SRI VASAVI ENGINEERING COLLEGE (Autonomous)

(Permanent Affiliation to JNTUK, Kakinada),
PEDATADEPALLI, TADEPALLIGUDEM-534 101

A.Y: 2020-21

III SEM CST Handbook
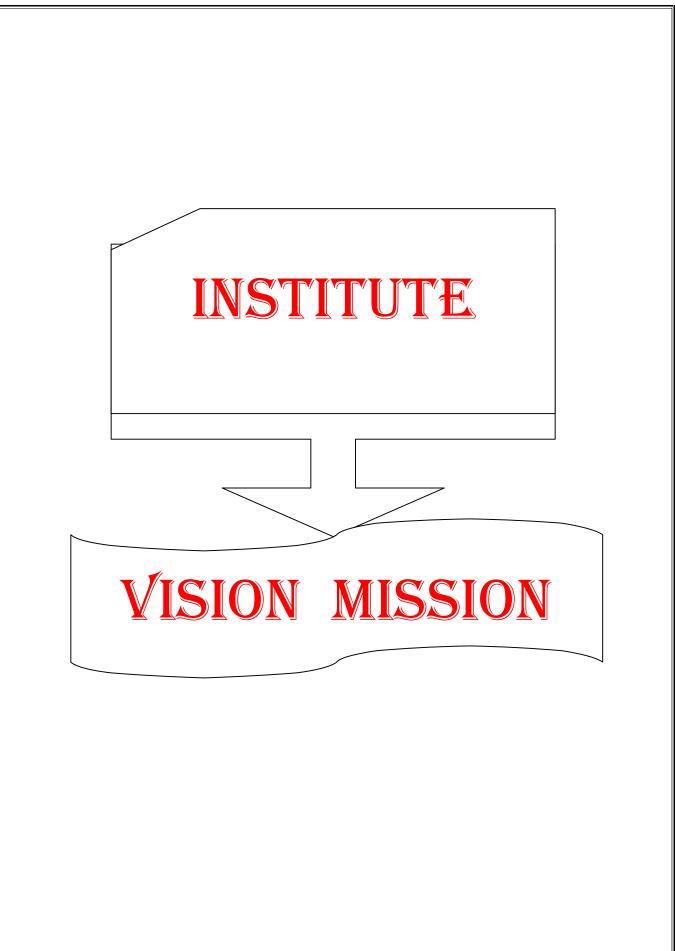
(V18 Regulation)

Department of Computer Science and Technology

Pedatadepalli, Tadepalligudem-534101, A.P

INDEX

INSTITUTE

VISION MISSION

INSTITUTE VISION AND MISSION

VISION

To be a premier technological institute striving for excellence with global perspective and commitment to the nation.

MISSION

- ➢ To produce engineering graduates of professional quality and global perspective through Learner Centric Education.
- ➢ To establish linkages with government, industry and research laboratories to promote R&D activities and to disseminate innovations.
- ➢ To create an eco-system in the institute that leads to holistic development and ability for life-long learning..

DEPARTMENT

VISION

MISSION

DEPARTMENT
VISION AND MISSION

Vision:

- To evolve as a centre of academic and research excellence in the area of Computer Science and Technology.

Mission :

- To utilize innovative learning methods for academic improvement.
- To encourage higher studies and research to meet the futuristic requirements of Computer Science and Technology.
- To inculcate Ethics and Human values for developing students with good character

PROGRAM EDUCATIONAL OBJECTIVES, PROGRAM OUTCOMES & PROGRAM SPECIFIC OUTCOMES

Program Educational Objectives (PEOs)

Graduates of this programme will :

PEO 1: Adapt to evolving technology.

PEO 2: Provide optimal solutions to real time problems.

PEO 3: Demonstrate his/her abilities to support service activities with due consideration for Professional and Ethical Values.

Programme Specific Outcomes (PSO s):

A graduate of the Computer Science and Technology Program will be able to:

PSO 1: Use Mathematical Abstractions and Algorithmic Design along with Open Source Programming tools to solve complexities involved in Programming. [K3]

PSO 2: Use Professional engineering practices and strategies for development and maintenance of software. [K3]

Program Outcomes (POs):

Computer Science Technology Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of Mathematics, Science, Engineering Fundamentals and Concepts of Computer Science Engineering to the solution of complex Engineering problems. **[K3]**

2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of Mathematics, Natural Sciences and Computer Science. **[K4]**

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specific needs with appropriate consideration for the public health and safety, and the cultural, societal and environmental considerations. **[K5]**

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. **[K5]**

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**. **[K3]**

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. **[K3]**

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. **[K3]**

8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the Engineering practice. **[K3]**

9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings. **[K6]**

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. **[K2]**

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. **[K6]**

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. **[K1]**

CLASS CONSOLIDATED TIME TABLE

Branch:CST   **ClassCoordinator:** Mr.KSatyanarayana   **Room No:B-301**

Periods	1	2	3	4	1:00PM to	5	6	7
Time / Day	(09.30AM- 10.30AM)	(10.30AM- 11.20AM)	(11.20AM- 12.10PM)	(12.10PM- 01.00PM)	2:00PM	(02.00PM- 02.50PM)	(02.50 PM- 03.40 PM)	(03.40 PM- 04.30 PM)
Mon	DM	C++	PCS-I	P&S		DSALab		
Tue	C++	DM	DSA	DE		DELab		
Wed	P&S	TS-I			Lunch Break	DSA	DM	DE
Thu	DSA	OOPC++ LAB				DE	C++	P&S
Fri	DE	TS-I	P&S	C++		DM	DSA	DE
Sat	PCS-I	DM	C++	P&S		DSA	Library	Sports

Staff list

S.No.	Course	LE Section	CST
1	P&S	Mr.AKiranKumar	Mr.AKiranKumar
2	DE	Mr. G Srikanth	Mr. G Srikanth
3	DSA	Mr.KSatyanarayana	Mr.KSatyanarayana
4	DM	Ms.MMadhavi	Ms.MMadhavi
5	OOPS	Mrs.MSRadhaMangamani	Mrs.MSRadhaMangamani
6	DE Lab	Mr. G Srikanth	G.Srikanth,K.Rajesh,PVVSatyanarayana, Thota Srinivas
7	DSA Lab	Mr.KSatyanarayana Ms.MMadhavi	Mr.KSatyanarayana Mr.BKiranKumar
8	OOPLab	MSRadhaMangamani K Harikrishna	Mrs.MSRadhaMangamani Ms. M Madhavi
9	TS-1	Mrs. A Leelavathi Mr.GSriramGanesh	Mr.ChRajaRames h Mr. K Harikrishna
10	PCS-1	Mr.DNaveenKumar	Mr.DNaveenKumar

