

# **SRI VASAVI ENGINEERING COLLEGE (Autonomous)**

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

**A.Y: 2020-21**

## **IV SEM CST Handbook**

**(V18 Regulation)**



**Department of Computer Science and Technology**

Pedatadepalli, Tadepalligudem-534101, A.P

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**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**

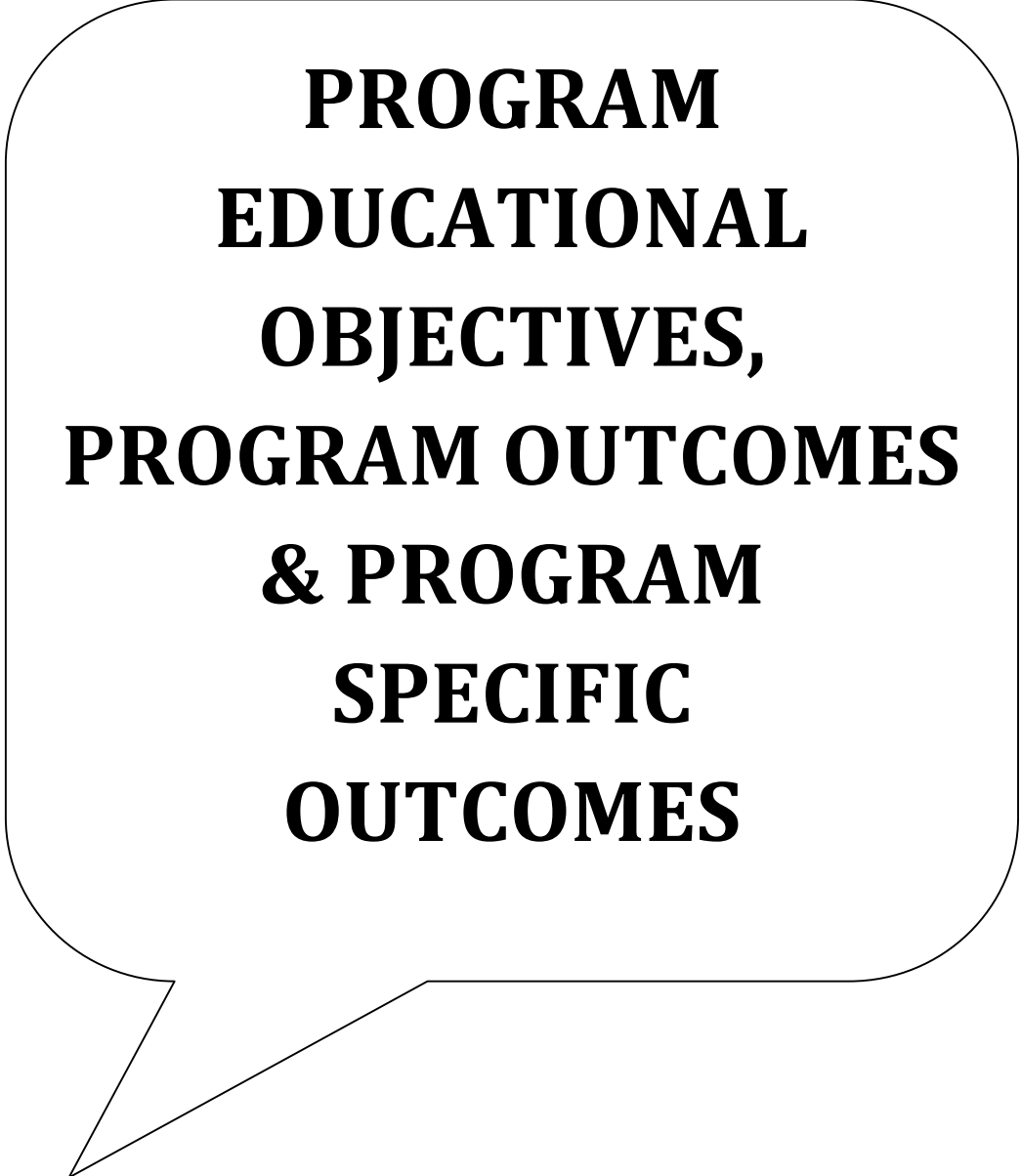
# DEPARTMENT VISION AND MISSION

## **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]

# ACADEMIC CALENDAR

✉ : [principal@sriwasaviengg.ac.in](mailto:principal@sriwasaviengg.ac.in)  
[svec.a9@gmail.com](mailto:svec.a9@gmail.com)



☎ : 08818- 284344, 355

## **SRI VASAVI ENGINEERING COLLEGE (AUTONOMOUS)**

(Sponsored by Sri Vasavi Educational Society)  
(Approved by AICTE, New Delhi & Permanently affiliated to JNTUK, Kakinada)  
(Accredited by NAAC with 'A' Grade, Recognized by UGC under section 2(f) & 12(B))  
(NBA Accreditation to B.Tech., EEE,CSE, ME and ECE Branches for 3 Years )  
Pedatadepalli, **TADEPALLIGUDEM** – 534 101. W.G.Dist. (A.P)

Principal's Office  
Date: 25-03-2021

### **Academic Calendar for B.Tech IV & VI Semesters** **Academic Year 2020-21**

<b>B.Tech IV &amp; VI Semesters</b>			
Description	From	To	Weeks
Commencement of Class Work	12.04.2021		
I Unit of Instructions	12.04.2021	29.05.2021	7 W
I Mid Examinations	24.05.2021	29.05.2021	1 W
II Unit of Instructions	31.05.2021	17.07.2021	7 W
II Mid Examinations	12.07.2021	17.07.2021	1 W
Comprehensive Examinations	19.07.2021	24.07.2021	1 W
Preparation & Practicals	26.07.2021	31.07.2021	1 W
End Examinations	02.08.2021	14.08.2021	2 W
Commencement of Next Semester Class Work	16.08.2021		

PRINCIPAL

Copy to : ALL

#### **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.



# SRI VASAVI ENGINEERING COLLEGE (Autonomous)

Pedatadepalli, TADEPALLIGUDEM-534 101, W.G. Dist.

Department Of Computer Science & Technology

## CLASS CONSOLIDATED TIME TABLE



Class: IV Semester

Section : CST

Class Coordinator : Mr. Ch Hemanandh

w.e.f. 21.03.2022

Room No : B-203

Periods	1	2	3	4	1:00PM 2:00PM	5	6	7
Time Day	(09.30 AM- 10.30 AM)	(10.30 AM- 11.20 AM)	(11.20 AM- 12.10 PM)	(12.10 PM- 01.00 PM)		(02.00 PM- 02.50 PM)	(02.50 PM- 03.40 PM)	(03.40 PM- 04.30 PM)
Mon	SE	DAA	SE	P&S	<b>LUNCH BREAK</b>	DAA	DBMS	SPORTS
Tue	P&S	JAVA	JAVA	DBMS		JAVA LAB		
Wed	DBMS	DAA	DBMS	SE		P&S	PCS-II (Verbal)	
Thu	DAA	SE	P&S	LIBRARY		PCS-II (Aptitude)		DBMS
Fri	JAVA	SE	DAA	P&S		DBMS LAB		
Sat	DBMS	STAT-R LAB				JAVA	JAVA	STAT-R

### Staff Details:

S. No.	Course Code	Course Name	CST
1.	V20CST06	Design and Analysis of Algorithms	Mr.P Uma Sankar
2.	V20CST07	Software Engineering	Mr. Ch Hemanandh
3.	V20CST08	Database Management Systems	Mr. CH Raja Ramesh
4.	V20CST09	Java Programming	Mrs. A Leelavathi
5.	V20MAT04	Probability and Statistics	Dr.N N V.Sakunthala
6.	V20CSL06	Statistical Visualization using R Lab	Dr.G.Loshma / Mrs. D Anjani Suputhri Devi
7.	V20CSL07	Database Management Systems Lab	Mr. CH Raja Ramesh / Mr. Ch Hemanandh
8.	V20CSL08	Java Programming Lab	Mrs.A.Leelavathi / Mr. B Kiran Kumar
9.	V20ENT03	Professional Communication Skills –II (Aptitude)	Mr.P.Someswara Rao
		Professional Communication Skills –II (Verbal)	Dr.T.Sujani & Mr.M. Venkata Ramana

**NOTE:** Part of Curriculum you have to study **Skill Oriented Course-II (V20SOC02)** also, It will be conducted any 1 week during the semester.

