec-C A.Y: 2022-23

PRE-REQUISITE : Programminglanguage, Discrete Mathematical Structures, and Data Structures.

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of this lab is to provide a strong formal foundation in database concepts, technology, and practice to the participants to groom them into well-informed database application developers.

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

CO 1	Create & manipulate the relational database using SQL**.(Apply- L3)**
CO 2	Implement Views, procedures, triggers, and cursors on relational database. **(Apply- L3)**
CO 3	Create Unstructured Databases using MongoDB**.(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	-	2	2	-	2	-	-	-	-	-	-	-	-	-	3
CO2	-	1	1	1	1	-	-	-	-	-	-	-	-	-	3
CO3	3	-	1	1	1	-	-	-	-	-	-	-	-	-	3
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-C

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	07-09-22		TLM4	
2	Experiment - 1	3	14-09-22 & 21-09-22		TLM4	
3	Experiment - 2	3	28-09-22 & 12-10-.22		TLM4	
4	Experiment - 3	3	19-10-.22		TLM4	
5	Experiment - 4	3	26-10-22		TLM4	
6	Experiment – 5,6,7,8	3	02-11-22 & 16-11-22		TLM4	
7	Experiment – 9,10,11	3	23-11-22		TLM4	
8	Experiment – 12,13	3	30-11-22		TLM4	
9	Experiment – 14	3	07-12-22		TLM4	
10	Experiment – 15	3	14-12-22		TLM4	
11	Design database for Case study	3	21-12-22		TLM4	
12	Internal Exam	3	28-12-22		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 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.
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Title	**Course Instructor**	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	**N.Srikanth**	**Dr. M. Sitha Ram**	**Dr.K. Naga Prasanthi**	**Dr.D.Veeraiah**
Signature				

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hodcse@lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222 933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. Meriga Kiran Kumar

Course Name & Code : Discrete Mathematical Structures & 20CS04

L-T-P Structure : **3-0-0** **Credits:** 03

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

A.Y. : 2022-23

PRE-REQUISITE: Basic mathematical knowledge

COURSE EDUCATIONAL OBJECTIVES (CEOs): The objective of the course is to perform the operations associated with relations and functions. Relate practical examples to the functions and relations and interpret the associated operations and terminology used in the context. Use formal logic proofs and/or informal but rigorous logical reasoning to, for example, predict the behavior of software or to solve problems such as puzzles.

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

CO1	Construct mathematical arguments using logical connectives and quantifiers and verify them.**(Apply -L3)**
CO2	Demonstrate the basic terminology of functions, relations, lattices and their operations. **(Understand - L2)**
CO3	Apply the properties of graphs to solve the graph theory problems in Computer science. **(Apply- L3)**
CO4	Illustrate the basic principles/techniques to solve different algebraic structures & combinatorial problems. **(Understand- L2)**
CO5	Solve linear recurrence relations by recognizing homogeneity using constant coefficients, characteristic roots and Generating functions. **(Apply – L3)**

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

CO	Program Outcomes (POs)												PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	1													
CO2	3	2	1												
CO3	3	3	1												
CO4	3	3	1												
CO5	3	3	1												

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

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

TEXTBOOKS:

1. Tremblay, Manohar, "Discrete Mathematical Structures with Applications to Computer Science", TMH Publications, 2008

REFERENCE BOOKS:

1. Chandrasekaran, Umaparvathi, DiscreteMathematics,PHI, 2010.
2. Ralph. P.Grimaldi, Ramana, Discrete and Combinational Mathematics,Pearson,5th edition.
3. https://nptel.ac.in/courses/106/106/106106183/