Head of the Department

COURSE STRUCTURE

III-Semester

B.TECH Course Structure

S.No.	Course Code		Course	L	T	P	C
			III - Semester				
1	V18MAT04	BSC	Probability & Statistics	3	1	0	4
2	V18ECT06	ESC	Digital Electronics	3	0	0	3
3	V18CST02	PCC	Data Structures and Algorithms	3	0	0	3
4	V18CST03	ESC	Discrete Mathematics	3	0	0	3
5	V18CST04	ESC	Object Oriented Programming for problem Solving	3	0	0	3
6	V18ECL04	ESC	Digital Electronics Lab	0	0	2	1
7	V18CSL02	PCC	Data Structures and Algorithms Lab	0	0	3	1.5
8	V18CSL03	ESC	Object Oriented Programming for problem Solving Lab	0	0	3	1.5
9	V18ENT03		Professional Communication Skills – I	3	0	0	MNC
10	V18CST60		**Technical Skills-I**	0	0	4	MNC
			Total	18	1	12	20

Total Contact Hours: 31

LESSON PLANS

PROBABILITY AND STATISTICS

Academic Year: 2020-21 **Programme: B.Tech**
Semester: III Sem **Section: -**
Name of the Course: PROBABILITYA AND STATISTICS **Course Code: V18MAT04**

LESSON PLAN

Course Outcomes (Along with Knowledge Level):
After completion of this course, Student will be able to:

		Course Outcome	Knowledge level of the CO
CO1		Find measures of central tendency and dispersion for real data sets.	K3
CO2		Find parameters of given function	K3
CO3		Apply probability distribution to real time problems	K3
CO4		Plot a best fit curve to an experimental data and find the correlation and regression	K3
CO5		Create good estimators to various parameters	K6
CO6		Apply the principles of Statistical Inference to practical problems	K3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
Unit – 1: Basic Statistics			**K3**	**10**		
1	**CO1**	Define measures of central tendency or average , mean	K1	1	Lecture method	Black Board
2	**CO1**	Find mean of the given data and discuss its merits and demerits	K3	1	Lecture method	Black Board
3	**CO1**	Explain median, merits and demerits of median	K2	1	Lecture method	Black Board
4	**CO1**	Find median of the ungrouped and grouped data	K3	1	Lecture method	Black Board
5	**CO1**	Explain mode, merits and demerits of median	K2	1	Lecture method	Black Board
6	**CO1**	Find mode of the ungrouped and grouped data	K3	1	Lecture method	Black Board
7	**CO1**	Define measures of dispersion: standard deviation and variance	K1	1	Lecture method	Black Board
8	**CO1**	Find varianceand standard deviation	K3	1	Lecture method	Black Board
9	**CO1**	Define kurtosis and skewness	K1	1	Lecture method	Black Board

10	**CO1**	Find kurtosis and Skewness	K3	1	Lecture method	Black Board
UNIT-II: Basic Probability			**K3**	**10**		
11	**CO2**	Define random variables: discrete and continuous with examples	K1	**1**	Lecture method	Black Board
12	**CO2**	Explain discrete probability distribution, probability function, density function and their properties	K2	**1**	Lecture method	Black Board
13	**CO2**	Explain expectation , mean , variance, standard deviation of a probability distribution	K2	**1**	Lecture method	Black Board
14	**CO2**	Find the probabilities using discrete probability function	K3	1	Lecture method	Black Board
15	**CO2**	Calculate expectation , mean , variance and standard deviation of discrete distribution	K3	**1**	Lecture method	Black Board
16	**CO2**	Explain continuous probability distribution, probability function, density function and their properties	K2	1	Lecture method	Black Board
17	**CO2**	Find the probabilities using continuous probability function	K3	1	Lecture method	Black Board
18	**CO2**	Find the mean, median , mode , variance and standard deviation of continuous probability distribution	K3	1	Lecture method	Black Board
19	**CO2**	Explain moments and Chebyshev's Inequality	K2	1	Lecture method	Black Board
20	**CO2**	Find moments of given data	K3	1	Lecture method	Black Board
UNIT III: Probability Distributions			**K3**	**10**		
21	**CO3**	Explain Binomial distribution and its properties	K2	1	Lecture method	Black Board
22	**CO3**	Find the probability using Binomial distribution	K3	1	Lecture method	Black Board
23	**CO3**	Explain Poisson distribution and its properties	K2	1	Lecture method	Black Board
24	**CO3**	Find the probability using Poisson distribution	K3	1	Lecture method	Black Board
25	**CO3**	Explain Normal distribution and its properties	K2	1	Lecture method	Black Board
26	**CO3**	Find the probabilities by using Normal distribution	K3	1	Lecture method	Black Board
27	**CO3**	Find the probabilities by using Normal distribution	K3	1	Lecture method	Black Board
28	**CO3**	Explain Exponential distribution and weibull distribution	K2	1	Lecture method	Black Board

29	**CO3**	Explain Gamma distribution	K2	1	Lecture method	Black Board
30	**CO3**	Find the probabilities using Exponential ,Weibull and Gamma distributions	K3	1	Lecture method	Black Board
UNIT IV: Bivariate Distribution			**K3**	**10**		
31	**CO4**	Explain Least- Squares method to fit a curve to the given data	K2	1	Lecture method	Black Board
32	**CO4**	Apply the Method of Least-Squares to fit a straight line for the given data	K3	1	Lecture method	Black Board
33	**CO4**	Apply the Method of Least-Squares to fit a Second degree curve for the given data	K3	1	Lecture method	Black Board
34	**CO4**	Apply the Method of Least-Squares to fit a Exponential and power curve for the given data	K3	1	Lecture method	Black Board
35	**CO4**	Define correlation and types of correlation, correlation coefficient	K1	1	Lecture 4method d	Black Board
36	**CO4**	Calculate Karl Pearson's coefficient of correlation for given data	K3	1	Lecture method	Black Board
37	**CO4**	Discuss Spearman's rank correlation coefficient	K2	1	Lecture method	Black Board
38	**CO4**	Find the rank correlation coefficient	K3	1	Lecture method	Black Board
39	**CO4**	Discuss regression	K2	1	Lecture method	Black Board
40	**CO4**	Calculate the regression equation for given data	K3	1	Lecture method	Black Board
UNIT-V: Sampling Distribution and Estimation			**K3**	**10**		
41	**CO5**	Define population and samples, sampling theory	K1	1	Lecture method	Black Board
42	**CO5**	Define sampling distribution of means (σ known)	K1	1	Lecture method	Black Board
43	**CO5**	Calculate mean, variance and standard deviations of sampling distributions of means	K3	1	Lecture method	Black Board
44	**CO5**	Define sampling distribution of mean (σ unknown)	K1	1	Lecture method	Black Board
45	**CO5**	Explain t- distribution, F-distribution and chi-square	K2	1	Lecture method	Black Board