### Lab Venues:

S.No.	Name of the Lab Course	Lab Venue
1	Statistical Visualization using R Lab ( <b>Stat R LAB</b> )	Linus Torvalds Lab
2	Database Management Systems Lab ( <b>DBMS LAB</b> )	Linus Torvalds Lab
3	Java Programming Lab ( <b>JP Lab</b> )	E F CODD Lab

Head of the Department

# **COURSE STRUCTURE**

## **IV-Semester**

<b>IV - Semester</b>							
<b>S.No</b>	<b>Course Code</b>		<b>Course</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
1	V18CST05	PCC	Computer Organization	3	0	0	3
2	V18CST06	PCC	Software Engineering	3	0	0	3
3	V18CST07	PCC	Formal Languages and Automata Theory	3	0	0	3
4	V18CST08	PCC	Java Programming	3	0	0	3
	V18CST09	PCC	Python Programming	3	0	0	3
5	V18MBET51	HSS	Managerial Economics and Financial Analysis	3	0	0	3
6	V18CSL04	PCC	Java Programming Lab	0	0	3	1.5
7	V18CSL05	PCC	Python Programming Lab	0	0	3	1.5
8	V18ENT11		Constitution of India	2	0	0	MNC
9	V18ENT04		Professional Communication Skills – II	3	0	0	MNC
10	V18CST61		<b>Technical Skills -II</b>	4	0	0	MNC
<b>Total</b>				<b>27</b>	<b>0</b>	<b>6</b>	<b>21</b>

**Total Contact Hours: 33**



**LESSON  
PLANS**

# COMPUTER ORGANIZATION

Academic Year : 2020-21

Semester : IV

Name of the Course: COMPUTER ORGANIZATION

Programme: B.Tech

Sections :-

Course Code: V18CST05

## COURSE OUTCOMES (Along with Knowledge Level):

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

S.No.	CO No.	Course Outcome	BTL
1.	CO1	Illustrate Basic structure of Computers, Instruction types and their addressing modes	K2
2.	CO2	Describe the different modes of Input / Output transfer.	K2
3.	CO3	Illustrate different types of Memory.	K2
4.	CO4	Describe the different types of Control Unit techniques	K2
5.	CO5	Illustrate the Fixed point and Floating point arithmetic operations of ALU.	K2
6.	CO6	Explain the concept of Pipelining.	K2

## **TEXT BOOKS:**

1. Computer Organization, Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 5th Edition, McGraw Hill Education.
2. Computer System Architecture, M. Morris Mano, 3rd Edition, Pearson Education.

## **REFERENCE BOOKS:**

1. Computer Organization and Architecture, William Stallings, 10th Edition, Pearson Education.
2. Computer Architecture and Organization, John P. Hayes, 3rd Edition, McGraw Hill Education.

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	65	65	65	65	65	65
	Level 2	55	55	55	55	55	55
	Level 1	45	45	45	45	45	45

Lecture Plan:

**CO1**

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,CO'S and syllabus.		1	Lecture	BB
2		Describe various Functional units of a computer	K1	1	Lecture	BB
3		Illustrate the Basic Operational concepts	K2	2	Lecture with Discussion	BB/ICT
4		Discuss the Bus structures of computers.	K2	1	Lecture with Discussion	BB/ICT
5		Explain the instructions and instruction sequencing.	K2	1	Lecture with Discussion	BB/ICT
6		Illustrate the various addressing modes of instructions.	K2	2	Lecture with Discussion	BB/ICT
7		Discuss the basic input/output operation of computers.	K2	1	Lecture with Discussion	BB/ICT

**CO 2**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	<b>Input/Output Organization</b>				
2		Describe the Accessing of I/O Devices.	K1	1	Lecture	BB/ICT
3		Describe the interrupt of I/O Devices.	K2	2	Lecture with Discussion	BB/ICT
4		Discuss the Direct Memory Access	K2	1	Lecture with Discussion	BB/ICT
5		Explain the DMA Controller.	K2	1	Lecture with Discussion	BB/ICT
6		Describe the DMA Transfer.	K2	1	Lecture with Discussion	BB/ICT
7		Explain the Buses and its types.	K2	2	Lecture with Discussion	BB/ICT

**CO 3**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Memory Organization:				
2		Describe the memory hierarchy	K1	1	Lecture	BB/ICT
3		Explain the main memory RAM and ROM chips.	K2	1	Lecture with Discussion	BB/ICT
4		Illustrate the memory address map	K2	1	Lecture with Discussion.	BB/ICT
5		Discuss the memory connection to CPU.	K2	1	Lecture with Discussion	BB/ICT
		Illustrate the auxiliary memory used in computer.	K2	1	Lecture with Discussion	BB/ICT
		Illustrate the Associative memory.	K2	1	Lecture with Discussion	BB/ICT
		Explain the hardware organization of associative memory.	K2	1	Lecture with Discussion	BB/ICT
		Explain the read and write operation of associative memory.	K2	1	Lecture with Discussion	BB/ICT
		Illustrate the cache memory organization of computer	K2	1	Lecture with Discussion	BB/ICT
		Explain the mapping function of cache organization.	K2	2	Lecture with Discussion	BB/ICT

**CO 4**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Processing Unit:				
2		Describe the Fundamental Concepts in execution of instruction.	K1	1	Lecture	BB/ICT
4		Describe the Execution of instruction involves register transfer.	K2	1	Lecture with Discussion	BB/ICT
6		Explain the process of performing an Arithmetic and	K2	1	Lecture with Discussion	BB/ICT



		Logic operation				
		Discuss the process of fetching and storing a word from and to memory.	K2	1	Lecture with Discussion	BB/ICT
		Discuss the execution of complete instruction.	K2	1	Lecture with Discussion	BB/ICT
7		Explain the multiple bus organization.	K2	1	Lecture with Discussion	BB/ICT
8		Describe the hardwired control signals	K2	1	Lecture with Discussion	BB/ICT
		Describe the microprogrammed control signals.	K2	1	Lecture with Discussion	BB/ICT
		Discuss the microinstructions in microprogrammed control unit.	K2	1	Lecture with Discussion	BB/ICT
		Discuss the microprogram sequencing.	K2	1	Lecture with Discussion	BB/ICT

#### CO 5

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		<b>Memory Systems</b>				
2		Describe the representation of data for arithmetic instruction.	K1	1	Lecture	BB/ICT
3		Explain the addition and subtraction of signed magnitude data with hardware implementation and hardware algorithm.	K2	1	Lecture with discussion	BB/ICT
4		Explain the addition and subtraction of signed 2's complement data	K2	1	Lecture with Discussion	BB/ICT
5		Explain the multiplication of signed magnitude data with hardware implementation and hardware algorithm.	K2	1	Lecture with discussion	BB/ICT
6		Explain the booth multiplication algorithm.	K2	1	Lecture with discussion	BB/ICT
		Explain the array multiplier.	K2	1	Lecture with Discussion	BB/ICT
	CO5	Explain the division of signed magnitude data with hardware implementation and hardware algorithm.	K2	1	Lecture with Discussion	BB/ICT
		Discuss the divide overflow.	K2	1	Lecture with Discussion	BB/ICT

	Illustrate the floating point arithmetic operations.	K2	1	Lecture with Discussion	BB/ICT
	Explain the addition and subtraction of floating point data.	K2	1	Lecture with Discussion	BB/ICT
	Explain the multiplication and division of floating point data.	K2	1	Lecture with Discussion	BB/ICT

### CO 6

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 6	<b>Processing Unit &amp; Micro programmed Control</b>				
2		Describe the basic concepts of pipelining.	K1	1	Lecture	BB/ICT
		Discuss the role of cache memory	K2	1	Lecture with Discussion	BB/ICT
4		Explain the pipe line performance	K2	2	Lecture with Discussion	BB/ICT
5		Discuss the data hazards.	K2	1	Lecture with Discussion	BB/ICT
6		Discuss the operand forwarding in data hazards.	K2	1	Lecture with Discussion	BB+ICT
		Discuss the handling of data hazards in software and its side effects.	K2	1	Lecture with Discussion	BB/ICT
		Discuss the instruction hazards.	K2	1	Lecture with Discussion	BB/ICT
		Discuss the unconditional branches in instruction hazards.	K2	1	Lecture with Discussion	BB/ICT
		Discuss the conditional branches and branch predication in instruction hazards.	K2	1	Lecture with Discussion	BB/ICT
		Explain the datapath and control considerations in pipelined execution.	K2	1	Lecture with Discussion	BB/ICT