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I: Mathematical Logic

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Mathematical Logic: Propositional Calculus	1	13-09-2022		**TLM1**	CO1	
2.	Statement and Notations, Connectives, Truth Tables	1	15-09-2022		**TLM1**	CO1	
3.	Tautologies	1	16-09-2022		**TLM1**	CO1	
4.	Equivalence of Formulas	1	17-09-2022		**TLM1**	CO1	
5.	Duality Law, Tautological Implications	1	20-09-2022		**TLM1**	CO1	
6.	Normal Forms, DNF	1	22-09-2022		**TLM2**	CO1	
7.	CNF	1	23-09-2022		**TLM2**	CO1	
8.	PCNF, PDNF	1	24-09-2022		**TLM2**	CO1	
9.	Theory of inference for statement Calculus	1	27-09-2022		**TLM2**	CO1	
10.	RULE CP	1	29-09-2022		**TLM2**	CO1	
11.	Consistency of Premises Indirect Method of Proof	1	30-09-2022		**TLM1**	CO1	
12.	Predicative Logic	1	01-10-2022		**TLM1**	CO1	
13.	Statement Functions, Variables, Free & Bound Variables, QUANTIFIERS	1	11-10-2022		**TLM1**	CO1	
No. of classes required to complete UNIT-I		13	No. of classes taken:				

UNIT-II: Sets, Relations & Functions

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Set Theory: Introduction,	1	13-10-2022		**TLM1**	CO2	
2.	Representation of Sets	1	14-10-2022		**TLM1**	CO2	

3.	Operations on Binary Sets	1	15-10-2022		**TLM2**	CO2	
4.	Relations: Properties of Binary Relations	1	18-10-2022		**TLM1**	CO2	
5.	Relation Matrix and Digraph Operations on Relations	1	20-10-2022		**TLM1**	CO2	
6.	Partition and Covering, Transitive Closure	1	21-10-2022		**TLM1**	CO2	
7.	Equivalence Relation	1	22-10-2022		**TLM2**	CO2	
8.	Compatible Relation, Partial Ordering Relation	1	25-10-2022		**TLM1**	CO2	
9.	Hasse Diagrams, Lattices	1	27-10-2022		**TLM1**	CO2	
10.	Functions: Bijective Functions	1	28-10-2022		**TLM1**	CO2	
11.	Composition of Functions, Inverse Functions	1	29-10-2022		**TLM1**	CO2	
No. of classes required to complete UNIT-2		11	No. of classes taken:				

UNIT – III: Graph Theory I & II

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Basic Concepts of Graphs	1	01-11-2022		**TLM1**	CO3	
2.	Matrix Representation of Graphs	1	02-11-2022		**TLM1**	CO3	
3.	Adjacency Matrices, Incidence Matrices	1	03-11-2022		**TLM1**	CO3	
4.	Isomorphic Graphs, Paths and circuits	1	04-11-2022		**TLM1**	CO3	
5.	Eulerian Graphs, Hamiltonian Graphs	1	05-11-2022		**TLM2**	CO3	
6.	Multigraphs, Planar Graphs, Euler‟s Formula	1	15-11-2022		**TLM1**	CO3	
7.	Graph Colouring and Covering, Chromatic Number	1	17-11-2022		**TLM1**	CO3	
8.	Trees Introduction	1	18-11-2022		**TLM1**	CO3	
9.	BFS, DFS	1	19-11-2022		**TLM2**	CO3	
10.	Spanning Trees: Properties	1	22-11-2022		**TLM2**	CO3	
11.	Algorithms for Minimum Spanning Trees	1	24-11-2022		**TLM2**	CO3	
No. of classes required to complete UNIT-3		11	No. of classes taken:				

UNIT-IV: Algebraic Structures & Combinatorics

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Algebraic Systems with one Binary Operation	1	25-11-2022		**TLM1**	CO4	
2.	Properties of Binary operations, Semi groups and Monoids	1	26-11-2022		**TLM1**	CO4	
3.	Homomorphism of Semi groups and Monoids, Groups	1	29-11-2022		**TLM1**	CO4	
4.	Abelian Group, Cosets, Subgroups	1	01-12-2022		**TLM1**	CO4	
5.	Langrage's Theorem	1	02-12-2022		**TLM1**	CO4	
6.	Basic of Counting, Permutations	1	03-12-2022		**TLM1**	CO4	
7.	Combinations	1	06-12-2022		**TLM1**	CO4	
8.	Circular Permutations, Restricted Permutations	1	08-12-2022		**TLM1**	CO4	
9.	Combinations with repetition Pigeonhole Principle and its Applications	2	09-12-2022 & 10-12-2022		**TLM1**	CO4	
10.	Principle of inclusion-exclusion	2	13-12-2022 & 15-12-2022		**TLM1**	CO4	
No. of classes required to complete UNIT-4		12	No. of classes taken:				

