



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: Mrs M. Hema latha

Course Name & Code : Object Oriented Programming, 20CS09

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

Credits: 03

Program/Sem/Sec : B.Tech-IT / III SEM / A

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												3	
CO3	3													2	
CO4		2													3
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 Edition 2008.
2. E. Balaguruswamy, “Programming with JAVA”, TMH Publications, 2nd Edition, 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-C**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	15-09-2022		TLM2	CO1	
4.	Data types, variables and Keywords	1	17-09-2022		TLM2	CO1	
5.	Operators and expression Evaluation	1	19-09-2022		TLM2	CO1	
6.	Control statements	2	20-09-2022		TLM2	CO1	
7.	Class definition: Variables and Methods	1	22-09-2022		TLM2	CO1	
8.	Object creation – sample programs	1	24-09-2022		TLM2	CO1	
9.	Constructors	1	26-09-2022		TLM2	CO1	
10.	this keyword	1	27-09-2022		TLM2	CO1	
No. of classes required to complete UNIT-I			11	No. of classes taken:			

UNIT-II:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly	
11.	Overloading methods and constructors	1	10-10-2022		TLM2	CO2		
12.	Parameter passing and returning objects and recursion	1	11-10-2022		TLM2	CO2		
13.	Access specifiers	1	13-10-2022		TLM2	CO2		
14.	Nested and inner classes	1	15-10-2022		TLM2	CO2		
15.	Final and static keyword	1	17-10-2022		TLM2	CO2		
16.	Variable and command line arguments	1	18-10-2022		TLM2	CO2		
17.	Inheritance, Types of Inheritance , super keyword	1	20-10-2022		TLM2	CO2		
18.	Polymorphism – compile-time and run-time, Dynamic method dispatch	1	22-10-2022		TLM2	CO2		
19.	Abstract class, Final with inheritance	1	25-10-2022		TLM2	CO2		
20.	String ,StringBuffer, and StringTokenizer	2	27-10-2022 29-10-2022		TLM2	CO2		
No. of classes required to complete UNIT-II		11	No. of classes taken:					

UNIT-III:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly	
21.	Interfaces -definition and creation	1	31-10-2022		TLM2	CO3		
22.	Inheritance in interfaces	1	01-11-2022		TLM2	CO3		
23.	Packages : Built-in and user-defined	1	03-11-2022		TLM2	CO3		
24.	User-Defined Packages	1	05-11-2022		TLM2	CO3		
25.	Exception Handling – Exception class hierarchy	1	14-11-2022		TLM2	CO3		
26.	Use of try, catch, throw, throws, and finally	2	15-11-2022		TLM2	CO3		
27.	Creation of user-defined exceptions	1	17-11-2022		TLM2	CO3		
28.	Assertions	1	19-11-2022		TLM2	CO3		
No. of classes required to complete UNIT-III		09	No. of classes taken:					

UNIT-IV:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly	
29.	Multithreading – Introduction and thread life-cycle	1	21-11-2022		TLM2	CO4		
30.	Creation of threads, naming and joining a thread	1	22-11-2022		TLM2	CO4		
31.	Daemon thread and thread pool	1	24-11-2022		TLM2	CO4		
32.	Thread synchronization	2	26-11-2022		TLM2	CO4		
33.	Inter-thread communication	1	28-11-2022		TLM2	CO4		
34.	Collection framework – Introduction	1	29-11-2022		TLM2	CO4		
35.	List interface	2	1-12-2022		TLM2	CO4		
36.	Set interface	1	3-12-2022		TLM2	CO4		
37.	Queue Interface	1	5-12-2022		TLM2	CO4		
38.	Map Interface	1	6-12-2022		TLM2	CO4		
No. of classes required to complete UNIT-IV		11	No. of classes taken:					

UNIT-V:

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly	
39.	AWT hierarchy – components and containers- Button, Label, text field, checkbox	2	8-12-2022 12-12-2022		TLM2	CO5		
40.	Choice, list, canvas, scrollbar, menu Item & Menu	2	13-12-2022 15-12-2022		TLM2	CO5		
41.	Layout Managers	1	17-12-2022		TLM2	CO5		
42.	Event Delegation model & Action Event class	1	19-12-2022		TLM2	CO5		
43.	Key Events and Mouse Events	1	20-12-2022		TLM2	CO5		
44.	Window Events and Action listener interface	1	22-12-2022		TLM2	CO5		
45.	Key, Mouse, and Mouse Motion Listener.	1	24-12-2022		TLM2	CO5		
46.	Window Listener and Mouse Motion Listener.	1	26-12-2022		TLM2	CO5		
47.	Adapter classes	1	27-12-2022		TLM2	CO5		
No. of classes required to complete UNIT-V		10	No. of classes taken:					

Contents beyond the Syllabus

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
48.	Introduction to Swings	2	29-12-2022 31-09-2022		TLM2	CO5	

Teaching Learning Methods

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

ACADEMIC CALENDAR:

Description	From	To	Weeks
I Phase of Instructions	25-10-2021	11-12-2021	7 W
I Mid Examinations	13-12-2021	18-12-2021	
II Phase of Instructions	20-12-2021	05-02-2022	7 W
II Mid Examinations	07-02-2022	12-02-2022	
Preparation and Practicals	14-02-2022	19-02-2022	1 W
Semester End Examinations	21-02-2022	05-03-2022	2 W

PART-C

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 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	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Signature				
Name of the Faculty	Mrs M HemaLatha	Dr. K Venu Gopal	Dr.S.Naganjaneyulu	Dr. B.Srinivasa Rao



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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor : Mrs. M.HemaLatha

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

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

Program/Sem/Sec : B.Tech-IT / III SEM / A

A.Y. : 2022-23

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-A

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1	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 & Inheritance	3	13-09-2022		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	02-12-2022		TLM4	CO2	
9	Module-8 : Applet Programming & Develop simple applications using AWT	3	09-12-2022		TLM4	CO3	
10	Module-9 : Collections framework Module-10: Collections framework	3	16-12-2022		TLM4	CO3	
11	Programs Beyond Syllabus, Revision, Pending Etc	3	23-12-2022		TLM4	CO3	
12	Lab Internal Examination	3	30-12-2022				

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 (R20 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.
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	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Signature				
Name of the Faculty	Mrs M HemaLatha	Dr. K Venu Gopal	Dr.S.Naganjaneyulu	Dr. B.Srinivasa Rao



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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: M. VijayKumar
Course Name & Code : COMPUTER ORGANIZATION & 20CS08
L-T-P Structure : 3-0-0 **Credits:** 3
Program/Sem/Sec : B.Tech/III/A **A.Y.:** 2022-23

PREREQUISITE: Discrete Mathematical Structures, Fundamentals of Computer Hardware

COURSE EDUCATIONAL OBJECTIVES (CEOs):

The objective of the course is to learn about the functional blocks and data representation of computer system and understands the design principles of processor and 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. (Understand- L2)
CO2	Design Combinational logic circuits and Sequential logic circuits (Apply - L3)
CO3	Understand computer architecture and Data representation to perform computer arithmetic operations. (Understand- L2)
CO4	Illustrate the design principles of control unit and pipelining. (Understand- L2)
CO5	Analyze the memory hierarchy in computer system. (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														
CO2	2		1												
CO3	3	1													
CO4	2	1													
CO5		1	1												
				1 - Low				2 - Medium							3 - High

TEXTBOOKS:

- T1** Morris Mano, Michael D Ciletti, Digital Design, 4/e, 2008, PEA
Carl Hamacher, Zvonks Vranesic, Safeazaky, "Computer Organization", TMH
T2 publications.