		distribution				
46	**CO5**	Explain Estimation, criteria of a good estimator , point and interval estimation	K2	1	Lecture method	Black Board
47	**CO5**	Define the maximum error and confidence interval for the mean of a populations	K1	1	Lecture method	Black Board
48	**CO5**	Find the maximum error	K3	1	Lecture method	Black Board
49	**CO5**	Compute the confidence interval for the mean of a population using various distributions	K3	1	Lecture method	Black Board
50	**CO5**	Compute the confidence interval for the mean of a population using various distributions	K3	1	Lecture method	Black Board
UNIT-VI Tests of Hypothesis			K3	13		
51	**CO6**	Define Null and alternative Hypothesis	K1	1	Lecture	Black Board
52	**CO6**	Explain Type-1,Type II errors and one tail and two tail test	K2	1	Lecture method	Black Board
53	**CO6**	Examine the hypothesis concerning mean and proportion using z-test	K3	1	Lecture method	Black Board
54	**CO6**	Examine the hypothesis concerning mean and proportion using z-test	K3	1	Lecture method	Black Board
55	**CO6**	Examine the hypothesis concerning two means and their differences	K3	1	Lecture method	Black Board
56	**CO6**	Examine the hypothesis concerning two proportions and their differences	K3	1	Lecture method	Black Board
57	**CO6**	Examine the hypothesis concerning small samples using t-test	K3	1	Lecture method	Black Board
58	**CO6**	Examine the hypothesis concerning small samples using t-test	K3	1	Lecture method	Black Board
59	**CO6**	Examine the hypothesis concerning small samples using t-test	K3	1	Lecture method	Black Board
60	**CO6**	Examine the hypothesis concerning variance using F-test	K3	1	Lecture method	Black Board
61	**CO6**	Examine the hypothesis concerning variance using F-test	K3	1	Lecture method	Black Board
62	**CO6**	Examine the hypothesis using chi-square test	K3	1	Lecture method	Black Board
63	**CO6**	Examine the hypothesis using chi-square test	K3	1	Lecture method	Black Board

Total No. of Classes: 63

Digital Electronics

Academic Year: 2020-21   **Programme: B.Tech**
Year/ Semester: III Sem   **Section: A,B,C&D**
Name of the Course: Digital Electronics   **Course Code:V18ECT06**

LESSON PLAN

Course Outcomes (Along with Knowledge Level):
After completion of this course, Student will be able to:

CO	Course Outcome	Knowledge Level
V18ECT06.1	Illustrate the conversion of a number from one number system to another.	K3
V18ECT06.2	Classify Boolean theorems & simplify the Boolean functions using the Boolean properties.	K2
V18ECT06.3	Use K-map as a tool to simplify and design logic circuits	K3
V18ECT06.4	Construct different combinational Logic circuits like MUX, Decoders, Encoders etc.	K3
V18ECT06.5	Demonstrate the basic flip-flops in terms of truth table & excitation table	K3
V18ECT06.6	Apply the concepts of flip-flops in the designing of different sequential circuits like registers, counters, etc.	K3

Text Books/ Reference Books suggested:
TEXT BOOKS:

Text Books:
> **T1.** Digital Design, 4/e, M.Morris Mano, Michael D Ciletti, PEARSON

> **T2.** Fundamentals of Logic Design, 5/e, Roth ,Cengage

Reference books:
> **R1.**Switching and Finite Automata Theory, 3/e, Kohavi, Jha, Cambridge.

> **R2.**Digital Logic Design, Leach Malvino, Saha, TMH

> **R3.**Modern Digital Electronics, R,P. Jain, TMH

Targeted Proficiency Level and Targeted level of Attainment (For each course outcome):

COURSE OUTCOME	PROFICIENCY LEVEL	ATTAINMENT LEVEL
V18ECT06.1	70	70
V18ECT06.2	70	70
V18ECT06.3	65	65
V18ECT06.4	65	65
V18ECT06.5	65	65
V18ECT06.6	65	65

LESSON PLAN

<table>
<tr><td colspan="7" align="center">UNIT1: Number systems& Binary codes:</td></tr>
<tr>
<td>S.No</td>
<td>Course Outcome</td>
<td>Intended Learning Outcomes (ILO)</td>
<td>Knowledge Level of ILO</td>
<td>No. of Hours</td>
<td>Pedagogy</td>
<td>Teaching aids</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Dissemination of vision, mission, PEOs, POs, PSOs</td>
<td></td>
<td>1</td>
<td>Lecture</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td rowspan="6">CO 1</td>
<td>Explain a Number System & Digital System</td>
<td>K2</td>
<td>1</td>
<td>Lecture</td>
<td>BB</td>
</tr>
<tr>
<td>3</td>
<td>Interpret Binary, Octal, Decimal, Hexadecimal Number Systems</td>
<td>K3</td>
<td>2</td>
<td>Lecture with Discussion</td>
<td>BB</td>
</tr>
<tr>
<td>4</td>
<td>Change Numbers From One Radix To Another Radix</td>
<td>K3</td>
<td>2</td>
<td>Lecture with Discussion</td>
<td>BB</td>
</tr>
<tr>
<td>5</td>
<td>Practice r's complement and (r-1)'s complement numbers</td>
<td>K3</td>
<td>2</td>
<td>Lecture with Discussion</td>
<td>BB</td>
</tr>
<tr>
<td>6</td>
<td>Illustrate Binary Codes</td>
<td>K3</td>
<td>2</td>
<td>Lecture with Discussion</td>
<td>BB + ICT</td>
</tr>
<tr>
<td></td>
<td>Practice more examples on code conversions</td>
<td>K2</td>
<td>2</td>
<td>Lecture with Discussion</td>
<td>BB + ICT</td>
</tr>
<tr>
<td></td>
<td></td>
<td align="center">TOTAL</td>
<td></td>
<td>12</td>
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</tr>
</table>

		UNIT -II: Concept of Boolean algebra:				
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Explain Basic Theorems	K2	1	Lecture	BB
2		Explain Properties of Boolean algebra	K2	1	Lecture With Discussion	BB
3		Explain Boolean Functions	K2	1	Lecture With Discussion	BB
4		Describe the Canonical and Standard Forms	K2	1	Lecture With Discussion	BB
5		Solve Minterms and Maxterms	K2	1	Lecture With Discussion	BB
6		Explain the Basic Logic Gates	K2	2	Lecture With Discussion	BB
7		Construct Universal Gates NAND and NOR, Ex-OR and Ex-NOR Gates.	K2	1	Lecture With Discussion	BB
8		Practice more problems on SOP and POS and vie-versa	K2	3	Lecture With Discussion	BB
		TOTAL		**11**		

UNIT- III: Gate level Minimization:

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Explain Map Method,	K2	1	Lecture	BB
2		Practice 2,3,4-Variable K-Maps	K3	2	Lecture With Discussion	BB
3		use K-MAP for Products of Sum Simplification	K3	2	Lecture With Discussion	BB
4	CO 3	Use K-MAP for Sum of Products Simplification	K3	2	Lecture With Discussion	BB
5		Find the SOP & POS forms for Don't–Care Conditions,	K3	2	Lecture With Discussion	BB
6		Develop NAND and NOR Implementation Exclusive OR function.	K3	1	Lecture With Discussion	BB
		TOTAL		**10**		