UNIT-V: Recurrence Relation

S.No	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcomes	HOD Sign Weekly
1.	Generating Functions of Permutations and Combinations	2	16-12-2022 & 16-12-2022		**TLM1**	CO5	
2.	Calculating Coefficient of Generating Functions	2	20-12-2022 & 22-12-2022		**TLM1**	CO5	
3.	Recurrence Relations	2	23-12-2022 & 24-12-2022		**TLM1**	CO5	
4.	solving linear homogeneous recurrence Relations by substitution	2	27-12-2022 & 29-12-2022		**TLM1**	CO5	
5.	generating functions	2	30-12-2022 & 31-12-2022		**TLM1**	CO5	
6.	The Method of Characteristic Roots	2	02-01-2023 & 04-01-2023		**TLM1**	CO5	
No. of classes required to complete UNIT-5		12	No. of classes taken:				

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

EVALUATION PROCESS:

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

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

PROGRAMME SPECIFIC OUTCOMES (PSOs):

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

	Course Instructor	**Course Coordinator**	**Module Coordinator**	**Head of the Department**
Name of the Faculty	Mr.M.Kiran Kumar	Mr. T.N.V.S.Praveen	Dr.S.Jaya Pradha	Dr. D Veeraiah
Signature				

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

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

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: S. SRINIVASA REDDY
Course Name & Code **:** OBJECT ORIENTED PROGRAMMING & 20CS09
L-T-P Structure **: 3-0-0** **Credits:** 3
Program/Sem/Sec : B.Tech/III/C **A.Y.:** 2022-23

PREREQUISITE: Programming for Problem Solving using C

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to learn the constructs of the Java programming language along with built-in facilities to create different applications such as console & graphical user interfaces. In the process of learning the language, they will be applying knowledge of object-oriented programming; they will get the fundamental knowledge reason collection framework.

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

CO1	Demonstrate the fundamentals of object-oriented programming and basic building blocks of Java. **(Understand- L2)**
CO2	Apply object-oriented programming principles to solve problems. **(Apply - L3)**
CO3	Demonstrate JAVA built-in API packages and create user-defined packages and interfaces **(Understand- L2)**
CO4	Develop multitasking applications using JAVA multithreaded programming and handling runtime errors using Exception Handling. **(Apply – L3)**
CO5	Develop GUI applications using AWT (Abstract Window Toolkit). **(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	3												1		
CO2		3												1	
CO3	3												1		
CO4		2												2	
CO5		2	1											2	
1 - Low				**2 –**Medium							**3 -** High				

TEXTBOOKS:

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

T2 Cay S. Horstmann, "Core Java Volume I – Fundamentals", Pearson, Eleventh edition, 2018

REFERENCE BOOKS:

R1 Dr.R.NageswaraRao, "Core JAVA: An Integrated Approach", Dreamtech Press, 1st Edition2008.

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

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

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

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Programming Paradigms	1	12-09-2022		TLM1	
2.	Difference Between OOP vs POP	1	13-09-2022		TLM1	
3.	Principles of OOP	1	16-09-2022		TLM1	
4.	Java Introduction- History, Buzzwords	1	17-09-2022		TLM1	
5.	Data Types	1	19-09-2022		TLM1	
6.	Keywords, Variables	1	20-09-2022		TLM1	
7.	Operators	1	23-09-2022		TLM1	
8.	Control Statements	1	24-09-2022		TLM1	
9.	Class Definition, Variables and Methods	1	26-09-2022		TLM1	
10.	Declaring Objects, this Keyword	1	27-09-2022		TLM1	
11.	Constructors	1	30-09-2022		TLM1	
No. of classes required to complete UNIT-I: 11				**No. of classes taken:**		

