

# LESSON PLAN

Academic Year: 2022-23

Name of the Course: Electrical Drives

Program: UG-B.TECH

Course Code: V20EET19

Section: A&B Year/ Semester: III/VI-SEMESTER

Course Outcomes (Along with Knowledge Level):

Student should be able to

CO1	Understand the fundamentals concept about an electric drive and different electric braking methods	K2
CO2	Operate Converter fed DC motor drives in various quadrants	K4
CO3	Understand the closed loop operation of chopper fed dc motor drives	K2
CO4	Compute the change in speed of three phase induction motor with variable voltage and v/f control	K3
CO5	Illustrate the speed control mechanism of synchronous motors	K3

## TEXT BOOKS SUGGESTED:

- T1. Power Semiconductor Controlled Drives by G. K. Dubey, Prentice Hall, 1989.  
T2. Electric Motor Drives: Modeling, Analysis and Control by R. Krishnan, Prentice Hall, 2001.  
T3. Fundamentals of Electrical Drives by G. K. Dubey, CRC Press, 2002.  
T4. Power Semiconductor Drives, by S.B. Dewan, G.R. Slemon, A. Straughen, Wiley-India Edition

## REFERENCE BOOKS SUGGESTED:

- R1. Control of Electric Drives by W. Leonhard, Springer Science & Business Media, 2001.  
R2. Electric Motors and Drives Fundamentals, Types and Applications, by Austin Hughes and Bill Drury, Newnes.  
R3. Thyristor Control of Electric drives – Vedam Subramanyam Tata McGraw Hill Publications.  
R4. Power Electronic Circuits, Devices and applications by M.H. Rashid, PHI  
R5. Power Electronics handbook by Muhammad H. Rashid, Elsevier.

## TARGETED PROFICIENCY LEVEL (FOR EACH COURSE OUTCOME) AND TARGETED LEVEL OF ATTAINMENT (FOR EACH COURSE OUTCOME):

COs		CO1	CO2	CO3	CO4	CO5	CO6
Targeted Proficiency Level (%)		60	50	60	60	60	50
Targeted level of Attainment	Level 1	40%	40%	40%	40%	40%	40%
	Level 2	50%	45%	50%	50%	50%	45%
	Level 3	60%	50%	60%	60%	60%	50%

S. No.	Course Outcome	Intended Learning Outcomes (ILO)	e-resources link(s)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
<b>UNIT I: Fundamentals of Electric Drives</b>							
1	Understand the fundamentals concept about an electric drive and different electric braking methods (K2)	Electric drive - Fundamental -	<a href="https://freevideolectures.com/course/4117/nptel-fundamentals-electric-drives/4">https://freevideolectures.com/course/4117/nptel-fundamentals-electric-drives/4</a>	K2	2	Lecture & Discussion	Black board
2		Load torque components - Nature and classification of load torques	<a href="https://www.eeeguide.com/classification-of-load-torques/">https://www.eeeguide.com/classification-of-load-torques/</a>	K2	2	Lecture & Discussion	Black board
3		Steady state stability - Load equalization-	<a href="https://freevideolectures.com/course/4117/nptel-fundamentals-electric-drives/4">https://freevideolectures.com/course/4117/nptel-fundamentals-electric-drives/4</a>	K2	1	Lecture & Discussion	Black board & PPT
4		torque equation --Four quadrant operation of drive (hoist control)	<a href="https://www.eeeguide.com/four-quadrant-operation-of-motor-drive/">https://www.eeeguide.com/four-quadrant-operation-of-motor-drive/</a>	K2	2	Lecture & Discussion	Black board & PPT
5		Braking methods: Dynamic - Plugging - Regenerative methods.	<a href="https://www.elprocus.com/what-is-dynamic-braking-working-its-applications/#:~:text=Basically%2C%20there%20are%20three%20types%20of%20braking%20methods,torque%20can%20be%20reversed%20for%20breaking%20the%20motor.">https://www.elprocus.com/what-is-dynamic-braking-working-its-applications/#:~:text=Basically%2C%20there%20are%20three%20types%20of%20braking%20methods,torque%20can%20be%20reversed%20for%20breaking%20the%20motor.</a>	K2	3	Lecture & Discussion	Black board & PPT
Number of hours required					10		
<b>UNIT II: Controlled Converter Fed DC Motor Drives</b>							
6	Operate Converter fed DC motor drives in various quadrants (K4)	Single phase half controlled converter fed separately and self-excited DC motor drive	<a href="https://electriceasy.blogspot.com/2016/01/single-phase-semi-and-full-converter.html">https://electriceasy.blogspot.com/2016/01/single-phase-semi-and-full-converter.html</a>	K3	2	Lecture & Discussion	Black board
7		Single phase fully controlled converter fed separately and self-excited DC motor drive	<a href="https://electriceasy.blogspot.com/2016/01/single-phase-semi-and-full-converter.html">https://electriceasy.blogspot.com/2016/01/single-phase-semi-and-full-converter.html</a>	K3	2	Lecture & Discussion	Black board & PPT
8		Three phase fully controlled converter fed separately excited DC motor drive-Output	<a href="https://www.brainkart.com/article/Three-Phase-Fully-Controlled-Converter-Fed-">https://www.brainkart.com/article/Three-Phase-Fully-Controlled-Converter-Fed-</a>	K3	3	Lecture & Discussion	Black board & PPT