UNIT- IV:Combinational Logic

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Explain the combinational logic circuits	K2	1	Lecture With Discussion	BB + ICT
2		Dramatise the Analysis Procedure of Combinational logic circuit	K3	1	Lecture With Discussion	BB + ICT
3	CO 4	Construct Binary Adder– Subtractor	K3	3	Lecture With Discussion	BB + ICT
4		Explain Decimal Adder	K3	1	Lecture With Discussion	BB + ICT
5		Construct Decoders-encoders	K3	2	Lecture With Discussion	BB + ICT

S.No					No. of Hours		
6		Construct Multiplexers & De-Multiplexers	K3	3		Lecture With Discussion	BB + ICT
		TOTAL		**11**			

UNIT V: **Sequential Logic Circuits**						
S.No	**Course Outcome**	**Intended Learning Outcomes (ILO)**	**Knowledge Level of ILO**	**No. of Hours**	**Pedagogy**	**Teaching aids**
1		Explain–Latches and Flip flops	K2	1	Lecture With Discussion	BB + ICT
2		Discuss Basic Flip flop circuit	K2	1	Lecture With Discussion	BB + ICT
3	CO 5	Demonstrate RS, D, JK and T Flip-flop	K3	3	Lecture With Discussion	BB + ICT
4		Illustrate Clocked Sequential Circuits	K2	3	Lecture With Discussion & Seminar	BB + ICT
5		Change one Flip flop into another Flipflop	K2	2	Lecture With Discussion	BB + ICT
		TOTAL		**10**		

UNIT -VI: Registers and Counters

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Explain Registers	K2	1	Lecture With Discussion	BB + ICT
2		Construct Shift Register, Universal Shift Register,	K3	2	Lecture With Discussion	BB + ICT
3	CO 6	Construct Asynchronous counter, Synchronous counter,	K3	2	Lecture With Discussion	BB + ICT
4		Construct Mod-N Counter, binary up/down counter, Ring counter, & Johnson counter.	K3	2	Lecture With Discussion	BB + ICT
5		Explain ROM, PROM, EPROM.	K2	2	Lecture With Discussion	BB + ICT
\		**TOTAL**		**9**		

Total No. of Classes: 63

Data Structures and Algorithms

Academic Year: 2020-21   **Programme: B.Tech**
Semester: III Sem   **Section: -**
Name of the Course: Data Structures and Algorithms   **Course Code:V18CST02**

LESSON PLAN
COURSE OUTCOMES (Along with Knowledge Level):
After completion of this course, the students will be able to:

CO1: Explain Sorting and Searching techniques.   (K2)
CO2: Demonstrate Singly Linked List and Double Linked List.   (K3)
CO3: Interpret the basic operations on Stacks and Queues.   (K3)
CO4: Demonstrate Binary Tree and Binary Search Tree.   (K3)
CO5: Compare Binary trees and Self-Balanced trees with appropriate examples. (K4)
CO6: Illustrate various graph algorithms.   (K3)

Text Books:

1. Data Structures, algorithms and applications in C++, SartajSahni, Universities press, Second Edition
2. Fundamentals of Data Structures in C++, Ellis Horowitz, SartajSahni and Dinesh Mehta, 2nd Edition, Universities Press (India) Pvt. Ltd

Reference Books:

1. AnIntroduction to Data Structures with Application, Jean-Paul Tremblay , Paul Sorenson, Second Edition
2. Fundamentals of Data Structures and algorithms by C V Sastry, Rakesh Nayak, Ch. Raja Ramesh, IK Publications, new Delhi.
3. Data structures using C and C++, Langsam, Augenstein and Tanenbaum,PHI.
4. Problem solving with C++, The OOP, Fourth edition, W.Savitch, Pearsoneducation.

Targeted Proficiency Level (For each course Outcome):

Course Outcome	Targeted Proficiency Level (% of Marks)
1	70
2	65
3	65
4	60
5	60
6	60

Targeted level of Attainment (for each Course Outcome):

Course Outcome	Targeted level of Attainment (% Students)
1	70
2	60
3	60
4	60
5	60
6	60

CO 1

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 1	Dissemination of Vision, Mission of the Dept.and PEOs,Pos,& PSOs of the Programme		1	Lecture	BB+ICT
2		Define Data Structure and Algorithms. Performance analysis: Space complexity, time complexity	K1	2	Lecture	BB+ICT
3		Asymptotic notation: Big O, Omega and Theta. Identyfing Time complexity of an algorithm	K2	1	Lecture with Discussion	BB+ICT
4		Explanation of Bubble Sort and Insertion Sort.	K2	1	Lecture with Discussion	BB+ICT
5		Explanation Selection Sort and Merge Sort	K2	2	Lecture with Discussion	BB+ICT
6		Explanation of Quick Sort	K2	1	Lecture with Discussion	BB+ICT
7		Explanation of Merge Sort and RadixSort	K2	2	Lecture with Discussion	BB+ICT
8		Explain Linear Search, Binary Search. Introduction to Hashing	K2	1	Lecture	BB+ICT
				11		

CO 2

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Describe Linear data structures and non-linear datastructures. Representation of arrays	K2	1	Lecture	BB+ICT
2		Explain polynomial representation, Solve addition of twopolynomials	K3	1	Lecturewith Discussion	BB+ICT
3	CO 2	Usesparse representation, transpose of sparse matrix	K3	1	Lecture	BB+ICT
4		Discuss representation of node, Apply operations on single linked list.	K3	2	Lecture with Discussion	BB+ICT
5		Demonstratehow to reverses the linked list	K3	1	Lecture with Discussion	BB+ICT
6		Implementoperations like insert delete and display in Double linked list	K3	2	Lecture with Discussion in class	BB+ICT
7		Discuss about Circular linked List	K2	1	Lecture with Discussion in class	BB+ICT
				9		

CO 3

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define Stacks, operations of stack	K1	1	Lecture	BB+ICT
2		Explain array representation and linked list representation of Stack	K2	2	Lecture with Discussion	BB+ICT
3		Solve Towers of hanoi problem, infix to postfix conversion and expression evolution	K3	2	Lecture with Discussion	BB+ICT
4	CO 3	Demonstrate Multistack and its implementation	K3	1	Lecture with Discussion	BB+ICT
5		Define Queue, operations of Queue	K1	1	Lecture with Discussion	BB+ICT
6		Explain array representation and linked list representation of Queue	K2	2	Lecture	BB+ICT
7		Applications of Queues, Circular Queue.	K3	1	Lecture with Discussion	BB+ICT