UNIT-II:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
12.	Overloading Methods and Constructors	1	01-10-2022		TLM1	
13.	Parameter Passing and Returning Objects	1	10-10-2022		TLM1	
14.	Recursion and Access Control	1	11-10-2022		TLM1	
15.	Nested and Inner Classes	1	14-10-2022		TLM1	
16.	Final Keyword & Static	1	15-10-2022		TLM1	
17.	Variable and Command Line Arguments	1	17-10-2022		TLM1	
18.	Inheritance Introduction	1	18-10-2022		TLM1	
19.	Types of Inheritance	1	21-10-2022		TLM1	
20.	Super Keyword	1	22-10-2022		TLM1	
21.	Overriding and Dynamic Method Dispatch	1	25-10-2022		TLM1	
22.	Abstract Class and Final with Inheritance	1	29-10-2022		TLM1	
23.	String	1	29-10-2022		TLM1	
24.	StringBuffer and StringTokenizer	1	31-10-2022		TLM1	
No. of classes required to complete UNIT-II: 13				**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
25.	Interfaces, Inheritance in interfaces	1	01-11-2022		TLM1	
26.	Packages -Introduction, Creation	1	04-11-2022		TLM1	
27.	Java Built in Packages	1	05-11-2022		TLM1	
28.	Exception Hierarchy	1	14-11-2022		TLM1	
29.	Try,catch,throw	1	15-11-2022		TLM1	
30.	Throws and finally	1	18-11-2022		TLM1	
31.	User Defined Exception	1	19-11-2022		TLM1	
32.	Assertions	1	21-11-2022		TLM1	
No. of classes required to complete UNIT-III: 08				**No. of classes taken:**		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
33.	Multi Threading -Introduction	1	22-11-2022		TLM1	
34.	Thread Life Cycle	1	25-11-2022		TLM1	
35.	Creation of Thread	1	26-11-2022		TLM1	
36.	Naming a Thread, Joining a Thread	1	28-11-2022		TLM1	
37.	Thread Priorities, Daemon Thread	1	29-11-2022		TLM1	
38.	Thread Pool, Thread Group	1	02-12-2022		TLM1	
39.	Thread Synchronization	1	03-12-2022		TLM1	
40.	Inter Thread Communications	1	05-12-2022		TLM1	
41.	Collections Framework	1	06-12-2022		TLM1	
42.	Hierarchy, Generics	1	09-12-2022		TLM1	
43.	List, Set	1	10-12-2022		TLM1	
44.	Queue and Map	1	12-12-2022		TLM1	
No. of classes required to complete UNIT-IV: 12				**No. of classes taken:**		

UNIT-V:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
45.	AWT Hierarchy	1	13-12-2022		TLM1	
46.	Components & Containers	1	16-12-2022		TLM1	
47.	Button, Label, Text Field	1	17-12-2022		TLM2	
48.	Checkbox, Choice, List	1	19-12-2022		TLM2	
49.	Canvas, Scrollbar, Menus	1	20-12-2022		TLM2	
50.	Layout Managers	1	23-12-2022		TLM2	
51.	Event Delegation Model, Event Classes	1	24-12-2022		TLM2	
52.	Listener Interfaces	1	26-12-2022		TLM2	
53.	Key Listener and Window Listener	1	27-12-2022		TLM2	
54.	Adapter Classes	1	30-12-2022		TLM2	
No. of classes required to complete UNIT-V: 10				**No. of classes taken:**		

CONTENT BEYOND THE SYLLABUS:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Java Arrays	1	31-12-2022		TLM1	
2.	Applets	1	31-12-2022		TLM1	
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 (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

PO 1	**Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
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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.
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	**Mr. S. Srinivasa Reddy**	**Mr. N. Srinivasa Rao**	**Dr. K. Naga Prasanthi**	**Dr. D.Veeraiah**
Signature				

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: S. SRINIVASA REDDY
Course Name & Code **:** OBJECT ORIENTED PROGRAMMING LAB & 20CS57
L-T-P Structure **: 0-0-3** **Credits:** 1.5
Program/Sem/Sec : B.Tech /III/C **A.Y.:** 2022-23

PREREQUISITE: Programming for Problem Solving Using C and Data Structures

COURSE EDUCATIONAL OBJECTIVE(CE0):
The objective of the course is to learn the constructs of the Java programming language along with built-in facilities to create different applications such as console & graphical user interfaces. They will be applying knowledge of object-oriented programming, collection framework to perform all operations on data.