**Total No. of Classes: 60**

# SOFTWARE ENGINEERING

**Academic Year:** 2020-21

**Programme:** B.Tech

**Year/ Semester:** IV Sem

**Section:** -

**Name of the Course:** Software Engineering

**Course Code:** : V18CST06

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

CO	Course Outcomes	Knowledge Level
1	Demonstrate Software Process Models.	K3
2	Illustrate Requirement Engineering Process.	K3
3	Discuss Software architecture and Design.	K2
4	Apply Coding principles and Testing techniques.	K3
5	Discuss Software Estimation and Maintenance.	K2
6	Describe Quality Management and Metrics.	K2

**Text Books:**

T1. Software Engineering, A practitioner's Approach- Roger S.Pressman, 7th Edition,

McGrawHill International Edition

T2. Software Engineering, 9/e, Sommerville, Pearson.

T3. Software Engineering, A Precise approach, PankajJalote, Wiley

**REFERENCES**

R1. CMMI and Six Sigma: Partners in Process Improvement, Jeannine M. Sivy, M. Lynn Penn, Robert W. Stoddard, 1st edition, Addison Wesley.

R2. Software Engineering principles and practice, W S Jawadekar, 3rdEdition, TMH.

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

Cos		CO1	CO2	CO3	CO4	CO5	CO6
Targeted Proficiency Level		65	65	65	60	60	60
Targeted level of Attainment	Level 3	65	65	65	60	60	60
	Level 2	55	55	55	50	50	50
	Level 1	45	45	45	40	40	40

**Lecture Plan:**

**Unit-I**

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 1	Dissemination of Department Vision, Mission, PEOs, POs, PSOs, COs	-	1	Lecture	BB+ICT
2		Defining Software, Software application Domains	K1	1	Lecture	BB
3		Describe Legacy software. Software engineering,	K1	2	Lecture	BB
4		Describe the software process,	K1	1	Lecture	BB
5		Describe software Myths.	K1	1	Lecture	BB
6		Demonstrate Waterfall model, Prototyping	K3	2	Lecture with Discussion and in class Assignment	BB
7		Demonstrate Iterative development,	K3	1	Lecture with Discussion and in class Assignment	BB
8		Demonstrate Unified process	K3	1	Lecture with Discussion and in class Assignment	BB
9		Demonstrate Extreme programming and agile process	K3	1	Lecture with Discussion and in class Assignment	BB
10		Explain Merits and Demerits of Software Process Models.	K2	1	Lecture with Discussion	BB
<b>Total Hours</b>				<b>12 Hours</b>		

**Unit-II**

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Illustrate Functional and non-functional requirements	K3	2	Lecture with Discussion and in class Assignment	BB
2		Illustrate User requirements, System requirements	K3	1	Lecture with Discussion and in class Assignment	BB
3		Explain Interface specification	K2	1	Lecture with Discussion	BB
4		Explain the Software requirements document	K2	1	Lecture with Discussion	BB
5		Explain Feasibility studies	K2	1	Lecture with Discussion	BB
6		Explain Requirements elicitation and analysis	K2	1	Lecture with Discussion	BB
7		Explain Requirements validation	K2	1	Lecture with Discussion	BB
8		Explain Requirements management	K2	1	Lecture with Discussion	BB
<b>Total Hours</b>				<b>9 Hours</b>		

**Unit-III**

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Explain Role of software architecture, Architecture views	K2	1	Lecture with Discussion	BB
2		Describe components and connector view	K1	1	Lecture	BB
3		Explain architecture styles for C & C view	K2	2	Lecture with Discussion	BB
4		Explain documenting architecture design	K2	1	Lecture with	BB

					Discussion	
5		Explain Evaluating architectures.	K2	1	Lecture with Discussion	BB
6		Explain Design concepts	K2	2	Lecture with Discussion	BB+ICT
7		Explain Function-oriented design	K2	1	Lecture with Discussion	BB+ICT
8		Explain Object oriented design	K2	2	Lecture with Discussion	BB+ICT
9		Describe Detailed design.	K1	1	Lecture	BB
<b>Total Hours</b>				<b>12 Hours</b>		

#### Unit-IV

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Demonstrate Programming principles and guidelines	K3	1	Lecture with Discussion and in class Assignment	BB
2		Explain incrementally developing code, managing evolving code	K2	2	Lecture with Discussion	BB
3		Explain Testing concepts	K2	1	Lecture with Discussion	BB
4		Explain testing process	K2	1	Lecture with Discussion	BB
5		Demonstrate Black- box testing,	K3	1	Lecture with Discussion and in class Assignment	BB
6		Demonstrate White-box testing.	K3	1	Lecture with Discussion and in class Assignment	BB+ICT
7		Differentiate Reactive vs. Proactive Risk strategies	K2	1	Lecture with Discussion	BB

8		Describe Software risks, Risk identification	K2	1	Lecture with Discussion	BB
9		Explain Risk projection, Risk refinement	K2	1	Lecture with Discussion	BB
10		Explain RMMM Plan.	K2	1	Lecture with Discussion	BB
<b>Total Hours</b>				<b>11 Hours</b>		

#### Unit-V

S #	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Explain Decomposition techniques	K2	1	Lecture with Discussion	BB
2		Describe Empirical Estimation Models.	K1	2	Lecture	BB
3		Discuss Software Maintenance: Maintenance Process	K2	1	Lecture with Discussion	BB
4		Explain Reverse Engineering	K2	1	Lecture with Discussion	BB
5		Explain Reengineering	K2	1	Lecture with Discussion	BB
6		Explain Configuration Management	K2	1	Lecture with Discussion	BB
<b>Total Hours</b>				<b>7 Hours</b>		

**Unit-VI**

<b>S#</b>	<b>Course Outcome</b>	<b>Intended Learning Outcomes (ILO)</b>	<b>Knowledge Level of ILO</b>	<b>No. of Hours</b>	<b>Pedagogy</b>	<b>Teaching aids</b>
1	CO 6	Describe Software Measurement and Metrics for software quality.	K2	1	Lecture with Discussion	BB
2		Explain Quality concepts, Software quality assurance	K2	1	Lecture with Discussion	BB
3		Distinguish Software Reviews and Formal technical reviews,	K2	2	Lecture with Discussion	BB
4		Explain Statistical Software Quality Assurance and Software reliability	K2	2	Lecture with Discussion	BB
5		Explain SEI-CMM Model,	K2	1	Lecture with Discussion	BB+ICT
6		Explain Six Sigma	K2	1	Lecture with Discussion	BB+ICT
7		Explain ISO 9000 quality standards.	K2	1	Lecture with Discussion	BB+ICT
<b>Total Hours</b>				<b>9 Hours</b>		

**Total No. of Classes: 60**



# **FORMAL LANGUAGES AND AUTOMATA THEORY**

Academic Year: 2020-21

Programme: B.Tech

Year/ Semester: IV Semester

Section: -

Name of the Course: FLAT

Course Code: V18CST07

## **COURSE OUTCOMES (Along with Knowledge Level):**

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

- CO1. Construct DFA, NFA and  $\epsilon$ -NFA. (K3).
- CO2. Produce Regular expressions, Regular Grammars. (K3)
- CO3. Construct Context Free Grammars, Context Free Languages. (K3).
- CO4. Construct Pushdown Automata and its equivalence with CFG. (K3).
- CO5. Construct Turing machine. (K3).
- CO6. Discuss Decidability Theory. (K2).

### **TEXT BOOKS:**

1. Introduction to Automata Theory, Languages and Computation, J.E.Hopcroft, R. Motwani And J.D.Ullman, 3rd Edition, Pearson, 2008
2. Theory of Computer Science-Automata, Languages and Computation, K.L.P.Mishra and N.Chandrasekharan, 3rd Edition, PHI, 2007.