REFERENCE BOOKS:

- R1** M. Morris Mano, "Computer Systems Architecture", Pearson Education Publishers.[Units-1,2].
R2 Leach, Malvino, Saha, "Digital Logic Design", TMH, 2006.
R3 A.Anand Kumar, "Switching Theory and Logic Design", PHI Pvt, 2010.
R4 Kohavi, Jha, Cambridge, "Switching and Finite Autometa Theory", 3/e.
R5 R.P.Jain, "Modern Digital Electronics",TMH, 2011

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.	Number Systems: Binary, Octal, Decimal, Hexadecimal Number Systems	1	12-09-2022		TLM1	
2.	Conversion of numbers from one radix to another radix	1	13-09-2022		TLM1	
3.	Conversion of numbers from one radix to another radix	1	14-09-2022		TLM1	
4.	R's complement and (R-1)'s complement	1	17-09-2022		TLM1	
5.	Subtraction using complements	1	19-09-2022		TLM1	
6.	Binary codes	1	20-09-2022		TLM1	
7.	Basic gates, Universal gates, Special gates	1	24-09-2022		TLM1	
8.	Fundamental postulates of Boolean algebra, basic theorems and properties	1	26-09-2022		TLM1	
9.	Complement and Dual of logical expressions	1	27-09-2022		TLM1	
10.	SOP & POS	1	28-09-2022		TLM1	
11.	Minimization of logic functions using Boolean theorems	1	01-10-2022		TLM1	
12.	Karnaugh Maps for minimization of Boolean functions	1	10-10-2022		TLM1	
13.	Karnaugh Maps for minimization of Boolean functions using Don't cares	1	11-10-2022		TLM1	
No. of classes required to complete UNIT-I: 13				No. of classes taken:		

UNIT-II: Combinational & 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
14.	Design of Half Adder, Full Adder	1	12-10-2022		TLM1	
15.	Design of Half Subtractor, Full Subtractor	1	15-10-2022		TLM1	
16.	Ripple carry adder	1	17-10-2022		TLM1	
17.	Design of Decoders	1	18-10-2022		TLM1	
18.	Design of Encoders	1	19-10-2022		TLM1	
19.	Design of Multiplexers	1	22-10-2022		TLM1	
20.	Design of Demultiplexers	1	25-10-2022		TLM1	

21.	Priority encoder	1	26-10-2022		TLM1	
22.	Latch and Flip-flop, RS-Latch using Universal gates	1	29-10-2022		TLM1	
23.	RS,JK,T and D flip-flops, Truth tables and excitation tables	1	31-10-2022		TLM1	
24.	Conversion of flip-flops	1	01-11-2022		TLM1	
25.	Master-Slave flip-flop	1	02-11-2022		TLM1	
26.	Registers	1	05-11-2022		TLM1	
27.	Counters	1	14-11-2022		TLM1	
No. of classes required to complete UNIT-II: 14				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
28.	Fundamental Blocks of a computer: CPU, Memory, Input-Output subsystems, Control unit	1	15-11-2022		TLM1	
29.	Instruction set architecture of a CPU-Registers	1	16-11-2022		TLM1	
30.	Instruction execution cycle	1	19-11-2022		TLM1	
31.	RTL interpretation of instructions	1	21-11-2022		TLM1	
32.	Addressing Modes	1	22-11-2022		TLM1	
33.	Instruction Set	1	23-11-2022		TLM1	
34.	Signed number representation, Fixed and floating point representation	1	26-11-2022		TLM1	
35.	Character representation- Integer addition and subtraction, multiplication, shift	1	28-11-2022		TLM1	
36.	Booth Multiplier	1	29-11-2022		TLM1	
37.	Division Restoring and Non-Restoring Techniques	1	30-11-2022		TLM1	
38.	Floating point Arithmetic	1	03-12-2022		TLM1	
No. of classes required to complete UNIT-III: 10				No. of classes taken:		

UNIT-IV: CPU control unit 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
39.	Hardwired and Micro programmed design approaches	1	05-12-2022		TLM1	
40.	Basic concepts of pipelining	1	06-12-2022		TLM1	
41.	Throughput, Speedup, Pipeline hazards	1	07-12-2022		TLM1	