COURSE OUTCOMES (CO):
CO1: Solve basic mathematical problems using fundamentals of Java and its object oriented principles **(Apply - L3)**
CO2: Implement multithreading and exception handling mechanisms. (**Apply - L3**)
CO3: Develop GUI applications and basic data structures using collection framework. (**Apply - L3**)
CO4: Improve individual / teamwork skills, communication & report writing skills with ethical values.

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

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

Note: 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	HOD Sign
1.	Introduction Lab	3	12-09-2022		
2.	Java Basic Programs	3	19-09-2022		
3.	Classes and Objects	3	26-09-2022		
4.	Constructors & Parameter Passing	3	10-10-2022		
5.	Static Keyword Strings	3	17-10-2022		
6.	Inheritance & Polymorphism	3	24-10-2022		
7.	Dynamic Method Dispatch & Interfaces	3	31-10-2022		
8.	Packages & Exception Handling	3	14-11-2022		
9.	Multithreading Programs	3	21-11-2022		
10.	Collections Framework	3	28-11-2022		
11.	AWT Controls	3	05-12-2022		
12.	AWT Controls	3	12-12-2022		
13.	Event Handling	3	19-12-2022		
14.	Lab Internal Exam	3	26-12-2022		

PART-C

PROGRAMME OUTCOMES (POs):

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

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

DEPARTMENT OF COMPUTER SCINCE AND ENGINEERING

COURSE HANDOUT

PART-A

PROGRAM : II B. Tech., I-Sem., CSE - C
ACADEMIC YEAR : 2022-23
COURSE NAME & CODE : PROBABILITY AND STATISTICS
L-T-P STRUCTURE : 3-0-0
COURSE CREDITS : 3
COURSE INSTRUCTOR : K. N. V. Lakshmi
COURSE COORDINATOR : M. Rami Reddy
PRE-REQUISITES : None

COURSE EDUCATIONAL OBJECTIVES (CEO): The objective of this course is to provide students with the foundations and applications of probabilistic and statistical methods mainly used in varied applications in engineering and science.

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

CO1: Understand various probabilistic situations using the laws of probability and Random variables. (Understand - L2)
CO2: Apply probability distributions like Binomial, Poisson, Normal and Exponential distributions in solving engineering problems. (Apply - L3)
CO3: Calculate the standard error of sampling distribution and confidence intervals for parameters like mean and proportion based on sample data. (Apply - L3)
CO4: Analyze the data scientifically with the appropriate statistical methodologies to apply the suitable test of hypothesis. (Analyze - L4)
CO5: Construct the regression lines to predict the dependent variables and calculate the Correlation Coefficient for a bivariate statistical data. (Apply - 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	2	1	2	-	-	-	-	-	-	-	2	-	-	-
CO2	3	2	2	3	-	-	-	-	-	-	-	2	-	-	-
CO3	3	2	2	2	-	-	-	-	-	-	-	2	-	-	-
CO4	3	3	3	3	-	-	-	-	-	-	-	2	-	-	-

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

BOS APPROVED TEXT BOOKS:

T1 Jay L.Devore "Probability and Statistics for engineering and the sciences." , 8th edition, Cengage Learning india, 2012
T2 S.C.Gupta, V.K.Kapoor, "Fundamentals of Mathematical Statistics", 11thEdition, Sultan Chand and sons, New Delhi,2014.

BOS APPROVED REFERENCE BOOKS:

R1 Miller & Freund's "Probability and Statistics for Engineers",8th edition. PHI, New Delhi,2011.
R2 B.V. Ramana, "Higher Engineering Mathematics", 1st Edition, TMH, New Delhi, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I :Probability and Random Variables