### **REFERENCE BOOKS:**

1. Formal Language and Automata Theory, K.V.N.Sunitha and N.Kalyani, Pearson, 2015.
2. Introduction to Automata Theory, Formal Languages and Computation, ShyamalenduKandar, Pearson,2013.
3. Theory of Computation, V.Kulkarni, Oxford University Press, 2013.
4. Theory of Automata, Languages and Computation, Rajendra Kumar, McGraw Hill, 2014.

**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

**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 & PEO`s Define Automata Theory?	K1	1	LECTURE	ICT
2		Examine the Central Concepts of Automata Theory	K1	1	LECTURE	ICT
3		State Automation, and Finite Automation	K1	1	LECTURE	ICT
4		Describe about Transition Systems	K2	1	LECTURE	ICT
5		Compute the acceptance of a String by a Finite Automation	K3	1	LECTURE	ICT
6		Construct DFAs, DFA problems	K3	3	LECTURE	ICT
7		Construct NFA,NFA problems	K3	1	LECTURE	ICT
8		Illustrate the equivalence of DFA and NFA	K3	1	LECTURE	ICT
9		Compute the conversion of NFA into DFA	K3	1	LECTURE	ICT
10		Compute finite Automata with E-Transition	K3	1	LECTURE	ICT
11		Discover the minimization of Finite Automata	K3	1	LECTURE	ICT
12		Explain about Mealy and Moore Machines	K2	2	Discussion	ICT
13		Describe the Applications and Limitation of Finite Automata	K1	1	LECTURE	ICT
		<b>TOTAL</b>		<b>16</b>		

**CO 2**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Describe Regular Expressions	K1	1	LECTURE	ICT
2		Outline Regular Sets, Identity Rules	K1	1	LECTURE	ICT
3		Illustrate the Equivalence of two Regular Expressions	K3	1	LECTURE	ICT
4		Describe Finite Automata, and Regular Expressions	K2	1	Discussion	ICT
5		Illustrate the Equivalence between Finite Automata and Regular Expressions	K3	2	Discussion	ICT
6		Describe Pumping Lemma, Closers/ Properties	K2	1	LECTURE	ICT
7		Describe the Applications of Regular Expressions and , Finite Automata and Regular Grammars	K2	1	LECTURE	ICT
8		Describe the Regular Expressions and Regular Grammars	K2	1	LECTURE	ICT
		<b>TOTAL</b>		<b>9</b>		

**CO 3**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Define Formal Languages, Grammars	K1	1	LECTURE	ICT
2		Classify the Grammars, Chomsky Hierarchy Theorem	K2	1	LECTURE	ICT
3		Describe Context Free Grammar, Examples	K2	1	LECTURE	ICT
4		Illustrate the Leftmost and the Rightmost Derivations, Parse Trees with examples	K3	1	Discussion with Lecture	ICT
5		Explain about the Ambiguous Grammars	K2	1	LECTURE	ICT
6		Determine the Simplification of Context Free Grammars- Elimination of Useless Symbols, E-Productions and Unit Productions with examples	K3	2	Discussion	ICT
7		Illustrate the Normal Forms for Context Free Grammars- Chomsky Normal Form and Greibach Normal Form	K3	2	ICT	ICT
8		Explain about Pumping Lemma, Closure Properties	K2	1	LECTURE	ICT

9		Describe the Applications of Context Free Grammars	K1	1	LECTURE	ICT
		<b>TOTAL</b>		<b>11</b>		

**CO 4**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Define Pushdown Automata and, Model	K1	1	LECTURE	ICT
2		Describe the Graphical Notation, Instantaneous Language Acceptance of pushdown Automata	K2	1	LECTURE	ICT
3		Construct the Pushdown Automata	K3	2	Lecture with Discussion	ICT
4		Illustrate deterministic and Non – Deterministic Pushdown Automata	K2	1	LECTURE	ICT
5		Compute the Equivalence of Pushdown Automata and Context Free Grammars Conversion	K3	1	Discussion	ICT
6		Construct Two Stack Pushdown Automata, Describe the Applications of Pushdown Automata	K3	2	LECTURE	ICT
		<b>TOTAL</b>		<b>8</b>		

**CO 5**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Define Turing Machine	K1	1	LECTURE	ICT
2		Define the Model, Representation of Turing Machines-Instantaneous Descriptions	K1	1	LECTURE	ICT
3		Explain the Transition Tables and Transition Diagrams with examples	K2	2	LECTURE	ICT
4		Explain the Language of a Turing Machine	K2	1	LECTURE	ICT
5		Estimate the Language of a Turing Machine examples	K3	1	LECTURE	ICT
6		Construct a Turing Machines and, Techniques for Turing Machine	K3	2	LECTURE	ICT
7		Discuss the Types of Turing	K2	1	LECTURE	ICT

		Machines				
8		Describe the Church's Thesis, Universal Turing Machine, Explain the Restricted Turing Machine	K2	1	LECTURE	ICT
		<b>TOTAL</b>		<b>10</b>		

**CO 6**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 6	Describe about the Decidable and Un-decidable Problems	K1	1	LECTURE	ICT
2		Describe the Halting Problem of Turing Machines	K2	1	LECTURE	ICT
3		Review the Post's Correspondence Problem	K2	1	LECTURE	ICT
4		Describe the Modified Post's Correspondence Problem	K2	1	LECTURE	ICT
5		Classify the Classes of P and NP	K2	1	LECTURE	ICT
6		Classify the NP-Hard and NP-Complete Problems	K2	1	LECTURE	ICT
		<b>TOTAL</b>			<b>6</b>	

**Total No. of Classes: 60**

# **JAVA PROGRAMMING**

Academic Year: 2020-21

Programme: B.Tech

Year/ Semester: IV Semester

Section: -

Name of the Course: Java Programming

Course Code: V18CST08/C214

## **COURSE OUTCOMES (Along with Knowledge Level):**

**After successful completion of the Course, the student will be able to:**

**C214.1:** Describe Java Virtual Machine and Type casting. [K2]

**C214.2:** Demonstrate Concepts like Constructors, Arrays, Nested Classes and Command Line Arguments. [K3]

**C214.3:** Implement concepts of Inheritance and Exception Handling. [K3]

**C214.4:** Develop programs on Multi-Threading and Files. [K3]

**C214.5:** Demonstrate Applet Programming and AWT Components. [K3]

**C214.6:** Demonstrate Event Handling and Swings. [K3]

### **Text Books:**

1. Java Programming, E.Balagurusamy, 4th Edition, TMH.
2. The complete Reference Java, 8<sup>th</sup> Edition, Herbert Schildt, TMH.
3. Introduction to java programming, Y Daniel Liang, 7<sup>th</sup> Edition, Pearson.

### **Reference books:**

1. Core Java: An Integrated Approach, R Nageswara Rao, 7th Edition, DreamTech
2. Head First Java, Kathy Sierra and Bert Bates, 2nd Edition O'reilly

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

<b>Course Outcome</b>	<b>Targeted Proficiency Level (% of Marks)</b>	<b>Targeted level of Attainment (% Students)</b>
C214.1	65	65
C214.2	65	65
C214.3	65	65
C214.4	60	60
C214.5	60	60
C214.6	60	60

## LESSON PLAN

### CO 1

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO1	Recall the Need of Object Oriented Programming and the Principles of Object Oriented Languages	K1	1	Lecture+ Discussion	BB
2		Explain different applications of OOP	K2	1	Lecture+ Discussion	BB
3		Describe the history of Java	K2	1	Lecture	BB
4		Discuss about different features of java	K2	1	Lecture	BB
5		Explain about Java Virtual Machine	K2	1	Lecture	BB
6		Discuss about Java Program Structure	K2	1	Lecture	BB
7		Discuss about Variables, Primitive Datatypes and Identifiers	K2	1	Lecture	BB
8		Discuss about constants, Operators and Expressions	K2	2	Lecture	BB
9		Discuss Precedence Rules and Associativity	K2	1	Lecture	BB
10		Illustrate Primitive Type conversion and casting with an example	K2	1	Lecture	BB
11		Discuss briefly about control structures	K2	1	Lecture	BB
<b>Total Hours</b>				<b>12</b>		