42.	Introduction to parallel processors	1	12-12-2022		TLM1	
43.	Introduction to parallel processors	1	13-12-2022		TLM1	
No. of classes required to complete UNIT-IV: 5				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
44.	Memory organization	1	14-12-2022		TLM1	
45.	Memory interleaving	1	17-12-2022		TLM1	
46.	Hierarchical memory organization	1	19-12-2022		TLM2	
47.	Cache memory	1	20-12-2022		TLM2	
48.	Input-output subsystems	1	21-12-2022		TLM2	
49.	I/O device interface	1	24-12-2022		TLM2	
50.	I/O transfers: Program controlled	1	26-12-2022		TLM2	
51.	Interrupt driven	1	27-12-2022		TLM2	
52.	DMA	1	28-12-2022		TLM2	
53.	DMA	1	02-01-2023		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.	BCD Addition & Subtraction	1	21-09-2022		TLM1	
2.	Hamming code	1	31-12-2022		TLM1	

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

PART-C

PEVALUATION 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 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. M VijayKumar	Dr.Ch Venkata Narayana	Mr.G.Rajendra	Dr.B.Srinivasa Rao
Signature				



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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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.

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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: MR. SAMBASIVARAO CHINDAM

Course Name & Code : DBMS & 20CS07

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

Program/Sem/Sec : B.TECH /III SEM /A-SECTION

Credits: 3

A.Y.: 2022-2023

PREREQUISITE: Data Structures

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	-	-	-	-	-	-	-	-	-	-	2	2	
CO2	3	2	-	-	-	-	-	-	-	-	-	-	1	3	1
CO3	3	2	1	-	-	-	-	-	-	-	-	-		2	
CO4	-	2	1	-	-	-	-	-	-	-	-	-	1		
CO5	2	3	1	-	-	-	-	-	-	-	-	-	1	2	1
	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 Wiley & Sons, 2011.

REFERENCE BOOKS:

- R1** Raghu Ramakrishnan, Johannes Gehrke, –Database Management System||, McGrawHill, 3rd edition, 2000.
- R2** Date C J, –An Introduction to Database System, Pearson Education, 8th edition, 2003.
- R3** Ramez Elmasri, Shamkanth B. Navathe, "Fundamentals of Database Systems", Addison Wesley, 6th edition, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to prerequisite, course educational objectives and course outcomes.	1	25-10-21		TLM1 TLM2	
2.	An overview of Database Management System	1	26-10-21		TLM1 TLM2	
3.	Database System Vs File System	1	27-10-21		TLM1 TLM2	
4.	Database System Concepts and Three Schema Architecture, Database Structure.	1	30-10-21		TLM1 TLM2	
5.	Data Models, Database Schema	1	1-11-21		TLM1	
6.	Data Instances, Data Independence	1	2-11-21		TLM1	
7.	Database Languages	1	3-11-21		TLM4	
8.	Data Modelling using the Entity Relationship Model: ER model concepts	1	6-11-21		TLM1 TLM2	
9.	Notation for ER Diagram	1	8-11-21		TLM2	
10.	Mapping Constraints, Keys, Concepts of Super Key	1	9-11-21		TLM1 TLM2	
11.	Candidate Key, Primary Key, Generalization,	1	10-11-21		TLM1 TLM2	
12.	Aggregation, Reduction of an ER Diagrams to Tables, Relationships of Higher Degree.	1	13-11-21		TLM2	
No. of classes required to complete UNIT-I: 12				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
13.	Relational Data Model and Language: Relational Data Model Concepts	1	15-11-21		TLM1 TLM2	
14.	Integrity Constraints: Entity Integrity, Referential Integrity, Key Constraints	1	16-11-21		TLM1 TLM2	
15.	Domain Constraints, and Relational Algebra.	1	17-11-21		TLM1 TLM2	
16.	Introduction to SQL: Characteristics of SQL, Advantage of SQL.	1	20-11-21		TLM1 TLM2	
17.	SQL Data types and Literals, Insert, Update and Delete Operations	1	22-11-21		TLM1 TLM4	
18.	Tables, Views and Indexes	1	23-11-21		TLM4	
19.	Nested Queries	1	24-11-21		TLM4	
20.	Aggregate Functions, Joins	1	27-11-21		TLM4	
21.	Unions, Intersection, Minus, Cursors in SQL	1	29-11-21		TLM4	
22.	Triggers in SQL.	1	30-11-21		TLM4	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	Normalization: Functional Dependencies	2	1-12-21		TLM1 TLM2	
24.	Normal Forms - First, Second	1	4-12-21		TLM1 TLM2	
25.	Third Normal Forms	1	6-12-21		TLM1 TLM2	
26.	BCNF, Inclusion Dependences	1	7-12-21		TLM1 TLM2	
27.	Loss Less Join Decompositions	1	8-12-21		TLM1 TLM2	
28.	Multi Valued Dependencies, Fourth Normal Form	1	11-12-21		TLM1 TLM2	
29.	Join Dependencies	1	20-12-21		TLM1 TLM2	
30.	Fifth Normal Form.	1	21-12-21		TLM1 TLM2	
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
31.	Transaction Processing Concepts: Transaction System	1	22-12-21		TLM1 TLM2	
32.	Testing of Serializability, Serializability of Schedules	1	27-12-21		TLM1 TLM2	
33.	Conflict & View Serializability, Recoverability	1	28-12-21		TLM1 TLM2	
34.	Deadlock Handling, Concurrency Control Techniques	1	29-12-21		TLM1 TLM2	
35.	Concurrency Control, Locking Techniques for Concurrency Control	1	3-1-2022		TLM1 TLM2	
36.	Time Stamping Protocols for Concurrency Control	1	04-1-22		TLM1 TLM2	
37.	Validation Based Protocol, Multiple Granularity	1	05-1-22		TLM1 TLM2	
38.	Recovery with Concurrent Transactions.	1	08-1-22		TLM1 TLM2	
39.	Crash Recovery: Log Based Recovery	1	10-1-22		TLM1 TLM2	
40.	Checkpoints, ARIES Algorithm	1	19-1-22		TLM1 TLM2	
No. of classes required to complete UNIT-IV: 10				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
41.	Physical Database Design: Storage and file structure,	1	22-1-22		TLM1 TLM2	
42.	indexed files, hashed files	1	24-1-22		TLM1	
43.	B+ trees	1	25-1-22		TLM1 TLM2	