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction class, course outcomes	1	12-09-22		TLM1	
2.	Basic concepts of probability	1	14-09-22		TLM1	
3.	problems on basic probability	1	15-09-22		TLM1	
4.	problems on addition theorem	1	17-09-22		TLM1	
5.	Conditional probability	1	19-09-22		TLM1	
6.	Multiplication theorem, examples	1	21-09-22		TLM1	
7.	Independent events, theorems	1	22-09-22		TLM1	
8.	Problems on multiplication theorem, independent events	1	24-09-22		TLM1	
9.	Baye's theorem, problems	1	26-09-22		TLM1	
10.	Random variables, Expections	1	28-09-22		TLM1	
11.	Problems on PMF	1	29-09-22		TLM1	
12.	Problems on PDF	1	01-10-22		TLM1	
13.	Tutorial-1	1	10-10-22		TLM3	
No. of classes required to complete UNIT-I: 13				No. of classes taken:		

UNIT-II: Probability Distributions

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.	Binomial Distribution- mean & variance	1	12-10-22		TLM1	
2.	Problems on Binomial distribution	1	13-10-22		TLM1	
3.	Fitting of binomial distribution	1	15-10-22		TLM1	
4.	Poisson distribution, mean and variance	1	17-10-22		TLM1	
5.	Problems on Poisson distribution and fitting of Poisson distribution	1	19-10-22		TLM1	
6.	Normal distribution: mean &variance	1	20-10-22		TLM1	
7.	Problems on Normal Distribution	1	22-10-22		TLM1	
8.	Exponential distribution:	1	26-10-22		TLM1	
9.	Tutorial -2	1	27-10-22		TLM3	
No. of classes required to complete UNIT-II: 9				No. of classes taken:		

UNIT-III: Sampling distribution and Estimation

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.	Sampling distribution ,definitions	1	29-10-22		TLM1	

2.	Sampling distribution of mean, variance	1	31-10-22		TLM1	
3.	Problems	1	02-11-22		TLM1	
4.	Problems on central limit theorem	1	03-11-22		TLM1	
5.	Problems on Central limit theorem	1	05-11-22		TLM1	
6.	I MID		07-11-22			
7.	I MID		09-11-22			
8.	I MID		10-11-22			
9.	I MID		12-11-22			
10.	Estimation	1	14-11-22			
11.	Estimation	1	16-11-22		TLM1	
12.	Point and interval estimation	1	17-11-22		TLM1	
13.	Interval estimation of mean and proportions in large samples	1	19-11-22		TLM1	
14.	Interval estimation of mean in small samples	1	21-11-22		TLM1	
15.	Problems	1	23-11-22		TLM1	
16.	Tutorial-3	1	24-11-22		TLM3	
No. of classes required to complete UNIT-III: 12				No. of classes taken:		

UNIT-IV :Tests of Hypothesis

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.	Testing of Hypothesis , definitions	1	26-11-22		TLM1	
2.	Z-test for means	1	28-11-22		TLM1	
3.	Z-test for means	1	30-11-22		TLM1	
4.	Z-test for proportions	1	01-12-22		TLM1	
5.	Z-test for proportions	1	03-12-22		TLM1	
6.	t-test for means	1	05-12-22		TLM1	
7.	t-test for means	1	07-12-22		TLM1	
8.	paired t-test	1	08-12-22		TLM1	
9.	F-test for variances	1	10-12-22		TLM1	
10.	χ^2-test for goodness of fit	1	12-12-22		TLM1	
11.	χ^2-test for goodness of fit	1	14-12-22		TLM1	
12.	χ^2-test for independence of attributes	1	15-12-22		TLM1	
13.	χ^2-test for independence of attributes	1	17-12-22		TLM1	
14.	Tutorial-4	1	19-12-22		TLM3	
No. of classes required to complete UNIT-IV: 14				No. of classes taken:		

UNIT-V :Correlation and Regression

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.	Simple Bi-variate Correlation	1	21-12-22		TLM1	
2.	Problems on Pearson's Correlation	1	22-12-22		TLM1	
3.	Regression lines	1	24-12-22		TLM1	
4.	Problems on Regression lines	1	26-12-22		TLM1	
5.	Properties of Regression coefficients	1	28-12-22		TLM1	
6.	Tutorial-5	1	29-12-22		TLM3	
7.	Problems on rank Correlation	1	31-12-22		TLM1	
8.	II MID		02-01-23			
9.	II MID		04-01-23			
10.	II MID		05-01-23			
11.	II MID		07-01-23			
No. of classes required to complete UNIT-V: 7				No. of classes taken:		