### CO 2

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO2	Explain about classes and objects	K2	2	Lecture+ Discussion	BB
2		Discuss about methods	K2	1	Lecture	BB
3		Describe Constructors and Constructor Overloading	K2	2	Lecture+ Discussion	BB
4		Illustrate the use of this keyword with examples	K2	1	Lecture	ICT
5		Discuss about the importance of Static keyword	K2	1	Lecture	BB
6		Explain about different types of Arrays	K2	2	Lecture	BB
7		Interpret Command line arguments	K3	1	Lecture+ Discussion	ICT

8		Demonstrate Nested Classes	K3	1	Lecture	BB
<b>Total Hours</b>				<b>11</b>		

### CO 3

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO3	Explain about different types of Inheritance	K2	1	Lecture	BB
2		Illustrate the use of super keyword and final keyword	K2	1	Lecture	BB
3		Explain the concept of Method Overriding	K2	1	Lecture	BB
4		Explain about Abstract class	K2	1	Lecture	BB
5		Explain about interface	K2	1	Lecture	BB
6		Illustrate the procedure of creating packages and using packages	K2	1	Lecture	ICT
7		Explain the importance of CLASSPATH	K2	1	Lecture	ICT
8		Describe different types of Exceptions and procedure of Exception Handling	K2	3	Lecture	BB
9		Construct programs using Exception handling techniques like try...catch and finally block	K3	3	Lecture+ Discussion	BB
10		Interpret throw and throws statements with examples	K3	1	Lecture	BB
<b>Total Hours</b>				<b>14</b>		



**CO 4**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO4	Discuss about thread lifecycle	K3	1	Lecture	BB
2		Interpret Thread Priorities and Thread Synchronization with examples	K3	2	Lecture	ICT
3		Illustrate Communication between threads with example program	K3	1	Lecture	ICT
4		Illustrate various file operations like Reading data from and writing data to files	K3	3	Lecture	BB
5		Demonstrate Random Access Files	K3	1	Lecture	BB
<b>Total Hours</b>				<b>8</b>		

**CO 5**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Explain about applet class	K2	1	Lecture	BB
2		Discuss about Applet Lifecycle	K2	1	Lecture	BB
		Discuss about AWT ,Components and Containers of AWT	K2	1	Lecture+ Discussion	ICT
		Illustrate various AWT Controls like Button,label,Checkbox, RadioButton,List box, Menu and Scrollbar with example programs	K3	4	Lecture+ Discussion	ICT
		Interpret different types of layout managers with examples	K3	2	Lecture+ Discussion	ICT
<b>Total Hours</b>				<b>9</b>		

**CO 6**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 6	Describe Event Delegation Model	K3	1	Lecture	ICT
2		Illustrate Source of Events and Event Listeners	K3	3	Lecture+ Discussion	ICT
2		Illustrate Adapter classes and inner classes with example programs	K3	2	Lecture	ICT
3		Intoduction to Swings	K3	2	Lecture+ Discussion	ICT
<b>Total Hours</b>				<b>8</b>		

**Total No. of hours: 62**

# PYTHON PROGRAMMING

**Academic Year:** 2020-21

**Programme:** B.Tech

**Year/ Semester:** IV Semester

**Section:** -

**Name of the Course:** Python Programming

**Course Code:** : V18CST09 /C215

**Course Outcomes (Along with Knowledge Level):**

After Completing the course Student will be able to:

S.No	Course Outcomes	Knowledge Level
CO1	Illustrate the basic concepts of python programming	K2
CO2	Describe the control structures of python.	K2
CO3	Demonstrate functions and packages.	K3
CO4	Construct python programs using structured data types	K3
CO5	Compare Text Files and Binary Files.	K4
CO6	Apply OOPs concepts to Develop Test cases.	K3

## TEXT BOOKS

1. "Python Programming using problem solving Approach" Reema Thareja, Oxford University Press – 2017.

2. Python with Machine Learning by A.Krishna Mohan, Karunakar & T.Murali Mohan by S. Chand Publisher-2018. **Reference Books:**

1. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd edition, Updated for Python 3, Shroff /O'Reilly Publishers, 2016 .

2. Guido van Rossum and Fred L. Drake Jr, An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.

3. John V Guttag, "Introduction to Computation and Programming Using Python", Revised and expanded Edition, MIT Press , 2013

4. Robert Sedgewick, Kevin Wayne, Robert Dondero, "Introduction to Programming in Python:

## Targeted Proficiency and attainment Levels (for each Course Outcome):

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

### Lecture Plan:

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO1	Discuss Blooms Taxonomy	K2	1	LECTURE	ICT+BB
2		Explain History of Python, Discuss Features of python				
3		Describe Future of Python installation and execution Show Running Python Scripts	K2	1	LECTURE	ICT+BB
4		Explain Data types, Explain Variables	K2	1	LECTURE	ICT+BB
5		Assignment, Keywords, Input-Output,	K2	1	LECTURE	ICT+BB
6		Indentation, Explain type conversions	K2	1	LECTURE with Discussion	ICT+BB
7		Discuss Literal constants, Numbers, Strings	K2	1	LECTURE with Discussion	ICT+BB
8		Explain Operators and expressions	K2	1	LECTURE	ICT+BB
9		Operator precedence and expression evaluation	K2	1	LECTURE	ICT+BB
			<b>TOTAL</b>		<b>8</b>	

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO2	Discuss with decision control statements if alternative if-else	K2	1	LECTURE	ICT+BB
2		Discuss chained conditional (if-elif-else):	K2	2	Discussion	ICT+BB
3		Discuss with Control Structures: While loop	K2	1	Discussion	ICT+BB
4		Explain for loop	K2	1	Discussion	ICT+BB
5		Explain nested for loop	K2	2	Discussion	ICT+BB
6		Discuss with range function	K2	1	Discussion with Lecture	ICT+BB
7		Discuss with break	K2	3	Discussion with Lecture	ICT+BB
8		Discuss with continue	K2	1	Discussion with Lecture	ICT+BB

9		Discuss with pass statements	K2	1	Discussion with Lecture	ICT+BB
		<b>TOTAL</b>		<b>13</b>		ICT+BB

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO3	Explain Functions	K2	1	LECTURE	ICT+BB
2		Discuss with Function declaration and Definition	K2	1	LECTURE	ICT+BB
3		Explain Function Call	K2	2	LECTURE	ICT+BB
4		Discuss with variable Scope and Lifetime	K2	1	Lecture	ICT+BB
5		Explain the return statement	K2	1	LECTURE	ICT+BB
6		Explain Lambda functions	K2	1	Discussion	ICT+BB
7		Explain Anonymous functions	K2	1	ICT	ICT+BB
8		Discuss Documentation strings	K2	1	Lecture	ICT+BB
9		Demonstrate with Modules	K3	2	Lecture	ICT+BB
10		Demonstrate with Packages	K3	1	Lecture	ICT+BB
11		Practice Exercises	K3	1	Lecture	ICT+BB
		<b>TOTAL</b>		<b>13</b>		

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO4	Defining Lists	K1	1	LECTURE	ICT+BB
2		Discuss List operations	K2	1	Lecture with Discussion	ICT+BB
3		Discuss List slices	K2	1	Lecture with Discussion	ICT+BB
4		Explain List methods	K2	1	LECTURE	ICT+BB
5		Demonstrate cloning lists	K3	1	Discussion	ICT+BB
6		Discuss list parameters	K2	2	Discussion	ICT+BB

7		Discuss with Tuples	K2	1	LECTURE	ICT+BB
8		Explain tuple assignment and tuple as return value	K2	1	LECTURE	ICT+BB
9		Discuss with set creation and set operations	K2	1	LECTURE	ICT+BB
10		Explain Dictionaries creation and operations	K2	1	LECTURE	ICT+BB
11		Demonstrate comprehension, operations on strings	K3	2	LECTURE	ICT+BB
		<b>TOTAL</b>		<b>13</b>		

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO5	Define File	K1	1	LECTURE	ICT+BB
2		Define Types of files	K1	1	LECTURE	ICT+BB
3		Explain File handling	K2	2	LECTURE	ICT+BB
4		Explain Text Files reading and writing	K2	1	LECTURE	ICT+BB
5		Discuss Error and Exceptions introduction	K2	1	Discussion	ICT+BB
6		Discover Difference between an error and Exception, Handling Exception	K3	1	LECTURE	ICT+BB
7		Explain try except block, Raising Exceptions	K2	2	LECTURE	ICT+BB
		<b>TOTAL</b>		<b>9</b>		