		voltage and current waveforms – Speed-torque expressions – Speed-torque characteristics	<u>Separately-Excited-D-C-Motor-Drive 12645/</u>				
9		Principle of operation of dual converters and dual converter fed DC motor drives	<a href="https://www.elprocus.com/dual-converter-working-using-thyristor-application/">https://www.elprocus.com/dual-converter-working-using-thyristor-application/</a>	K3	2	Lecture & Discussion	Black board
10		Numerical problems	<a href="https://www.tutorialspoint.com/power_electronics/power_electronics_dual_converters.htm">https://www.tutorialspoint.com/power_electronics/power_electronics_dual_converters.htm</a>	K3	3	Lecture & Discussion	Black board& PPT
Number of hours required					12		

### UNIT-III: DC-DC Converters Fed DC Motor Drives

Understand the closed loop operation of chopper fed dc motor drives (K2)	11	Single quadrant DC-DC converter fed separately excited and self-excited DC motors – Continuous current operation and Output voltage and current waveforms – Speed-torque expressions Speed-torque characteristics –	<a href="https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators">https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators</a>	K2	2	Lecture & Discussion	Black board& PPT
	12	Two quadrant DC-DC converter fed separately excited and self-excited DC motors – Continuous current operation-Speed-torque characteristics	<a href="https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators">https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators</a>	K2	2	Lecture & Discussion	Black board& PPT
	13	four quadrant DC-DC converter fed separately excited and self-excited DC motors – Continuous current operation Speed-torque characteristics	<a href="https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators">https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators</a>	K2	3	Lecture & Discussion	Black board& PPT
	14	Four quadrant operation – Closed loop operation (qualitative treatment only).	<a href="https://www.tutorialspoint.com/four-quadrant-operation-of-dc-motor-motoring-and-breaking-operation">https://www.tutorialspoint.com/four-quadrant-operation-of-dc-motor-motoring-and-breaking-operation</a>	K2	3	Lecture & Discussion	Black board& PPT
Number of hours required					10		

### UNIT – IV Control of Induction Motor Drives

		voltage and current waveforms – Speed-torque expressions – Speed-torque characteristics	<u>Separately-Excited-D-C-Motor-Drive 12645/</u>				
9		Principle of operation of dual converters and dual converter fed DC motor drives	<a href="https://www.elprocus.com/dual-converter-working-using-thyristor-application/">https://www.elprocus.com/dual-converter-working-using-thyristor-application/</a>	K3	2	Lecture & Discussion	Black board
10		Numerical problems	<a href="https://www.tutorialspoint.com/power_electronics/power_electronics_dual_converters.htm">https://www.tutorialspoint.com/power_electronics/power_electronics_dual_converters.htm</a>	K3	3	Lecture & Discussion	Black board & PPT
<b>Number of hours required</b>					12		