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

PART-C

EVALUATION PROCESS (R17 Regulations):

Evaluation Task	Marks
Assignment-I (Unit-I)	A1=5
Assignment-II (Unit-II)	A2=5
I-Mid Examination (Units-I & II)	M1=20
I-Quiz Examination (Units-I & II)	Q1=10
Assignment-III (Unit-III)	A3=5
Assignment-IV (Unit-IV)	A4=5
Assignment-V (Unit-V)	A5=5
II-Mid Examination (Units-III, IV & V)	M2=20
II-Quiz Examination (Units-III, IV & V)	Q2=10
Attendance	B=5
Assignment Marks = Best Four Average of A1, A2, A3, A4, A5	A=5
Mid Marks =75% of Max(M1,M2)+25% of Min(M1,M2)	M=20
Quiz Marks =75% of Max(Q1,Q2)+25% of Min(Q1,Q2)	B=10
Cumulative Internal Examination (CIE) : A+B+M+Q	40
Semester End Examination (SEE)	60
Total Marks = CIE + SEE	100

Course Instructor	Course Coordinator	Module Coordinator	HOD
(K. N. V. Lakshmi)	(M. Rami Reddy)	(Dr. A. Rami Reddy)	(Dr. A. Rami Reddy)

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
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Approved by AICTE, New Delhi. and Affiliated to JNTUK, Kakinada
L.B. REDDY NAGAR, MYLAVARAM, KRISHNA DIST., A.P.-521 230.
http://cse.lbrce.ac.in, cselbreddy@gmail.com, Phone: 08659-222933, Fax: 08659-222931
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE HANDOUT

Part-A

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

ACADEMIC YEAR : 2021-22

COURSE NAME & CODE : R Programming Lab (20IT53)

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

COURSE CREDITS : 1

COURSE INSTRUCTOR : **Mr.N V NAIK**

COURSE COORDINATOR : **G V SURESH**

PRE-REQUISITES: Basics of Mathematics

COURSE EDUCATIONAL OBJECTIVES (CEOs): In this course student will learn about the fundamentals of R programming, standard R libraries, solid understanding of R functions, write programs using the R and gain skills in R programming language, get acquaintances with Arrays, files, strings, packages and distributions using R

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

CO1: : Implement basic concepts of R programming and its different module that includes conditional, looping, lists, strings, functions, frames, arrays and file programming

CO2: Implement the concepts of R Script to extract the data from data frames and file operations.

CO3: Implement the various statistical techniques using R

C04: Extend the functionality of R by using the addon packages

CO5: Use R Graphics and Tables to visualize results of various statistical operations on data

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

CO5	3	3	3			1							2	3	3

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

Part-B

COURSE DELIVERY PLAN (LESSON PLAN): Section-C

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1	Cycle1: Installing R and basic functionality of R	3	15/00/2022		TLM4/TLM5	CO1	
2	Cycle 2: R Script on operators, if and else programs	3	22/09/2022		TLM4/TLM5	CO1	
3	Cycle 3: R Script on list	3	29/09/2022		TLM4/TLM5	CO1	
4	Cycle 4: Implement R Script on vectors	3	13/10/2022		TLM4/TLM5	CO1	
5	Cycle 5: Implement R Script on matrices and data frames	3	20/10/2022		TLM4/TLM5	CO1	
6	Cycle 6: Implement R Script on Descriptive statistics	3	27/10/2022		TLM4/TLM5	CO4	
7	Cycle7: Reading different types of data sets into files	3	03/11/2022		TLM4/TLM5	CO2	
8	Cycle8: implement different charting methods	3	17/11/2022 24/11/2022		TLM4/TLM5	CO2	
9	Cycle9: implement the different distributions	3	01/12/2022		TLM4/TLM5	CO3	
10	Cycle 10 : implement the Non tabular data types and data transformations	3	08/02/2022		TLM4/TLM5	CO4	
11	Cycle 11: Introduction to dirty data problems	3	15/12/2022 22/12/2022		TLM4/TLM5	CO5	
12	Cycle 12 : implement different data sources	3	29/12/22		TLM4/TLM5	CO5	
13	**LAB INTERNAL**	3	7/01/20230				

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

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: Design and develop innovative products and services in the field of Electrical and Electronics Engineering and allied engineering disciplines.