44.	Files with dense index; files with variable length records.	1	26-1-22		TLM1
45.	Interfacing And Interacting With NoSQL:Introduction to NoSQL	1	31-1-22		TLM1 TLM2
46.	Storing and Accessing Data,.	1	01-2-22		TLM1 TLM2
47.	Storing Data In and Accessing Data from MongoDB	1	02-2-22		TLM1 TLM2
48.	Querying MongoDB	1	05-2-22		TLM1 TLM2
No. of classes required to complete UNIT-V: 08				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

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO 1: Pursue a successful career in the area of Information Technology or its allied fields.

PEO 2: Exhibit sound knowledge in the fundamentals of Information Technology and apply practical experience with programming techniques to solve real world problems.

PEO 3: Able to demonstrate self-learning, life-long learning and work in teams on multidisciplinary projects.

PEO 4: Able to understand the professional code of ethics and demonstrate ethical behavior, effective communication, team work and leadership skills in their job.

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 ring and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
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	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.Ch.Sambasivarao	Dr.R.Vijaya Kumar Reddy	Dr.K.Lavanya	Dr.B.Srinivasarao
Signature				



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

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

PROGRAM	: II B. Tech., I-Sem., IT - A
ACADEMIC YEAR	: 2022-23
COURSE NAME & CODE	: PROBABILITY AND STATISTICS
L-T-P STRUCTURE	: 3-0-0
COURSE CREDITS	: 3
COURSE INSTRUCTOR	: D. VIJAYA 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	14-09-22		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	19-09-22		TLM1	
6.	Multiplication theorem, examples	1	21-09-22		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	26-09-22		TLM1	
10.	Random variables, Expectations	1	28-09-22		TLM1	
11.	Problems on PMF	1	30-09-22		TLM1	
12.	Problems on PDF	1	01-10-22		TLM1	
13.	Tutorial-1	1	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		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	17-10-22		TLM2	
5.	Problems on Poisson distribution and fitting of Poisson distribution	1	19-10-22		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	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	28-10-22		TLM2	