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO6	Define OOPs concepts	K1	1	LECTURE	ICT+BB
2		Explain classes	K2	1	LECTURE	ICT+BB
3		Explain Methods	K2	2	LECTURE	ICT+BB
4		Demonstrate Constructor	K3	2	LECTURE	ICT+BB
5		Discuss with inheritance	K2	2	LECTURE	ICT+BB
6		Discuss Overriding methods	K2	1	LECTURE	ICT+BB
7		Discuss Data hiding	K2	1	LECTURE with Discussion	ICT+BB
8		Explain GUI programming with Tkinter	K2	1	LECTURE	ICT+BB
			<b>Total</b>		<b>11</b>	

**Total Number of Hours= 67**

# **Managerial Economics and Financial Analysis**

Academic Year: 2020-21

Programme: B.Tech

Semester : IV Semester

Section: -

Name of the Course: MEFA

Course Code: V18MBT51

## **Course Outcomes (Along with Knowledge Level):**

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

CO1.Understand the basic concepts of managerial Economics, Demand and Elasticity of demand and Methods of Demand Forecasting. (K2)

CO2. Estimate the Production function with one, two and infinite variables .Understand various cost concepts and calculating Break Even point (K2)

CO3.Understand and showing a price output determination in different types of market structures and knowing various pricing methods (K2)

CO4.Understanding various forms of business organizations (K2)

CO5.Prepare the financial statements and its analysis (K3)

CO6. Appraise the projects by using various capital budgeting methods (K4)

## **TEXT BOOKS:**

1. Aryasri: Managerial Economics and Financial Analysis, 2/e, TMH, 2005.2.
2. Varshney & Maheswari: Managerial Economics, Sultan Chand,2003.
3. S A Siddhiqui &AS Siddhiqui, Managerial Economics and Financial Analysis, New Age international publishers2013.

## **REFERENCE BOOKS:**

1. **Dr.B.Kuberudu and Dr.T.V.Ramana:** Managerial Economics and Financial Analysis Himalaya Publishing House, 2014.
2. V.Maheswari: Managerial Economics, Sultan chand.2014.



3. Suma Damodaran: Managerial Economics, Oxford, 2011.

4. S.A.Siddiqui: Managerial Economics Financial Analysis, New Age International Publishers, 2012.

**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

**CO 1**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
	CO 1 <b>K2</b>	<b>UNIT-Introduction to managerial economics</b>				
1		Define managerial economics	K1	1	LECTURE	ICT
2		Describe ME with other disciplines	K1	1	LECTURE	ICT
3		Explain Nature and scope of managerial economics	K2	1	LECTURE	ICT
4		Define Demand	K1	1	LECTURE	ICT
5		Describe law of demand	K2	3	LECTURE	ICT
6		Explain Elasticity of demand	K2	1	LECTURE	ICT
7		Find the of elasticity of demand	K2	1	LECTURE	ICT
8		Explain Demand forecasting, methods.	K2	1	LECTURE	ICT
		<b>TOTAL</b>			<b>9</b>	

**CO 2**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
	<b>CO 2</b> <b>K2</b>	<b>UNIT-II: Production analysis and cost analysis</b>				
1		State Production function	K1	1	LECTURE	ICT
2		State Isocost	K1	1	LECTURE	ICT
3		State Iso quants	K1	1	Discussion	ICT
4		Explain Cob-Douglas production function	K2	2	Discussion	ICT
5		Describe economies of scale	K2	1	LECTURE	ICT
6		Enumerate various cost concepts	K1	1	LECTURE	ICT
7		Solve break even analysis	K2	1	LECTURE	ICT
		<b>TOTAL</b>		<b>9</b>		

**CO 3**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
	<b>CO 3</b> <b>K2</b>	<b>UNIT-III: market structures</b>				
1		Describe Different types of market structures	K2	2	LECTURE	ICT
2		Explain Price-output determination	K2	2	LECTURE	ICT
3		Explain Pricing methods	K2	3	Discussion with Lecture	ICT
4		Describe Theory of firms	K2	2	LECTURE	ICT
			<b>TOTAL</b>		<b>10</b>	

**CO 4**

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
		<b>UNIT-IV: Types of Business organization and Business Cycles</b>				
1	CO 4 K2	State Features, merits, demerits of Different forms of Organizations	K2	4	LECTURE	ICT
2		Differentiate various forms of business organizations	K2	2	Lecture with Discussion	ICT
3		Sole Trader Business	K2	1	LECTURE	ICT
4		Partnership Business	K2	1	Discussion	ICT
5		Joint Stock Company	K2	1	LECTURE	ICT
6		Public Enterprises and Business Cycles	K2	1	LECTURE	ICT
		<b>TOTAL</b>		<b>10</b>		

**CO 5**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
		<b>Unit-V: Introduction to Accounting and Financing Analysis</b>				
1	CO 5 K3	Introduction to Double entry system	K3	2	LECTURE	ICT
2		Accounting cycle	K3	2	LECTURE	ICT
3		Prepare of financial statements	K3	4	LECTURE	ICT
4		Examine of financial statements by using funds flow	K3	4	LECTURE	ICT
5		Ratio analysis	K3	2	LECTURE	ICT
			<b>TOTAL</b>		<b>14</b>	

**CO 6**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
		<b>UNIT-VI: capital budgeting</b>				
1	CO 6 K4	Define Capital	K4	1	LECTURE	ICT
2		Enumerate types of capital	K4	1	LECTURE	ICT
3		Explain capital budgeting, Process	K4	2	LECTURE	ICT
4		Apply capital budgeting techniques	K4	4	LECTURE	ICT
		<b>TOTAL</b>			<b>8</b>	

**Total No. of Classes: 60**

## Java Programming Lab

Academic Year : 2020-21

Programme: B.Tech

Semester: IV

Branch: CSE

Sections:-

Name of the Course: Java Programming Lab

Course Code: V18CSL04/C217

### **COURSE OUTCOMES:**

Course Outcomes (Along with Knowledge Level):

After completing this course the student able to:

<b>C217.1</b>	Develop Programs to handle on Classes and Objects.	[K3]
<b>C217.2</b>	Demonstrate Constructors and Arrays.	[K3]
<b>C217.3</b>	Demonstrate Inheritance and Exception Handling.	[K3]
<b>C217.4</b>	Implement programs on Multi-Threading.	[K3]
<b>C217.5</b>	Illustrate File Handling Mechanisms.	[K3]
<b>C217.6</b>	Demonstrate GUI Programming using Applets and Swings.	[K3]

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

<b>Course Outcome</b>	<b>Targeted Proficiency Level (% of Marks)</b>	<b>Targeted level of Attainment (% Students)</b>
<b>C217.1</b>	60	65
<b>C217.2</b>	60	65
<b>C217.3</b>	60	65
<b>C217.4</b>	60	60
<b>C217.5</b>	60	60
<b>C217.6</b>	60	65

## LESSON PLAN

### CO 1

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO1	Lab 1: Develop java programs on Control Structures and Type Conversions in java Lab 2: Develop java programs using the following concepts a. classes and objects b. static keyword	K3	6	Lecture & Experiment	ICT
2						

### CO2

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
3	CO2	Lab 2: Develop java programs to implement constructors Lab 3: Develop java programs using the following concepts. a) Arrays b) Nested Classes c) Command Line Arguments	K3	6	Lecture & Experiment	ICT
4						

### CO 3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
5	CO3	Lab 4: Develop java programs using the following concepts. a) Inheritance b) Usage of super c) Method Overriding Lab 5: Develop java programs to implement various concepts like a) Usage of final keyword b) Abstract class c) Interfaces Lab 6: Experiment java programs on a) Packages b) Exception Handling.	K3	9	Lecture & Experiment	ICT
6						
7						

**CO 4**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
8	CO4	Lab 7:Develop java programs to implement multi threading using various concepts like a.Multiple threads acting on single object b.Deadlock c.Thread Communication	<b>K3</b>	3	Lecture, Experiment	BB&ICT

**CO 5**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
9	CO5	Lab 8: Develop java programs to perform reading and writing operations on sequential files and random access files	<b>K3</b>	6	Lecture, Experiment	ICT

**CO 6**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
10	CO6	Lab 9:Develop java Programs to design GUI using Applets & AWT Components.	<b>K3</b>	9	Lecture, Experiment	BB&ICT
11		Lab 10: Develop java Programs to Event Handling using Listener Interfaces.				
12		Lab 11: Develop java Programs to design GUI using Swings.				