				10		

CO 4

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Introduction to Trees, Terminology used, Representation of Trees	K1	1	Lecture	BB+ICT
2		Explain Properties of Binary Tress, Binary Tree Representation.	K2	1	Lecture	BB+ICT
3		Applyoperations that can be performed on a Binary Tree	K3	1	Lecture with Discussion	BB+ICT
4	CO 4	DemonstrateTree Traversals techniques– recursive, non-recursive	K3	2	Lecturewith Discussion	BB+ICT
5		ExplainBinary Search Tree and its properties	K2	1	Lecture	BB+ICT
6		Apply operations of Binary Search Tree	K3	2	Lecture	BB+ICT
				8		

CO 5

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		DefineSelf-Balanced Trees - AVL trees	K1	1	Lecture	BB+ICT
2		Representation of an AVL Tree, Height of AVL tree	K2	2	Lecture with Discussion	BB+ICT
3	CO 5	Solveelement searching in AVL Tree. Distinguish Binary Trees and Self balanced Trees	K3	2	Lecture with Discussion	BB+ICT
4		Apply operationsinsert and delete element from AVL tree.	K2	1	Lecture with Discussion	BB+ICT
5		ComparePriority Queues: Heaps, types of heaps	K4	2	Lecture with Discussion	BB+ICT
6		Explain properties and Apply operations of Heaps	K3	2	Lecture with Discussion	BB+ICT
				10		

CO 6

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define Graphs and Graph Representation and its properties.	K1	2	Lecture	BB+ICT
2		StateElementary Graph Operations	K1	1	Lecture	BB+ICT
3		DemonstrateGraph Traversal techniques: Depth First Search	K3	1	Lecture with Discussion	BB+ICT
	CO 6	Demonstrate Graph Traversal techniques: Breadth First Search	K3	1	Lecture with Discussion	BB+ICT
4		DefineSpanning Trees and Experiment Kruskal's Algorithm	K3	2	Lecturewith Discussion	BB+ICT
5		DemonstratePrims Algorithm	K3	1	Lecture with Discussion	BB+ICT
6		Solve Single source shortestPath	K3	2	Lecture with Discussion	BB+ICT
7		Solveall pair shortest path problem	K3	2	Lecture	BB+ICT
				12		

Total No. of Classes: 60

Discrete Mathematics

Academic Year: 2020-21 **Programme: B.Tech**
Semester: III Sem **Section: -**
Name of the Course: Discrete Mathematics **Course Code: V18CST03**

LESSON PLAN

Course Outcomes (Along with Knowledge Level):

After completion of this course, students will be able to:

After completion of this course, the students will be able to:

CO	Course Outcome	Knowledge Level
V18CST03.1	Demonstrate the concepts associated with propositions and mathematical logic.	K3
V18CST03.2	Demonstrate the basic concepts associated with relations, function and their applications.	K3
V18CST03.3	Illustrate algebraic structures and their applications in computer science.	K3
V18CST03.4	Apply techniques of graphs for real-time problems	K3
V18CST03.5	Demonstrate the basic concepts associated with Number Theory	K3
V18CST03.6	Solve recurrence relations using various methods and problems based on combinatorics.	K3

TEXT BOOKS:

1. Discrete Mathematical Structures with Applications to Computer Science, J. P. Tremblay and P. Manohar,
1st Edition, Tata McGraw Hill.
2. Discrete Mathematics and its Applications with Combinatorics and Graph Theory, K. H.Rosen, 7th Edition,
Tata McGraw Hill..
3. Discrete Mathematics for Computer Scientists and Mathematicians, J. L. Mott, A. Kandel, T.P. Baker, 2nd
Edition, Prentice Hall of India.

Targeted Proficiency Level and Targeted level of Attainment (for each Course Outcome):

Course Outcome	Targeted Proficiency Level (% of Marks)	Targeted level of Attainment (% Students)
1	60	60
2	60	60
3	60	60
4	60	60
5	60	60
6	60	60

UNIT-1

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Dissemination of Vision, Mission, PEOs,POs,PSOs		1	Lecture	BB
2		**Mathematical Logic:** Define Statements and their Notations, Connectives	K1	1	Lecture	BB
3		Describe Well Formed Formulas, Truth Tables, Tautologies	K2	1	Lecture with Discussion	ICT
4		Explain equivalence of Formulas	K2	2	Lecture	BB
5	CO1	State duality Law, Tautological implications	K1	1	Lecture with Discussion	ICT
6		Convert to normal forms	K2	2	Lecture	BB
7		Explain theory of inference for statement calculus, consistency of premises,	K2	2	Lecture	BB
8		Practice indirect method of proof	K3	2	Lecture	BB
9		Identify statement functions, variables and quantifiers, free and bound Variables	K2	1	Lecture	BB
10		Recognize theory for predicate calculus- Predicates, quantifiers, universe of discourse	K2	2	Lecture	BB
11		Total		**15**		

UNIT-2

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		**Set Theory and Relations:** Define basic concepts	K1	1	Lecture	BB
2		Illustrate operations on binary sets	K2	1	Lecture	BB
3		Use principle of inclusion and exclusion	K3	1	Lecture	BB
4	CO 2	Describe Relation and properties of binary relations on a set	K2	1	Lecture	BB
5		Sketch out relation matrix and digraph	K3	1	Discussion	ICT
6		Practice equivalence, and partial ordering relations	K3	2	Discussion	ICT+BB
7		Construct hasse diagrams, lattice and state its properties.	K3	2	Lecture	BB

S.No		Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
8		Illustrate Functions, bijective functions, composition of functions	K3	1	Lecture	BB
9		Total		**10**		

UNIT-3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		**Algebraic Structures:** Define algebraic systems and properties of binary operations	K1	2	Lecture	BB
2	CO 3	Demonstrate semi groups and monoids, homomorphism of semi groups and monoids	K3	2	Lecture	BB
3		Illustrate group, subgroup, abelian group	K2	2	Lecture	BB
4		Total		**6**		

UNIT-4

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Describe basic concepts of graphs, Sub graphs	K1	2	Lecture with Discussion	BB+ICT
2		Illustrate matrix representation of graphs, Adjacency matrices, Incidence matrices	K2	1	Lecture	BB
3	CO 4	Predict subgraph, isomorphic graphs, paths and circuits	K3	2	Lecture	BB
4		Demonstrate Eulerian and Hamiltonian Graphs, Multigraphs	K3	2	Lecture with Discussion	BB+ICT
5		Use Euler's Formula for Planar Graphs and explain Graph Colouring and Chromatic Number	K3	2	Lecture with Discussion	BB+ICT
6		Total		**9**		

UNIT-5

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		**Number Theory:** Describe properties of integers,	K1	1	Lecture	BB
2		Explain Division theorem, LCM	K2	1	Lecture	BB
3		Compute greatest common divisor using Euclidean Algorithm	K3	2	Lecture	BB
4	CO5	Examine testing for prime numbers, fundamental theorem of arithmetic	K3	1	Lecture	BB
5		Illustrate Fermat's Theorem and Euler's Theorem	K3	2	Lecture	BB
6		Total		**7**		