2.	Sampling distribution of mean, variance	1	28-10-22		TLM2
3.	Problems	1	29-10-22		TLM2
4.	Problems on central limit theorem	1	31-10-22		TLM2
5.	Problems on Central limit theorem	1	02-11-22		TLM2
6.	Estimation	1	04-11-22		TLM2
7.	Point and interval estimation	1	05-11-22		TLM3
8.	Interval estimation of mean and proportions in large samples	1	14-11-22		TLM2
9.	Interval estimation of mean in small samples	1	16-11-22		TLM2
10.	Problems	1	18-11-22		TLM2
11.	Tutorial-3	1	19-11-22		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	21-11-22		TLM2	
2.	Z-test for means	2	23-11-22 25-11-22		TLM2	
3.	Z-test for proportions	2	26-11-22 28-11-22		TLM2	
4.	t-test for means	2	30-11-22 02-12-22		TLM3	
5.	paired t-test	1	03-12-22		TLM2	
6.	F-test for variances	1	05-12-22		TLM2	
7.	χ^2 -test for goodness of fit	1	07-12-22 09-12-22		TLM2	
8.	χ^2 -test for independence of attributes	1	10-12-22 12-12-22		TLM2	
9.	Tutorial-8	1	14-12-22		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	16-12-22		TLM2	
2.	Problems on Pearson's Correlation	1	17-12-22		TLM2	
3.	Regression lines	1	19-12-22		TLM2	
4.	Problems on Regression lines	1	21-12-22		TLM2	
5.	Properties of Regression coefficients	1	23-12-22		TLM2	

6.	Tutorial-9	1	24-12-22		TLM3	
7.	Problems on rank Correlation	1	26-12-22		TLM2	
8.	Problems on repeated rank Revision	1	28-12-22		TLM3	
9.	Problems on repeated rank Revision		30-12-22		TLM3	
10.	Problems on repeated rank Revision		31-02-22		TLM3	
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
(D. Vijay
Kumar)

Course Coordinator
(M.Rami Reddy)

Module Coordinator
(Dr.A.Rami Reddy)

HOD
(Dr.A.Rami Reddy)



LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING

(AUTONOMOUS)

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

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

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

Phone: 08659-222933, Fax: 08659-222931

DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: MS. LIKHITA MEKA

Course Name & Code : R PROGRAMMING LAB& 20IT53

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

Program/Sem/Sec : B.TECH /III SEM /A-SECTION

Credits: 1.5

A.Y.: 2022-2023

PRE-REQUISITES:

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 this course,*

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

Introduction:

Week 1:

- a) Installing R and RStudio
- b) Basic functionality of R, variable, data types in R

Week 2:

- a) Implement R script to show the usage of various operators available in R language.
- b) Implement R script to read person's age from keyboard and display whether he is eligible for voting or not.

- c) Implement R script to find biggest number between two numbers.
- d) Implement R script to check the given year is leap year or not.

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

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.

Week 5:

- a) Implement R Script to perform various operations on matrices
- b) Implement R Script to extract the data from dataframes.
- c) Write R script to display file contents.
- d) Write R script to copy file contents from one file to another

Week 6:

- a) 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

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.

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.

Week 9:

a) Implement R Script to perform Normal, and Binomial distributions.

b) Implement R Script to perform correlation, Linear and multiple regression.

Week 10:

a) Introduction to Non-Tabular Data Types: Time series, spatial data, Network data.

b) Data Transformations: Converting Numeric Variables into Factors, Date Operations, String Parsing, Geocoding.

Week 11:

Introduction to Dirty data problems: Missing values, data manipulation, duplicates, forms of data dates, outliers, spelling.