**Total no of hours:39**

# Python Programming Lab

Academic Year : 2020-21

Semester: IV

Branch: CSE

Programme: B.Tech

Sections:-

Name of the Course: Python Programming Lab

Course Code: V18CSTL05/C218

## **COURSE OUTCOMES:**

Course Outcomes (Along with Knowledge Level):

S.No	Course Outcomes	Knowledge Level
CO1	Demonstrate Basic Python Programs	K3
CO2	Construct control structures in python	K3
CO3	Demonstrate functions and packages	K3
CO4	Construct python programs using structured data types.	K3
CO5	Demonstrate Text Files and exception handling.	K3
CO6	Test Rock paper Scissors game	K4

## **TEXT BOOKS**

1. "Python Programming using problem solving Approach" Reema Thareja, Oxford University Press – 2017.
2. Python with Machine Learning by A.Krishna Mohan, Karunakar & T.Murali Mohan by S. Chand Publisher-2018.

## **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	65
CO2	60	65
CO3	60	65
CO4	60	60
CO5	60	60
CO6	60	65



## Lecture Plan:

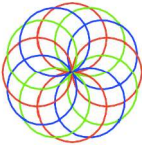
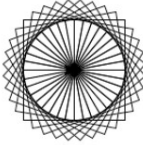
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO1	<p><b>Exercise 1 - Basics</b></p> <p>a) A sample Python Script using command prompt, Python Command Line and IDLE</p> <p>b) A program to purposefully raise an Indentation Error and correct it</p> <p><b>Exercise 2 - Operations</b></p> <p>a) A program to compute distance between two points taking input from the user (Pythagorean Theorem)</p> <p>b) A program on add.py that takes 2 numbers as command line arguments and prints its sum.</p>	K3	3	Lecture & Experiment	BB+ICT

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
2	CO2	<p><b>Exercise - 3 Control Flow</b></p> <p>a) A Program to implement for checking whether the given number is an even number or not.</p> <p>b) A program to construct reverses the digits of a given number and add it to the original, if the sum is not a palindrome repeat this procedure.</p> <p>c) A program using a while loop that asks the user for a number, and prints a countdown from that number to zero.</p> <p><b>Exercise 4 - Control Flow – Continued</b></p> <p>a) A program to construct the following pattern, using a nested for loop.</p> <pre>* ** *** **** ***** **** *** ** *</pre> <p>b) By considering the terms in the Fibonacci sequence whose values do not exceed four million, find the sum of the even-valued terms.</p>	K3	3	Lecture & Experiment	BB+ICT

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
3	CO3	<p><b>Exercise - 5 – Problem Solving using Functions</b></p> <p>a) Find mean, median, mode for the given set of numbers passed as arguments to a function.</p> <p>b) Develop a function nearly equal to test whether two strings are nearly equal. Two strings a and b are nearly equal when a can be generated by a single mutation on b</p> <p>c) Develop a Recursive Function to find the Factorial of a given number.</p> <p>d) Develop function to compute gcd, lcm of two numbers. Each function shouldn't exceed one line.</p> <p><b>Exercise - 8– Modules</b></p> <p>a) Install packages requests, flask and explore them using (pip)</p> <p>b) A program to implement a script that imports requests and fetch content from the page. Eg. (Wiki)</p> <p>c) Develop a simple script that serves a simple HTTPResponse and a simple HTML Page</p>	K3	9	Lecture & Experiment	BB+ICT

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
4	CO4	<p><b>Exercise - 6 Structured Data types</b></p> <p>a) a program to count the number of strings where the string length is 2 or more and the first and last character are same from a given list of strings.</p> <p>b) a program to develop unzip a list of tuples into individual lists and convert them into dictionary.</p> <p><b>Exercise – 7 Structured Data types Continued</b></p> <p>a) A program to count the numbers of characters in the string and store them in a</p>	K3	6	Lecture, Experiment	BB+ICT

		dictionary data structure  b) a program to use split and join methods in the string and trace a birthday with a dictionary data structure.				
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S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
5	CO5	<p><b>Exercise - 9 Files</b></p> <p>a) a program to count frequency of characters in a given file. Can you use character frequency to tell whether the given file is a Python program file, C program file or a text file?</p> <p>b) a program to compute the number of characters, words and lines in a file.</p> <p><b>Exercise - 10 OOP</b></p> <p>a) Class variables and instance variable and illustration of self variable</p> <p>i) Robot</p> <p>ii) ATM Machine</p> <p><b>Exercise - 11 GUI, Graphics</b></p> <p>1. Develop a GUI for an Expression</p> <p>2. A program to implement the following figures using turtle</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>	K3	9	Lecture, Experiment	BB+ICT

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
6	CO6	<p><b>Exercise - 12 - Testing</b></p> <p>a) Develop a test-case to check the even numbers</p> <p>b) Develop a test-case to check the function reverse string which returns reversed string</p> <p><b>Case Study:</b> Implement Rock – paper – Scissors game using tkinter.</p>	K3	3	Lecture, Experiment	BB+ICT

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
		<b>Addon programs</b>	K3	3	Lecture, Experiment	BB+ICT

**Total Number of Hours= 36**

## **CONSTITUTION OF INDIA**

**Academic Year : 2020-21**

**Programme: B.Tech**

**Semester : IV**

**Sections :-**

**Name of the Course: CONSTITUTION OF INDIA**

**Course Code: V18ENT11**

### **COURSE OUTCOMES (Along with Knowledge Level):**

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

CO1: Summarize the evolution and historical importance of the Indian Constitution from 1858 to 1947. [K2]

CO2: Explain various stages in the composition of the Indian Constitution. [K2]

CO3: Develop awareness about their primary rights and duties & build up their civic sense. [K3]

CO4: Explain the distribution of powers between the center and states. (K2)

CO5: Summarize and sketch the specific roles of heads of Nation and the functioning of legislative bodies. (K2)

CO6: Explain the role of local self-government in strengthening democracy. (K1)

**Text Books/ Reference Books suggested:**

1. D D Basu-Introduction to the Constitution of India – 18<sup>th</sup> Edition. Prentice – Hall of India Private Ltd-New Delhi-1998
2. Granville Austin (1972) the Indian Constitution, Cornerstone of a Nation, Oxford university Press, New Delhi
3. Madhavkhosla (2012) the Indian Constitution, Oxford University Press, New Delhi
4. Granville Austin (1999) Working a Democratic Constitution; A History of the Indian Experience, Oxford University Press, New Delhi
5. Zoya Hasan, Sridharan E and Sudharshan R (Eds) 2002 India's living Constitution, Permanent black, New Delhi
6. Baxi Upendra (1980) the Indian Supreme Court and Politics, Eastern Book Co, Lucknow.