UNIT-6

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		**Combinatorics** Define Basics of Counting	K1	1	Lecture	BB
2		Calculate Permutations, Permutations with Repetitions, Circular Permutations.	K3	1	Lecture	BB
3		Calculate Combinations, Restricted Combinations	K3	2	Lecture	BB
4		Illustrate principle of Inclusion–Exclusion	K2	1	Lecture	BB
5	CO 6	**Recurrence Relations** Explain generating functions, Function of Sequences	K2	2	Lecture	BB
6		Solve homogeneous Recurrence relations by substitution and generating functions	K3	2	Lecture	BB
7		Solve Recurrence relations by method of characteristic roots	K3	2	Lecture	BB
8		Solve inhomogeneous recurrence relations	K3	2	Lecture	BB
9		Total		**13**		

Total No. of Classes: 60

OBJECT ORIENTED PROGRAMMING FOR PROBLEM SOLVING

Academic Year: 2020-21   **Programme: B.Tech**
Semester: III sem   **Section: -**
Name of the Course: OBJECT ORIENTED PROGRAMMING FOR PROBLEM SOLVING
                                                          Course Code: V18CST04

LESSON PLAN

COURSE OUTCOMES (Along with Knowledge Level):
After completion of this course, the students will be able to:

   Course Outcomes:

CO Number	Course Outcome	Knowledge Level
CO1	Differentiate Procedural Oriented Programming and Object Oriented Programming.	K2
CO2	Develop object oriented programs on classes and objects.	K3
CO3	Demonstrate various object-oriented concepts like Constructors, Destructors &Operator-Overloading.	K3
CO4	Apply various Object Oriented features like Inheritance and Polymorphism to Solve various computing Problems.	K3
CO5	Develop programs to handle Exceptions & Files.	K3
CO6	Describe Generic Programming.	K3

TEXT BOOKS:

1. Programming in C++, Ashok N Kamthane, 2nd Edition, Pearson.
2. C++ How to Program, Paul J. Deitel, Harvey Deitel, 6th edition, PHI publication.

REFERENCE BOOKS:

   1. 1. Object Oriented Programming C++, Joyce Farrell, Cengage.
   2. Mastering C++, Venugopal, Raj Kumar, Ravi Kumar, TMH.

Other Books:

   1. Object Oriented Programming with C++, E. Balagurusamy, fourth edition, McGrawHill publications.

Targeted Proficiency Level and Targeted level of Attainment (for each Course Outcome):

Course Outcome	Targeted Proficiency Level (% of Marks)	Targeted level of Attainment (% Students)
CO1	60	60
CO2	60	60
CO3	60	60
CO4	60	60
CO5	60	60
CO6	60	60

Unit-1

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define Object-Oriented Programming	K1	1	Lecture	BB
2		Explain about Features of Object Oriented Programming	K2	1	Lecture+ Discussion	BB
3		Describe about Data Types, Variables, Constants, Operators.	K2	1	Lecture	BB
4	CO1	Explain decision Statements &Control Structures with examples	K2	1	Lecture	BB
5		Discuss about Arrays, Namespace, Default Arguments, Constant Arguments	K2	1	Lecture	BB
6		Discuss about Inputting Default Arguments, Reference Arguments.	K2	1	Lecture	BB
7		Demonstrate the example programs using arrays.	K2	2	Lecture	BB
		TOTAL Classes		8		

Unit-2

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define class and object with examples	K1	2	Lecture	BB
2		Explain about Access specifiers, Scope Resolution Operator,Static Member variables	K2	1	Lecture	BB
3		Describe about Static Member Functions, Array of Objects with examples	K3	2	Lecture+ Discussion	BB
4		Illustrate Inline Functions, Overloading Member Functions with example programs.	K3	1	Lecture	BB
5	CO2	Explain about Objects as Function Arguments with examples.	K2	1	Lecture	BB
6		Explain about Friend Functions, Friend Class with an example program.	K2	1	Lecture	BB
7		Construct Local Class, Empty Class with an example program.	K3	2	Lecture+ Discussion	BB
8		Construct Nested Classes with an example program and explain.	K3	1	Lecture	BB
9		Prepare a program using the concept Return by Reference	K3	1	Lecture	PPT
		TOTAL		12		

Unit-3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define Constructor	K1	1	Lecture	BB
2		Explain the characteristics of a constructor.	K2	1	Lecture	BB
3		Demonstrate about Constructor with default arguments, Parameterized constructors,	K3	2	Lecture	BB
4	CO3	Illustrate about Overloading constructors with an example.	K3	1	Lecture	BB
5		Construct Dynamic Constructors and Destructors	K3	1	Lecture	BB
6		Explain about Anonymous Objects.	K2	1	Lecture	ICT
7		Explain Operator overloading and its rules with an example.	K2	1	Lecture	BB

8		Demonstrate unary and binary operators	K3	2	Lecture+ Discussion	BB
9		Demonstrate about this keyword, Constraint on Increment and Decrement Operators	K3	1	Lecture	BB
10		Illustrate Overloading with Friend Functions with an example	K3	1	Lecture	BB
11		Explain about Type Conversions	K2	1	Lecture	BB
		TOTAL		13		

Unit-4

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define inheritance	K1	1	Lecture	BB
2		Explain about types of inheritances(Single Inheritance, Multiple Inheritance, Multilevel Inheritance, Hierarchical Inheritance, Hybrid Inheritance)	K2	1	Lecture	ICT
3	CO4	Illustrate example programs on Single Inheritance, Multiple Inheritance, Multilevel Inheritance, Hierarchical Inheritance, Hybrid Inheritance	K3	3	Lecture	ICT
4		Demonstrate Virtual Base Classes with example programs.	K3	2	Lecture	BB
5		Demonstrate about Constructor in Derived Classes. qualifier classes and inheritance.	K2	2	Lecture	BB
6		Explain about Early Vs Late Binding, Pure Virtual Functions, Virtual Destructor		1	Lecture	BB
		TOTAL		10		

Unit-5

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define Exception handling	K1	1	Lecture	BB
2	CO 5	Explain about the keywords in exception handling with an example	K2	1	Lecture	ICT
3		Demonstrate Multiple Catch Statements.	K3	1	Lecture	ICT

4		Illustrate about Catching Multiple Exceptions with an example.	K3	1	Lecture	BB
5		Explain about Re-throwing Exception	K2	1	Lecture	BB
6		Define file and file mode parameters.	K1	1	Lecture	BB
7		Explain about File Opening Modes, File Stream Classes, I/O manipulators	K2	1	Lecture	BB
8		Describe about Classes for File Handling	K2	1	Lecture	BB
9		Explain Sequential Access Files, Random Access Files with suitable examples.	K2	1	Lecture	BB
10		Explain about Error Handling Functions	K2	1	Lecture	BB
		TOTAL		10		