### UNIT-III: DC-DC Converters Fed DC Motor Drives

Understand the closed loop operation of chopper fed dc motor drives (K2)	11	Single quadrant DC-DC converter fed separately excited and self-excited DC motors – Continuous current operation and Output voltage and current waveforms – Speed-torque expressions Speed-torque characteristics –	<a href="https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators">https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators</a>	K2	2	Lecture & Discussion	Black board & PPT
	12	Two quadrant DC-DC converter fed separately excited and self-excited DC motors – Continuous current operation- Speed-torque characteristics	<a href="https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators">https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators</a>	K2	2	Lecture & Discussion	Black board & PPT
	13	four quadrant DC-DC converter fed separately excited and self-excited DC motors – Continuous current operation Speed-torque characteristics	<a href="https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators">https://www.tutorialspoint.com/types-of-dc-generator-separately-excited-and-self-excited-dc-generators</a>	K2	3	Lecture & Discussion	Black board & PPT
	14	Four quadrant operation – Closed loop operation (qualitative treatment only).	<a href="https://www.tutorialspoint.com/four-quadrant-operation-of-dc-motor-motoring-and-breaking-operation">https://www.tutorialspoint.com/four-quadrant-operation-of-dc-motor-motoring-and-breaking-operation</a>	K2	3	Lecture & Discussion	Black board & PPT
<b>Number of hours required</b>					10		

### UNIT – IV Control of Induction Motor Drives

15	Compute the change in speed of three phase induction motor with variable voltage and v/f control (K3)	Stator side control: Stator voltage control using 3-phase AC voltage regulators – Waveforms – Speed torque characteristics	<a href="https://www.slideshare.net/ShivageeRai/speed-control-of-three-phase-induction-motor-using-ac-voltage-regulator-79344640">https://www.slideshare.net/ShivageeRai/speed-control-of-three-phase-induction-motor-using-ac-voltage-regulator-79344640</a>	K2	3	Lecture & Discussion	Black board& PPT
16		Variable Voltage Variable Frequency control of induction motor by PWM voltage source inverter	<a href="https://www.eeeguide.com/variable-frequency-control-of-induction-motor-drive/">https://www.eeeguide.com/variable-frequency-control-of-induction-motor-drive/</a>	K3	2	Lecture & Discussion	Black board& PPT
17		Closed loop v/f control of induction motor drives (qualitative treatment only).	<a href="https://www.brainkart.com/article/V-F-Control--Open-and-Closed-Loop-V-F-Control-12659/">https://www.brainkart.com/article/V-F-Control--Open-and-Closed-Loop-V-F-Control-12659/</a>	K3	3	Lecture & Discussion	Black board& PPT
18		Rotor side control: Static rotor resistance control – Slip power recovery schemes	<a href="https://www.slideshare.net/Preet_patel/rotor-resistance-control-and-slip-power-control-using-chopper">https://www.slideshare.net/Preet_patel/rotor-resistance-control-and-slip-power-control-using-chopper</a>	K3	2	Lecture & Discussion	Black board& PPT
19		Static Scherbius drive – Static Kramer drive – Performance and speed torque characteristics – Advantages–Applications.	<a href="https://circuitglobe.com/static-kramer-drive.html">https://circuitglobe.com/static-kramer-drive.html</a>	K3	3	Lecture & Discussion	Black board& PPT

Number of hours required 13

**UNIT – V Control of Synchronous Motor Drives**

20	Illustrate the speed control mechanism of synchronous motors (K3)	Separate control of synchronous motors	<a href="https://www.etechnophiles.com/speed-control-synchronous-motor/">https://www.etechnophiles.com/speed-control-synchronous-motor/</a>	K2	1	Lecture & Discussion	Black board
21		self-control of synchronous motors	<a href="https://www.brainkart.com/article/Self-Control-Synchronous-Motor-12667/">https://www.brainkart.com/article/Self-Control-Synchronous-Motor-12667/</a>	K3	2	Lecture & Discussion	Black board& PPT
22		Operation of self-controlled synchronous motors by VSI	<a href="https://www.eeeguide.com/self-controlled-synchronous-motor-drive/">https://www.eeeguide.com/self-controlled-synchronous-motor-drive/</a>	K3	2	Lecture & Discussion	Black board& PPT
23		Closed Loop control operation of synchronous motor drives (qualitative treatment only)	<a href="https://1library.net/article/closed-operation-synchronous-">https://1library.net/article/closed-operation-synchronous-</a>	K3	2	Lecture & Discussion	Black board

			<a href="#">diagram-variable-frequency-control-converter.q2nlvw1r</a>				
24		Variable frequency control of synchronous motor drive using -Pulse width modulation	<a href="https://www.eeeguide.com/variable-frequency-control-of-multiple-synchronous-motors/">https://www.eeeguide.com/variable-frequency-control-of-multiple-synchronous-motors/</a>	K3	2	Lecture & Discussion	Black board
Number of hours required					9		
Total hours					54		

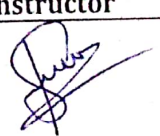
### CO-PO & CO-PSO Mapping:

	PO1(k3)	PO2(k4)	PO3(k5)	PO4(k5)	PO5(k3)	PO6(k3)	PO7 (K3)	PO8 (K3)	PO9 (K2)	PO10 (K5)	PO11(K3)	PO12(K6)	PSO1(k3)	PSO2(k3)
CO1(k2)	3	3	3	3	3	3						3	3	3
CO2(k4)	1	2	3	3	1	1						3	1	1
CO3(k2)	3	3	3	3	3	3						3	3	3
CO4(k3)	2	3	3	3	2	2						3	2	2
CO5(k3)	2	3	3	3	2	2						3	2	2
CO	2.2	2.8	3	3	2.2	2.2						3	2.2	2.2

### Course End Survey Questionnaires:

1. Are you able to understand the concept about an electric drive and electric braking methods? (K2)
2. Are you able to analyze the AC-DC Converter fed DC Motor drives?(K4)
3. Are you able to understand the closed loop operation of DC-DC converter fed DC drive? (K2)
4. Are you able to develop the change in speed of three phase induction motor with variable voltage and v/f control?(K3)
5. Are you able to develop the speed control mechanism for synchronous machine? (K3)

### Details of Course Instructors:

S.No.	Name of Course Instructor with designation	Year/ Section	Contact No. & e-mail:	Signature of Course Instructor
1	Mr. K.Suresh	VI EEE-A & B	9494446968 &suresh.katta@srivasaviengg.ac.in	

Name of the Course Coordinator (with designation): K. SURESH  
Asst. professor

Signature of the Course Coordinator:



# LESSON PLAN

Academic Year: 2022-23

Name of the Course: Electrical Machine Modeling Analysis

Program: UG-B.TECH

Course Code: V18EET34

Section: A&B Year/ Semester: IV/I-SEMESTER

Course Outcomes(Along with Knowledge Level):

Student should be able to

CO1	Analyze Krons primitive machine	K4
CO2	Develop modeling of DC machine	K3
CO3	Explain linear transformation	K4
CO4	Develop mathematical modeling of three phase induction machine	K3
CO5	Design control strategies based on dynamic modeling of three phase synchronous machine	K4
CO6	Analyze BLDC and switched reluctance machine based on mathematical modeling of BLDC and SRM	K4

### TEXT BOOKS SUGGESTED:

- T1. Generalized theory of Electrical Machinery –P.S.Bimbra- Khanna Publishers. 6<sup>th</sup> Edison 2017.  
 T2. Electric Motor Drives - Modeling, Analysis& control -R.Krishnan- Pearson Publications- 1st edition -2002.

### REFERENCE BOOKS SUGGESTED:

- R1. Analysis of Electrical Machinery and Drive systems – P.C.Krause, OlegWasynczuk, Scott D.Sudhoff – Second Edition-IEEE Press 2002.  
 R2. Dynamic simulation of Electric machinery using Matlab / Simulink –Chee MunOng-PHI 1997.  
 R3. Modern Power Electronics and AC Drives-B.K. Bose – PHI 2001.  
 R4. <https://www.youtube.com/watch?v=AECBgmKWvo0&list=PLuv3GM6-gsE0CpSKhU6qRJb98rpCXsk64>

TARGETED PROFICIENCY LEVEL (FOR EACH COURSE OUTCOME) AND TARGETED LEVEL OF ATTAINMENT (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 1	40%	40%	40%	40%	40%	40%
	Level 2	50%	50%	50%	50%	50%	50%
	Level 3	60%	60%	60%	60%	60%	60%



# 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)  
Pedatadepalli, TADEPALLIGUDEM – 534 101. W.G.Dist. (A.P)

## LESSON PLAN

Academic Year: 2022-23

Programme: B. Tech

Semester: VIII

Name of the Course: ELECTRICAL DISTRIBUTION SYSTEMS Course Code: V18EET36

Course Outcomes (Along with Knowledge Level):

S. No.	CO No.	Course Outcome	BTL
1.	CO1	Understand various factors of distribution system	K2
2.	CO2	Construct the distribution substation and feeders	K3
3.	CO3	Calculate the voltage drop and power loss calculations on Distribution system	K3
4.	CO4	Understand the distribution system protection and its coordination	K2
5.	CO5	Understand the effect of compensation for power factor improvement	K2
6.	CO6	Understand the effect of voltage control on distribution system	K2

### Text Books:

1. "Electric power distribution system, Engineering" – by Turan Gonen, CRC press, 2<sup>nd</sup> edition, 2007.
2. Electric power distribution-by A.S.Pabla, Tata McGraw-Hill publishing company, 4<sup>th</sup> edition, 1997.