Targeted Proficiency Level (For each course Outcome):

<b>Course Outcome</b>	<b>Targeted Proficiency Level (% of Marks)</b>
CO1	60
CO2	60
CO3	60
CO4	60
CO5	60
CO6	60

Targeted level of Attainment (for each Course Outcome):

<b>Course Outcome</b>	<b>Targeted level of Attainment (% Students)</b>
CO1	65
CO2	60
CO3	60
CO4	60
CO5	60
CO6	65

### LESSON PLAN

#### CO1

Sl. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 1	Discuss CO's and syllabus of the course & Historical Perspective of the Indian Constitution	K2	1	Lecture	BB
2		Explain Regulating Act of 1773, Pitt's India Act of 1784, & Charter Acts of 1833, 1853	K2	1	Lecture	BB
3		Explain Government of India Act of 1858, & Indian Councils Act of 1861, 1892, 1909	K2	1	Lecture with Discussion	BB
4		Explain Government of India Act of 1919, Simon Commission, & Communal Award	K2	1	Lecture	BB + ICT
5		Discuss the Government of India Act of 1935	K2	1	Lecture with Discussion	BB + ICT
6		Explain the Indian Independence Act of 1947	K2	1	Lecture with Discussion	BB

06

#### CO2

Sl. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Explain the Preparation of the Indian Constitution by Constituent Assembly of India	K2	1	Lecture	BB
2		Discuss the Preamble or Philosophy of the Indian Constitution	K2	2	Lecture with Discussion	BB
3		Discuss the Salient Features of the Indian Constitution	K2	2	Lecture with Discussion	BB + ICT

05

**CO3**

Sl. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Explain the Fundamental Rights - Their Importance and Limitations	K3	2	Lecture	BB + ICT
2		Discuss the Fundamental Duties and their Importance	K3	1	Lecture with Discussion	BB
3		Discuss the Directive Principles of the State Policy and their Implementation	K3	2	Lecture	BB + ICT

05

**CO4**

Sl. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Explain about Indian Federalism	K2	1	Lecture	BB
2		Discuss the Distribution of powers between Union and State Governments	K2	2	Lecture with Discussion	BB + ICT
3		Explain Legislative, Executive and Financial relations between Union and State Governments	K2	2	Lecture with Discussion	BB + ICT

05

**CO5**

Sl. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Explain the Parliamentary form of Government in India	K2	1	Lecture	BB
2		Discuss the Union Executive - a) President of India- Powers and functions	K2	1	Lecture with Discussion	BB + ICT
3		Discuss the Union Executive - b) Vice-President - Powers and functions, C) Prime Minister and Council of Minister - Powers and functions	K2	1	Lecture with Discussion	BB + ICT
4		Explain the Union Legislature - a) Rajya	K2	1	Lecture	BB + ICT
5		Explain Union Legislature - c) Amending	K2	1	Lecture with Discussion	BB + ICT



6		Explain the Judiciary – Supreme court of India - Powers and Functions	K2	1	Lecture with Discussion	BB + ICT
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06

**CO6**

Sl. No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO6	Explain the Local Self-government in India	K1	1	Lecture	BB + ICT
2		Explain the Local Self-government in India 73 <sup>rd</sup> Constitutional Amendment Act - Rural Areas Panchayati Raj System	K1	2	Lecture with Discussion	BB + ICT
3		Explain the Local Self-government in India 74 <sup>th</sup> Constitutional Amendment Act - Urban Areas Municipalities	K1	2	Lecture with Discussion	BB + ICT

05

**Total No. of Classes: 32**

## Professional Communication Skills - II

S.No	Course Code	Course Name	L	T	P	C
1	V18ENT04	<b>Professional Communication Skills - II</b>	3	-	-	MNC

The students will be able to

CO1: Correlate individual words into one whole sentence using new vocabulary and focus on the error analysis of prepositions and conjunctions. [K4]

CO2: Distinguish and acquire knowledge of using words of same category in a sentence and learn new words that promote communicative finesse. [K5]

CO3: Find errors in sentences where the modifiers are misplaced and put them at the appropriate place, use hit pair words and send an email that is concise and lucid[K5]

CO 4: Interpret the importance of Attire and Etiquette in societal context and manage their time. (K2)

CO5: Discover the team working abilities among themselves and display their leadership qualities. (K3)

CO6: Identify various elements of emotional balance that have positive impact on work-life-balance. (K2)

### **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 - ShaliniVarma
6. Barron's GRE - Barron's
7. Current English Grammar & Usage - R.P Sinha
8. Think & Grow Rich - Napoleon Hill
9. Soft Skills for Everyone - Butterfield, Jeff,
10. Soft Skills - Chauhan, G.S. and Sangeeta Sharma
11. Theories of Personality - Hall, Calvin S

12. Corporate Conversations - Holtz, Shel  
 13. . Communication Skills - Kumar, Sanajy and PushpLata  
 14. Winning at Interviews - Thorpe, Edgar and Showick Thorpe  
 15. Swami Vivekananda and “Personality Development” published by RK Math.

**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	CO 1	Dissemination of CO s and Introduction of the course to the students along with model papers.		1	Lecture	BB/Handout
2		To identify and recognize the words using roots	K1	2	Discussion	A.V
3		Can analyze sentence errors of prepositions and conjunctions	K4	3	Lecture	BB/ Handout
5		Make use of foreign expressions in day to day communication.	K3	1	Lecture	BB/ Handout.

**CO 2**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Can identify mistakes in the usage of sentence structures and learn parallel constructions	K4	2	Lecture	BB/Handout
2		Can use synonymous words to refine their communication	K3	1	Team work	blackboard
3		Perceive the intended meaning of proverbs	K5	2	individual	BB/ handout
4		Can use synonyms and antonyms with ease	K3	1	Lecture	BB/ Hand out

**CO 3**

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Can identify dangling modifiers in a sentence and rectify them	K3	2	Lecture	BB/workbook
2		Use Foreign expressions in conversation	K3	2	Pair work	workbook
3		Can write emails in a professional way	K5	1	individual	workbook
4		Take part in activities using the knowledge bank of idioms and phrases.	K3	1	Lecture	BB/ workbook.

**CO4**

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Able to understand the importance of Attire and Etiqueette	K2	2	Lecture	PPT
2		Can understand various principles and theories of managing Time and plan the activities effectively.	K3	2	Lecture	PPT

**CO5**

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Take part in various Team building activities	K3	2	Role Play	PPT
2		Able to understand Team dynamics and how to build teams	K3	2	Activity	PPT
3		Can understand various leadership styles	K3	1	Lecture	BB
4		Will be able to analyze various personality traits and myths about leadership	K3	2	Lecture	BB.

**CO6**

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 6	Recognize the importance of balancing work and life	K2	2	Lecture	PPT
2		Understand various models of emotional intelligence	K2	2	Lecture	PPT

**Total No. of Classes: 34**

## TECHNICAL SKILLS-II

Academic Year: 2020-21

Programme: B.Tech

Semester: IV

Section: -

Name of the Course: TECHNICAL SKILLS-II

Course Code:V18CST61

### COURSE OUTCOMES (Along with Knowledge Level):

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

**CO1** :Develop programs using Pointers.(K3)

**CO2** :Develop problems using functions.(K3)

**CO3** : Solve problems using recursions.(K3)

**CO4** :Construct programs using File Handling.(K3).

**CO5** :Develop programs using Structures and Unions (K3).

**CO6** :Make use of command line arguments and preprocessors to solve the given problems(K3)

### Syllabus

1. Pointers
2. Functions andPointers
3. Recursion
4. FileHandling
5. Structures andUnion
6. Enum, Preprocessors, Command LineArguments

### Text Books:

1. Let us C: YesvanthKanetkar, BPB Publications, 16<sup>th</sup>Edition
  2. Working With C, Yashavant P. Kanetkar, BPBPublications
  3. Test Your C Skills, Yashavant P. Kanetkar, BPBPublications
- UnderstandingPointersinC, YashavantP.Kanetkar, BPBPublications.

### **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.No	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	-	-	-	
		Demonstrate Pointer Types	K3	2	Lecture With Discussion	ICT
2		Illustrate Problem solving using Pointers.	K3	6	Lecture With Discussion	ICT

**08**

S.No	Course Outcome	Intended Learning Outcomes(ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Demonstrate Function Types.	K3	2	Lecture with Discussion	ICT
2		Illustrate Problem solving using Functions	K3	10	Lecture with Discussion	ICT

**12**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Demonstrate Recursion Types	K3	2	Lecture with Discussion	ICT
2		Illustrate Problem solving using Recursion.	K3	6	Lecture with Discussion	ICT

**08**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Demonstrate File Handling Functions	K3	2	Lecture with Discussion	ICT
2		Illustrate Problem solving using File Handling.	K4	10	Lecture with Discussion	ICT

**12**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Demonstrate Structure and union	K3	2	Lecture with Discussion	ICT
2		Illustrate Problem solving using Structure and Union	K3	8	Lecture with Discussion	ICT

**10**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 6	Demonstrate Command line arguments and preprocessor directives	K3	2	Lecture with Discussion	ICT
2		Illustrate Problem solving using command line arguments and preprocessor directives.	K3	8	Lecture with Discussion	ICT

**10**

**Total No. of Classes: 60**