Week 12:

Data sources: SQLite examples for relational databases, Loading SPSS and SAS files, Reading from Google Spreadsheets, API and web scraping examples

COURSE DELIVERY PLAN (LESSON PLAN):

S.No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	Learning Outcome COs	HOD Sign Weekly
1	Week 1, Week 2	3	13-9-2022		TLM8		
2	Week 3	3	20-09-2022		TLM8		
3	Week 4	3	27-9-2022		TLM8		
4	Week 5	3	11-10-2022		TLM8		
5	Week 6	3	18-10-2022		TLM8		
6	Week 7	3	25-10-2022		TLM8		
7	Week 8	3	1-11-2022		TLM8		
8	Week 9	3	15-11-2022		TLM8		
9	Week 10	3	22-11-2022		TLM8		
10	Week 11	3	29-11-2022 6-12-2022		TLM8		
11	Week 12	3	13-12-2022 20-12-2022		TLM8		
12	Internal Lab Exam	3	27-12-2022				

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

PROGRAMME 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 ring and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
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	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Ms. M.LIKHITA	Dr. S. Jayaprada	Dr. K. Naga Prasanthi	Dr.B.Srinivasarao
Signature				



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DEPARTMENT OF INFORMATION TECHNOLOGY

COURSE HANDOUT

PART-A

Name of Course Instructor: MR. SAMBASIVARAO CHINDAM

Course Name & Code : DBMS & 20CS07

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

Program/Sem/Sec : B.TECH /III SEM /B-SECTION

Credits: 3

A.Y.: 2022-2023

PREREQUISITE: Data Structures

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	-	-	-	-	-	-	-	-	-	-	2	2	
CO2	3	2	-	-	-	-	-	-	-	-	-	-	1	3	1
CO3	3	2	1	-	-	-	-	-	-	-	-	-		2	
CO4	-	2	1	-	-	-	-	-	-	-	-	-	1		
CO5	2	3	1	-	-	-	-	-	-	-	-	-	1	2	1
	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 Wiley & Sons, 2011.

REFERENCE BOOKS:

R1 Raghu Ramakrishnan, Johannes Gehrke, –Database Management System||, McGrawHill, 3rd edition, 2000.

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

R3 Ramez Elmasri, Shamkanth B. Navathe, "Fundamentals of Database Systems", Addison Wesley, 6th edition, 2010.

PART-B

COURSE DELIVERY PLAN (LESSON PLAN):

UNIT-I:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
1.	Introduction to prerequisite, course educational objectives and course outcomes.	1	12-09-22		TLM1 TLM2	
2.	An overview of Database Management System	1	15-09-22		TLM1 TLM2	
3.	Database System Vs File System	1	16-09-22		TLM1 TLM2	
4.	Database System Concepts and Three Schema Architecture, Database Structure.	1	17-09-22		TLM1 TLM2	
5.	Data Models, Database Schema	1	19-09-22		TLM1	
6.	Data Instances, Data Independence	1	22-09-22		TLM1	
7.	Database Languages	1	23-09-22		TLM4	
8.	Data Modelling using the Entity Relationship Model: ER model concepts	1	24-09-22		TLM1 TLM2	
9.	Notation for ER Diagram	1	26-09-22		TLM2	
10.	Mapping Constraints, Keys, Concepts of Super Key	1	29-09-22		TLM1 TLM2	
11.	Candidate Key, Primary Key, Generalization,	1	30-09-22		TLM1 TLM2	
12.	Aggregation, Reduction of an ER Diagrams to Tables, Relationships of Higher Degree.	1	01-10-22		TLM2	
No. of classes required to complete UNIT-I: 12				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
13.	Relational Data Model and Language: Relational Data Model Concepts	1	10-10-22		TLM1 TLM2	
14.	Integrity Constraints: Entity Integrity, Referential Integrity, Key Constraints	1	13-10-22		TLM1 TLM2	
15.	Domain Constraints, and Relational Algebra.	1	14-10-22		TLM1 TLM2	
16.	Introduction to SQL: Characteristics of SQL, Advantage of SQL.	1	15-10-22		TLM1 TLM2	
17.	SQL Data types and Literals, Insert, Update and Delete Operations	1	17-10-22		TLM1 TLM4	
18.	Tables, Views and Indexes	1	20-10-22		TLM4	
19.	Nested Queries	1	21-10-22		TLM4	
20.	Aggregate Functions, Joins	1	22-10-22		TLM4	
21.	Unions, Intersection, Minus, Cursors in SQL	1	27-10-22		TLM4	
22.	Triggers in SQL.	1	28-12-22		TLM4	
No. of classes required to complete UNIT-II: 10				No. of classes taken:		