### Reference Books:

1. Electrical distribution systems by Dale R. Patrick and Stephen W. Fardo, CRC press, 2<sup>nd</sup> edition, 2021.
2. Electrical power distribution systems by V. Kamaraju, 8<sup>th</sup> edition, 2014, Right publishers.
3. <https://nptel.ac.in/courses/108/107/108107112/>.

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	70%	70%	70%	70%	70%	70%
	Level 2	60%	60%	60%	60%	60%	60%
	Level 1	50%	50%	50%	50%	50%	50%



Lecture Plan:

Course Outcome	Intended Learning Outcomes (ILO)	e-resources link(s)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
CO1: Understand various factors of distribution system	Introduction to distribution systems, Load modelling and characteristics	<a href="https://www.youtube.com/watch?v=coaGNy-6rXA">https://www.youtube.com/watch?v=coaGNy-6rXA</a>	K2	3	Lecture with Discussion	Chalk & Board
	Coincidence factor – Contribution factor loss factor	<a href="https://www.youtube.com/watch?v=TWDCwSww504">https://www.youtube.com/watch?v=TWDCwSww504</a>	K1	3	Lecture with Discussion	Chalk & Board
	Relationship between the load factor and loss factor	<a href="https://www.youtube.com/watch?v=j7P_ufwUGEQ">https://www.youtube.com/watch?v=j7P_ufwUGEQ</a>	K2	2	Lecture with Discussion	Chalk & Board
	Classification of loads (Residential, Commercial, Agricultural and Industrial) and their characteristics.	<a href="https://www.youtube.com/watch?v=x4ygf5axvRg">https://www.youtube.com/watch?v=x4ygf5axvRg</a>	K2	1	Lecture with Discussion	Chalk & Board
CO2: Construct the distribution substation and feeders	Location of substations: Rating of distribution substation	<a href="https://www.youtube.com/watch?v=JLL07N5Ysac">https://www.youtube.com/watch?v=JLL07N5Ysac</a>	K3	2	Lecture with Discussion	Chalk & Board
	Service area	<a href="https://www.youtube.com/watch?v=Mm1hkjSj6H0">https://www.youtube.com/watch?v=Mm1hkjSj6H0</a>	K3	1	Lecture with Discussion	Chalk & Board
	With n primary feeders	<a href="https://www.youtube.com/watch?v=6zQR5eCDTka">https://www.youtube.com/watch?v=6zQR5eCDTka</a>	K2	1	Lecture with Discussion	Chalk & Board
	Benefits derived through optimal location of Substations.	<a href="https://www.youtube.com/watch?v=RHsSO_GyE8">https://www.youtube.com/watch?v=RHsSO_GyE8</a>	K3	2	Lecture with Discussion	Chalk & Board
	Design Considerations of distribution feeders: Radial and loop types of primary feeders	<a href="https://www.youtube.com/watch?v=RHsSO_GyE8">https://www.youtube.com/watch?v=RHsSO_GyE8</a>	K3	3	Lecture with Discussion	Chalk & Board
	Design Considerations of distribution feeders: Voltage levels – Feeder loading	<a href="https://www.youtube.com/watch?v=5IYj86Fbi5s">https://www.youtube.com/watch?v=5IYj86Fbi5s</a>	K3	2	Lecture with Discussion	Chalk & Board
	Basic design practice of the secondary distribution system					