Unit-6

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Define Template, Class Template and Function Template.	K1	2	Lecture	BB
2		Demonstrate about Class Templates and function Templates.	K3	1	Lecture	ICT
3	CO 6	Explain about Standard Template Library.	K2	2	Lecture	ICT
4		Explain about Sequential Containers & Associative Containers.	K2	2	Lecture	ICT
		TOTAL		7		

Total No. of Classes: 60

Digital Electronics Lab

Academic Year: 2020-21   **Programme: B.Tech**
Year/ Semester: III sem   **Section: -**
Name of the Course: Digital Electronics Lab   Course **Code: V18ECL04**

LESSON PLAN

COURSE OUTCOMES (Along with Knowledge Level):

After completion of this course, the students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
V18ECL04.1	Apply the Boolean algebra to design digital logic circuits.	K3
V18ECL04.2	Analyze the behaviour of different combinational logic circuits.	K4
V18ECL04.3	Analyze the behaviour of different sequential logic circuits	K4
V18ECL04.4	Construct and troubleshoot simple combinational and sequential circuits	K3

Data Structures and Algorithms Lab

Academic Year: 2020-21   **Programme: B.Tech**
Semester: III Sem   **Section: -**
Name of the Course: :Data Structures and Algorithms Lab   Course Code: V18CSL02

LESSON PLAN

Course Outcomes (Along with Knowledge Level):
After completion of this course, students will be able to:

   CO1:   Construct programs on Sorting and searching Techniques.   [K3]
   CO2:   Illustrate various operations on Singly Linked List.   [K3]
   CO3:   Construct programs on Double Linked List.   [K3]
   CO4:   Develop programs on Stacks, Queues and their Applications.   [K3]
   CO5:   Implement various operations on Binary Search Tree.   [K3]
   CO6:   Implement various shortest path algorithms.   [K3]

LIST OF EXPERIMENTS

Lab 1:
   1. Programs to implement the following sorting techniques
        (a) Selection sort (b) Quick sort (c) Merge sort

Lab 2 :

   2. Programs to implement the following searching methods

        (a) Linear search (b) Binary search.

   3. A Program to Implement hash table and its operations.(Note: Use at least one

   collision resolution technique)

Lab 3 :

   4. A Program to implement addition of two polynomials. (using arrays).

   5. A Program to implement single linked list and its operations. (create, insert,

   delete, display)

Lab 4 :

   6. A Program to implement double linked list and its operations

Lab 5 :

      7. A Program to implement stack operations using arrays

      10. A Program to implement circular queue using arrays.

Lab 6 :

      8. A Program to convert infix expression to postfix expression.

Lab 7 :

      9. A Program to implement queue operations using single linked list

Lab 8 :

      11. A Program to implement Binary search Tree and its operations.

Lab 9 :

      12. A Program to implement AVL trees and its operations.

Lab 10 :

      13. A Program to implement Heap sort.

Lab 11 :

      14. A Program to implement graph traversal algorithms (BFS & DFS).

Lab 12 :

      15. A Program to implement minimum spanning tree algorithms (Prims &Krushkal)

Lab 13 :

      16. A Program to implement single source shortest path algorithm.

Text Books:

1. Data Structures, algorithms and applications in C++, SartajSahni, Universities
   press, Second Edition
2. Fundamentals of Data Structures in C++, Ellis Horowitz, SartajSahni and
   Dinesh Mehta, 2nd Edition, Universities Press (India) Pvt. Ltd

Reference Books:

1. An Introduction to Data Structures with Application, Jean-Paul Tremblay ,
   Paul Sorenson, Second Edition
2. Fundamentals of Data Structures and algorithms by C V Sastry, Rakesh Nayak,
   Ch. Raja Ramesh, IK Publications, new Delhi.
3. Data structures using C and C++, Langsam, Augenstein and Tanenbaum, PHI.
4. Problem solving with C++, The OOP, Fourth edition, W.Savitch, Pearson education.

OBJECT ORIENTED PROGRAMMING FOR PROBLEM SOLVING-LAB

Academic Year: 2020-21   **Programme: B.Tech**
Year/ Semester: III sem   **Section: -**
Name of the Course: OBJECT ORIENTED PROGRAMMING FOR PROBLEM SOLVING-Lab
     Course Code: V18CSL03

Course Outcomes (Along with Knowledge Level):
After completion of this course, students will be able to:

CO1: Develop Programs on Classes and Objects.   **[K3**]
CO2: Demonstrate Constructors and Destructors.   **[K3]**
CO3: Demonstrate Operator-Overloading.   **[K3]**
CO4: Implement Inheritance and Polymorphism.   **[K3]**
CO5: Develop programs to handle Exceptions & Files.   **[K3]**
CO6: Illustrate Generic Programming.   **[K3]**

Syllabus

1. Programs illustrating Various Control Structures.

2. Programs illustrating the use of following concepts.
    a. Default Arguments
    b. Constant Arguments
    c. Reference Arguments

3. Programs illustrating the use of following concepts:
     a. Classes & Objects   b. Inline functions
     c. Static Member functions d. Overloading of Member Functions

4.   Programs illustrating the use of following concepts.
     a. Objects as Function Arguments b. Friend Functions , Friend class
     c. Local class   d. Empty Class & Nested Classes

5. Programs illustrating the use of following concepts.
   a. Default constructor   b. Constructor with arguments
   c. Copy constructor   d. this

6.   Programs to illustrate the Overloading of various operators.
     a. Binary b. Unary   c. new   d. delete

7. Programs illustrating the various forms of Inheritance.
   a. Single b. Multilevel c. Hierarchical d.Hybrid

8. Program illustrating the use of Virtual Functions & Virtual Base class.

9. Programs illustrating how Exceptions are handled.
   a. Division-by-zero b. Overflow in an array

10. Programs illustrating File handling operations:
    a) Copying text files   b) Displaying the contents of the file

11. Programs illustrating Class template and Overloading Function Template.

12. Programs illustrating Sequential Containers & Associative Containers.

Professional Communication Skills - I

Academic Year: 2020-21   **Programme: B.Tech**
Year/ Semester: III sem   **Section: -**
Name of the Course: Professional Communication Skills - I   **Course Code: V18ENT03**

Course Outcomes (Along with Knowledge Level):

After completion of this course, students will be able to:

CO1: Summarize one's introduction in an appropriate manner, exhibit grammatical competence through correction of sentences, analyze noun and pronoun dispositions, assess the importance of inter and intra personal skills at work place. [K5]

CO2: Distinguish singular and plural in different contexts and display knowledge through accurate usage of sentences, build conversations which befit the situations, think innovatively to solve problems analytically in a methodical way and realize one's dormant abilities. [K4]