PEO2: Apply the knowledge of Electrical and Electronics Engineering to solve problems of social relevance, pursue higher education and research.

PEO3: Work effectively as individuals and as team members in multidisciplinary projects.

PEO4: Engage in lifelong learning, career enhancement and adapt to changing professional and societal needs.

PROGRAM OUTCOMES

Engineering Graduates will be able to:

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

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

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

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

PROGRAM SPECIFIC OUTCOMES

PSO1: The ability to apply Software Engineering practices and strategies in software project development using open-source programming environment for the success of organization.

PSO2: The ability to design and develop computer programs in networking, web applications and IoT as per the society needs.

PSO3: To inculcate an ability to analyze, design and implement database applications.

Course Instructor	Course Coordinator	Module Coordinator	HOD

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

cseoffice@Lbrce.ac.in, hodcse@Lbrce.ac.in Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE HANDOUT

PART-A

Name of Course Instructor: Mr. Shaik Johny Basha

Course Name & Code : Web Application Development using Full Stack – Module - I (Frontend Development) & 20CSS1

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

Program/Sem/Sec : B.Tech. - CSE/III/C **A.Y.:** 2022 – 23

PREREQUISITE: Knowledge of basic Computer hardware & software.

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to understand the design of HTML web pages, Styling of HTML pages using CSS, web forms validation using JavaScript and developing responsive web page using JQuery.

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

CO1	Understand the basic UI/UX design and styling of web pages **(Understand – L2)**
CO2	Understand the DOM of web design, markup language and client-side scripting. **(Understand – L2)**
CO3	Understand the responsive web design using DHTML. **(Understand – L2)**
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	-	-	2	-	2	-	-	-	-	-	-	-	-	3	-
CO2	-	-	2	-	2	-	-	-	-	-	-	-	-	3	-
CO3	-	-	2	-	2	-	-	-	-	-	-	-	-	3	-
CO4	-	-	-	-	-	-	-	2	2	2	-	-	-	-	-
1 - Low **2 –**Medium **3 -** High															

REFERENCE BOOKS:

R1	HTML & CSS: The Complete Reference, 5thEditionby Thomas Powell, McGraw Hill, 2017.
R2	Beginning HTML, XHTML, CSS, and JavaScript by Jon Duckett, Wiley India, 2010.
R3	jQuery Cookbook by Cody Lindley, O'Reilly Media, 2009
R4	HTML, XHTML, and CSS Bible, 5th Edition by Steven M. Schafer, Wiley India, 2011.
R5	Web Development with jQuery by Richard York, Wiley India, 2015
R6	Head first HTML & CSS 2nd Edition by Elisabeth Robson, Eric Freeman, 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	3	16/09/2022		**DM5**	
2.	Lab Cycle – 1	3	23/09/2022		**DM5**	
3.	Lab Cycle – 2	3	30/09/2022		**DM5**	
4.	Lab Cycle – 2	3	14/10/2022		**DM5**	
5.	Lab Cycle – 2	3	21/10/2022		**DM5**	
6.	Lab Cycle – 3	3	28/10/2022		**DM5**	
7.	Lab Cycle – 3	3	04/11/2022		**DM5**	
8.	Lab Cycle – 4	3	18/11/2022		**DM5**	
9.	Lab Cycle – 4	3	25/11/2022		**DM5**	
10.	Lab Cycle – 5	3	02/12/2022		**DM5**	
11.	Lab Cycle – 5	3	09/12/2022		**DM5**	
12.	Lab Cycle – 6	3	16/12/2022		**DM5**	
13.	Lab Cycle – 6	3	23/12/2022		**DM5**	
14.	Review	3	30/12/2022		**DM4**	

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 Regulation):

Evaluation Task	Marks
Report	10
Quality of work	10
Presentation	20
Interaction / Queries	10
Total	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 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
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. Shaik Johny Basha**	**Mr. A. Raja Gopal**	**Dr. K. Naga Prasanthi**	**Dr. D. Veeraiah**
Signature				