UNIT-III:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
23.	Normalization: Functional Dependencies	2	28-10-22 29-10-22		TLM1 TLM2	
24.	Normal Forms - First, Second	1	31-10-22		TLM1 TLM2	
25.	Third Normal Forms	1	3-11-22		TLM1 TLM2	
26.	BCNF, Inclusion Dependences	1	4-11-22		TLM1 TLM2	
27.	Loss Less Join Decompositions	1	5-11-22		TLM1 TLM2	
28.	Multi Valued Dependencies, Fourth Normal Form	1	14-11-22		TLM1 TLM2	
29.	Join Dependencies	1	17-11-22		TLM1 TLM2	
30.	Fifth Normal Form.	1	18-11-22		TLM1 TLM2	
No. of classes required to complete UNIT-III: 09				No. of classes taken:		

UNIT-IV:

S. No.	Topics to be covered	No. of Classes Required	Tentative Date of Completion	Actual Date of Completion	Teaching Learning Methods	HOD Sign Weekly
31.	Transaction Processing Concepts: Transaction System	1	19-11-22		TLM1 TLM2	
32.	Testing of Serializability, Serializability of Schedules	1	21-11-22		TLM1 TLM2	
33.	Conflict & View Serializability, Recoverability	1	24-11-22		TLM1 TLM2	
34.	Deadlock Handling, Concurrency Control Techniques	1	25-11-22		TLM1 TLM2	
35.	Concurrency Control, Locking Techniques for Concurrency Control	1	26-11-22		TLM1 TLM2	
36.	Time Stamping Protocols for Concurrency Control	1	28-11-22		TLM1 TLM2	
37.	Validation Based Protocol, Multiple Granularity	1	1-12-22		TLM1 TLM2	
38.	Recovery with Concurrent Transactions.	1	2-12-22		TLM1 TLM2	
39.	Crash Recovery: Log Based Recovery	1	3-12-22		TLM1 TLM2	
40.	Checkpoints, ARIES Algorithm	1	5-12-22		TLM1 TLM2	
No. of classes required to complete UNIT-IV: 10				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
41.	Physical Database Design: Storage and file structure,	1	8-12-22		TLM1 TLM2	
42.	indexed files, hashed files	1	9-12-22		TLM1	
43.	B+ trees	1	10-12-22		TLM1 TLM2	

44.	Files with dense index; files with variable length records.	1	12-12-22		TLM1
45.	Interfacing And Interacting With NoSQL : Introduction to NoSQL	2	15-12-22 16-12-22		TLM1 TLM2
46.	Storing and Accessing Data,.	1	17-12-22		TLM1 TLM2
47.	Storing Data In and Accessing Data from MongoDB	2	21-12-22 22-12-22		TLM1 TLM2
48.	Querying MongoDB	2	26-12-22 29-12-22		TLM1 TLM2
No. of classes required to complete UNIT-V: 11				No. of classes taken:	

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

PART-C

EVALUATION PROCESS (R17 Regulation):

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

PART-D

PROGRAMME OUTCOMES (POs):

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

PSO 1	Organize, Analyze and Interpret the data to extract meaningful conclusions.
PSO 2	Design, Implement and Evaluate a computer-based system to meet desired needs.
PSO 3	Develop IT application services with the help of different current engineering tools.

Title	Course Instructor	Course Coordinator	Module Coordinator	Head of the Department
Name of the Faculty	Mr.Ch.Sambasivarao	Dr.M.Sitha Ram	Dr.K.Naga Prasanthi	Dr.B.Srinivasarao
Signature				