CO3: Classify various kinds of adjectives and adverbs, learn natural occurrence of paired words of native speakers, discover goal setting strategies and frame SMART goals, defend opinions through discussions. [K4]

CO4: Correlate and reinforce essential skills (grammar, vocabulary, pronunciation, and writing) through reading comprehension, appraise the use of figurative language in texts, make use of idioms while narrating personal experiences, employ appropriate body language in face to face communication. [K4]

CO5: Develop pre-reading strategies to improve comprehension skills,   identify the implied meaning of idioms and plan and prepare oral presentations. [K6]

CO6: Infer the referential and inferential aspects of the passages, use different kinds of idioms, develop a perspective on life to handle stress on academic and non-academic domains. [K4]

Reference:

1. Essential English Grammar   -   Raymond Murphy

2. Advanced English Grammar   –   D.S. Paul

3. Word Power Made Easy   –   Norman Lewis

4. English collocations in use   -   Michael McCarthy

5. Word Power Made Handy   -   Shalini Varma

6. Barron's GRE   -   Barron's

7. Current English Grammar & Usage – R.P Sinha

Targeted Proficiency Level and Targeted level of Attainment (for each Course Outcome):

Course Outcome	Targeted Proficiency Level (% of Marks)	Targeted level of Attainment (% Students)
1	50	60
2	50	60
3	50	60
4	50	60
5	50	60
6	50	60

CO 1

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Dissemination of CO s and Introduction of the course to the students along with model papers.		1	Lecture	BB/Handouts
2	CO 1	To identify people speaking slowly with some repetition and share very basic personal information through Self - Introductions.	K1	1	Discussion	A.V
3		Can analyze sentence errors of nouns and pronouns	K4	2	Lecture	BB/ workbook
4		Perceive the intended meaning of passages	K5	2	individual	workbook
5		Make use of idioms and phrases in day to day communication.	K3	1	Lecture	BB/ workbook.

CO 2

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Can analyse concord in a sentence	K4	2	Lecture	BB/workbook
2	CO 2	Build conversations that befit the situations	K3	1	Team work	blackboard
3		Perceive the intended meaning of passages	K5	2	individual	workbook
4		Construct conversations using idioms and phrases	K3	1	Lecture	BB/ workbook.

CO 3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Can identify adjective and adverb errors in sentences	K3	2	Lecture	BB/workbook
2	CO 3	Select natural combination of words to express accurately expressions.	K3	2	Pair work	workbook
3		Perceive the intended meaning of passages	K5	1	individual	workbook
4		Take part in activities using the knowledge bank of idioms and phrases.	K3	1	Lecture	BB/ workbook.

CO 4

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Dissemination of CO s and Introduction of the course to the students along with model papers.	K2	1	Lecture	BB/Handouts
2	CO 4	Outline the skills needed to work with an organization in today's context.	K2	1	Discussion	BB
3		Build Inter and Intra personal skills to deal with people in all the contexts (Organizational and Social)	K3	1	Discussion	AV
4		Identify various Gestures and Postures to study the inner view of people.	K3	1	Lecture & Discussion	AV

CO 5

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Able to find various techniques of Presenting a topic of interest.	K1	1	Lecture	AV/PPT
2	CO 5	Able to interpret the way of designing a poster.	K2	1	Discussion	BB
3		Demonstrate a Presentation/Poster on their area of interest.	K2	1	Individual	AV/PPT
4		Find ways to set Goals – Short, Medium and Long term.	K1	1	Lecture	PPT.

CO 6

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Compare the difference between Divergent and Convergent Thinking.	K2	1	Lecture	BB/workbook
2	CO 6	Solve exercises on Creativity	K3	1	Pair work	Exercise Sheets
3		Recall various elements of Stress.	K1	1	Lecture	PPT
4		Interpret how to manage stress.	K2	1	Lecture	PPT

Total No. of Classes: 30

Technical Skills - II

Academic Year: 2020-21   **Programme: B.Tech**
Year/ Semester: III sem   **Section: -**
Name of the Course: Technical Skills-II   **Course Code: V18CST60**

Course Outcomes (Along with Knowledge Level):
After completion of this course, students will be able to:

CO	Course Outcomes	Knowledge Level
1	Build programs using Variables and Operators.(K3)	K3
2	Identify and resolve compilation errors for conditional statements.(K3)	K3
3	Develop problems using looping constructs..	K3
4	Model the problems using functions	K3
5	Develop problems using Arrays	K3
6	Make use of Strings to solve the given problem	K3

TEXT BOOKS:
1. Let us C: Yesvanth Kanetkar, BPB Publications, 16th Edition
2. Working With C, Yashavant P. Kanetkar, BPB Publications
3. Test Your C Skills, Yashavant P. Kanetkar, BPB Publications

Targeted Proficiency and Attainment Levels (for each course Outcome):

Cos		CO1	CO2	CO3	CO4	CO5	CO6
Targeted Proficiency Level		60	60	60	60	60	60
Targeted level of Attainment	Level 3	60	60	60	60	60	60
	Level 2	50	50	50	50	50	50
	Level 1	40	40	40	40	40	40

Lecture Plan:

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours required	Pedagogy	Teaching aids
1	CO 1	Dissemination of Department Vision, Mission, PEOs, POs, PSOs	-	1	Discussion	
		Illustrate Problem solving Techniques	K3	1	Lecture With Discussion	ICT
2		Demonstrate IO statements	K3	2	Lecture With Discussion	ICT
		Demonstrate operators	K3	2	Lecture With Discussion	ICT
		Demonstrate Expressions	K3	2	Lecture With Discussion	ICT

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S.No	Course Outcome	Intended Learning Outcomes(ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Demonstrate operator hierarchy	K3	1	Lecture with Discussion	ICT
2		Demonstrate Control Structures	K3	2	Lecture with Discussion	ICT
3		Illustrate problems using if statement	K3	2	Lecture with Discussion	ICT
4		Demonstrate switch statement	K3	2	Lecture with Discussion	ICT
5		Develop problems using conditional statements	K3	3	Lecture with Discussion	ICT

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S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Illustrate problems using for loop	K3	2	Lecture with Discussion	ICT
2		Illustrate problems using while loop	K3	2	Lecture with Discussion	ICT
3		Illustrate problems using do-while loop	K3	2	Lecture with Discussion	ICT
4		Develop problems using loops	K3	4	Lecture with Discussion	ICT

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S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Demonstrate Functions	K3	2	Lecture with Discussion	ICT
2		Develop programs using functions	K4	8	Lecture with Discussion	ICT

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S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Demonstrate Arrays	K3	2	Lecture with Discussion	ICT
2		Develop programs using single and multidimentional arrays	K3	8	Lecture with Discussion	ICT

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S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 6	Demonstrate Strings	K3	2	Lecture with Discussion	ICT
2		Illustrate Problems solving using Strings	K3	8	Lecture with Discussion	ICT

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Total No. of Classes: 58