C03: Calculate the voltage drop and power loss calculations on Distribution system	Voltage drop and power-loss calculations: Derivation for voltage drop	<a href="https://www.youtube.com/watch?v=T7aW5DmFneI">https://www.youtube.com/watch?v=T7aW5DmFneI</a>	K3	2	Lecture with Discussion	Chalk & Board
	Voltage drop and power-loss calculations: Derivation for power loss in lines	<a href="https://www.youtube.com/watch?v=T7aW5DmFneI">https://www.youtube.com/watch?v=T7aW5DmFneI</a>	K3	3	Lecture with Discussion	Chalk & Board
	Radial feeder uniformly & non-uniformly distributed loads	<a href="https://www.youtube.com/watch?v=T7aW5DmFneI">https://www.youtube.com/watch?v=T7aW5DmFneI</a>	K3	2	Lecture with Discussion	Chalk & Board
C04: Understand the distribution system protection and its coordination	Three Phase balanced primary lines.	<a href="https://www.youtube.com/watch?v=nRzsH0pIXIc">https://www.youtube.com/watch?v=nRzsH0pIXIc</a>	K2	2	Lecture with Discussion	Chalk & Board
	Objectives of distribution system protection	<a href="https://www.youtube.com/watch?v=OMKCrXsLXKs">https://www.youtube.com/watch?v=OMKCrXsLXKs</a>	K2	1	Lecture with Discussion	Chalk & Board
	Types of common faults and procedure for fault calculations	<a href="https://www.youtube.com/watch?v=VG5PoBWleJA">https://www.youtube.com/watch?v=VG5PoBWleJA</a>	K2	3	Lecture with Discussion	Chalk & Board
	Protective devices: Principle of operation of fuses	<a href="https://www.youtube.com/watch?v=H0SeGWdgG7Y">https://www.youtube.com/watch?v=H0SeGWdgG7Y</a>	K2	2	Lecture with Discussion	Chalk & Board
	Circuit reclosures – Line sectionalizers and circuit breakers.	<a href="https://www.youtube.com/watch?v=nFU8ZDxXkbs">https://www.youtube.com/watch?v=nFU8ZDxXkbs</a>	K2	2	Lecture with Discussion	Chalk & Board
	Coordination of protective devices: General coordination procedure	<a href="https://www.youtube.com/watch?v=AhCjzRlEcow">https://www.youtube.com/watch?v=AhCjzRlEcow</a>	K2	2	Lecture with Discussion	Chalk & Board
	Residual current circuit breaker RCCB	<a href="https://www.youtube.com/watch?v=XtyMyFHC3Y0">https://www.youtube.com/watch?v=XtyMyFHC3Y0</a>	K2	1	Lecture with Discussion	Chalk & Board
	Capacitive compensation for power-factor control	<a href="https://www.youtube.com/watch?v=4UBRTt5-7Fs">https://www.youtube.com/watch?v=4UBRTt5-7Fs</a>	K2	1	Lecture with Discussion	Chalk & Board
	Different types of power capacitors – shunt and series capacitors	<a href="https://www.youtube.com/watch?v=1gSH67_ZCQQ">https://www.youtube.com/watch?v=1gSH67_ZCQQ</a>	K2	2	Lecture with Discussion	Chalk & Board
	Effect of shunt capacitors (Fixed and switched)	<a href="https://www.youtube.com/watch?v=1gSH67_ZCQQ">https://www.youtube.com/watch?v=1gSH67_ZCQQ</a>	K2	3	Lecture with Discussion	Chalk & Board
C05: Understand the effect of compensation for power factor improvement	Power factor correction	<a href="https://www.youtube.com/watch?v=4UBRTt5-7Fs">https://www.youtube.com/watch?v=4UBRTt5-7Fs</a>	K2	3	Lecture with Discussion	Chalk & Board


CO6: Understand the effect of voltage	Capacitor allocation	<a href="https://www.youtube.com/watch?v=ST8WYtToFTA">https://www.youtube.com/watch?v=ST8WYtToFTA</a>	K2	2	Lecture with Discussion	Chalk & Board
	Procedure to determine the best capacitor location	<a href="https://www.youtube.com/watch?v=ST8WYtToFTA">https://www.youtube.com/watch?v=ST8WYtToFTA</a>	K2	2	Lecture with Discussion	Chalk & Board
	Voltage Control: Equipment for voltage control	<a href="https://www.youtube.com/watch?v=tSPYLwH7Dd0">https://www.youtube.com/watch?v=tSPYLwH7Dd0</a>	K2	2	Lecture with Discussion	Chalk & Board
	Effect of series capacitors	<a href="https://www.youtube.com/watch?v=1gSH67_ZCQQ">https://www.youtube.com/watch?v=1gSH67_ZCQQ</a>	K2	2	Lecture with Discussion	Chalk & Board
	Effect of AVB/AVR – Line drop compensation.	<a href="https://www.youtube.com/watch?v=HNuU3MT8ieA">https://www.youtube.com/watch?v=HNuU3MT8ieA</a>	K2	3	Lecture with Discussion	Chalk & Board
Total Number of Hours Required			60			

(Signature)

The Assistant Professor/Head of the Dept.  
of Electrical Engineering  
Government Engineering College,  
Kannur, Kerala

Date: \_\_\_\_\_

Details of Course Instructors:

S.No.	Name of Course Instructor with designation	Year/ Sections	Contact No. & e-mail:	Signature of Course Instructor
1	A.UMA SIVA NAGA PRASAD, Assistant professor	IV/A&B	949166941 & Nagaprasad.akavarapu@srivasaviengg ac.in	

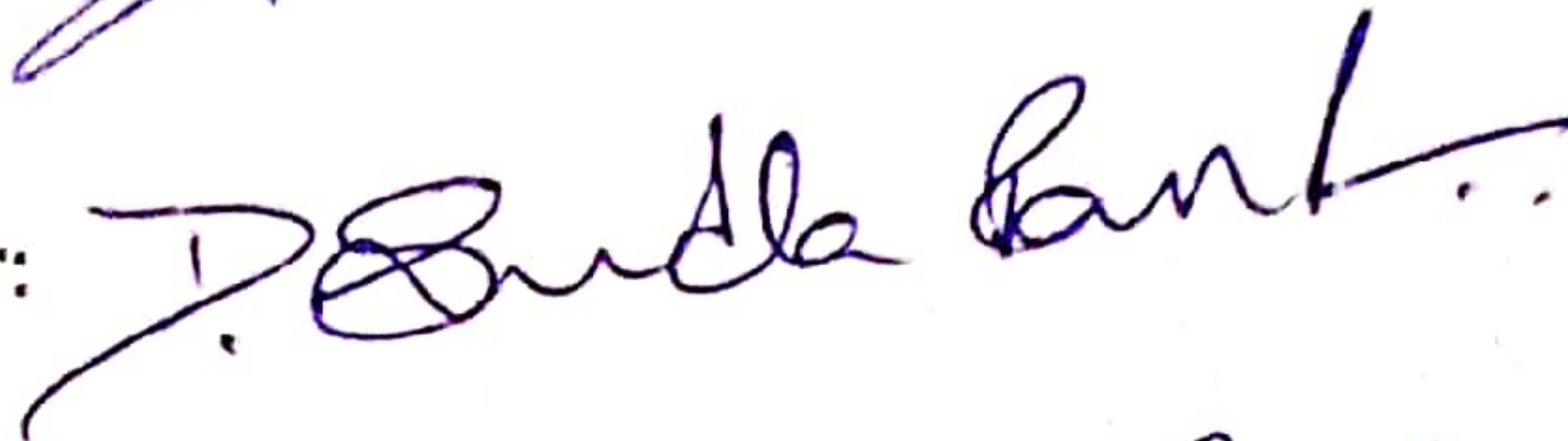
Name of the Course Coordinator (with designation): A.UMA SIVA NAGA PRASAD,

Assistant professor

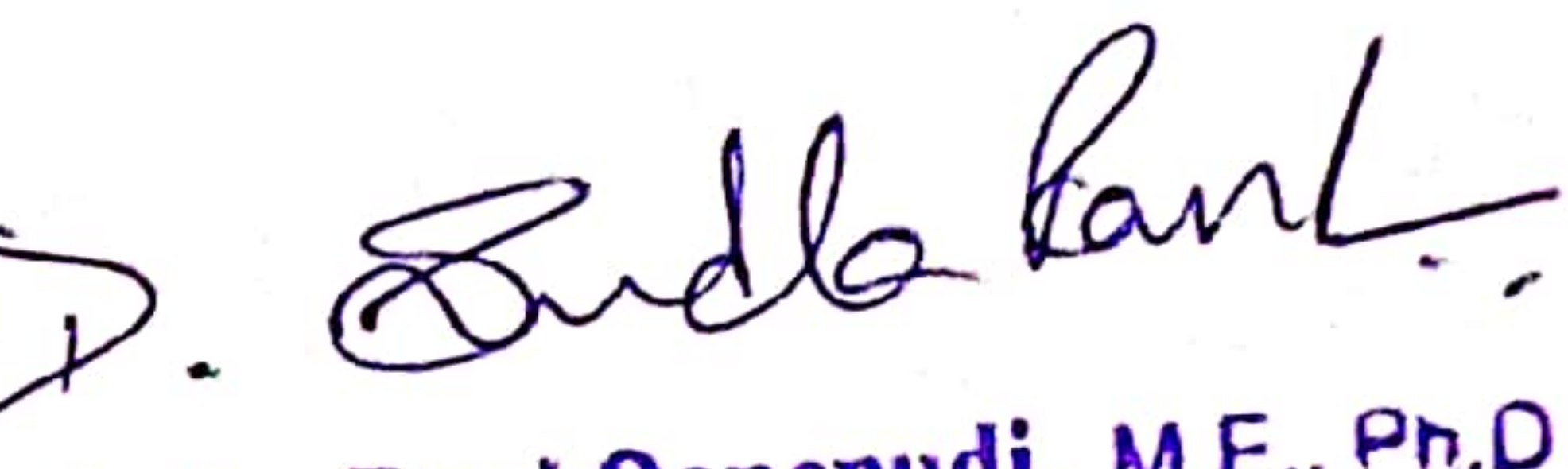
Signature of the Course Coordinator:



Signature of the Module Coordinator:



Signature of the Head of the Department:



**Dr. Sudha Rani Donepudi, M.E., Ph.D**  
Head of the Department  
Electrical & Electronics Engineering  
SRI VASAVI ENGINEERING COLLEGE  
(Autonomous)

## LESSON PLAN

Academic Year: 2022-23

Programme: B.

Tech

Year/ Semester: IV/VIII

Section: A & B

Name of the Course: Automobile Engineering

Course Code: V18MET28

Course Outcomes (Along with Knowledge Level):

CO#	After successful completion of the course, the student will be able to:	Knowledge Level	Proficiency level	Attainment levels		
				1	2	3
CO 1	Understand various components in four-wheel automobile.	K2	50%	40%	50%	60%
CO 2	Differentiate between different types of transmission systems used in automobile.	K4	50%	40%	50%	60%
CO 3	Examine steering geometry and steering systems used in automobile.	K3	50%	40%	50%	60%
CO 4	Interpret suspension, breaking and electrical systems in automobile	K3	50%	40%	50%	60%
CO 5	Understand various safety systems used in automobile	K2	50%	40%	50%	60%
CO 6	Practice engine service for different components in automobile.	K3	50%	40%	50%	60%

Text Books/ Reference Books suggested:

### TEXT BOOKS:

1. Automotive Mechanics – Vol. 1 & Vol. 2 / Kirpal Singh/standard publishers
2. Automobile Engineering / William Crouse/TMH Distributors
3. Automobile Engineering/P.S Gill/S.K. Kataria & Sons/New Delhi.

### REFERENCES:

1. Automotive Engines Theory and Servicing/James D. Halderman and Chase D. Mitchell Jr./ Pearson education inc.
2. Automotive Engineering / K Newton, W.Steeds & TK Garrett/SAE
3. Automotive Mechanics: Principles and Practices/ Joseph Heitner/Van Nostrand Reinhold
4. Automobile Engineering / C Srinivasan / Mc Graw Hill

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hrs Required	Pedagogy	Teaching aids
<b>UNIT 1: INTRODUCTION (13)</b>						
1	CO.1 (K2)	Understand about COs and POs	-	1	Lecture	Offline
2		Components of four-wheeler automobile	K2	1	Lecture	Offline
3		chassis and body and power unit	K2	1	Lecture	Offline
4		power transmission – rear wheel drive, front wheel drive, 4-wheel drive	K2	2	Lecture	Offline
5		types of automobile engines, engine construction	K2	1	Lecture	Offline
6		turbo charging and super charging	K2	1	Lecture	Offline
7		engine lubrication, splash and pressure lubrication systems	K2	2	Lecture	Offline
8		oil filters, oil pumps	K2	1	Lecture	Offline
9		crank case ventilation	K2	1	Lecture	Offline
10		engine service, reboring	K2	1	Lecture	Offline
11		decarbonisation, Nitriding of crank shaft.	K2	1	Lecture	Offline
<b>UNIT 2: TRANSMISSION SYSTEMS (15)</b>						
12	CO.2 (K4)	Introduction to Clutches	K1	1	Lecture	Offline
13		principle, types, cone clutch, single plate clutch, multi plate clutch, magnetic and centrifugal clutches,	K3	3	Lecture	Offline
14		fluid fly wheel	K3	1	Lecture	Offline
15		gear boxes, types, sliding mesh, construct mesh, synchromesh gear boxes, epicyclic gear box, over drive torque converter,	K4	3	Lecture	Offline
16		Propeller Shaft	K4	1	Lecture	Offline
17		Hotch – Kiss drive, Torquetube drive	K4	2	Lecture	Offline
18		universal joint	K4	2	Lecture	Offline
19		differential rear axles –	K4	2	Lecture	Offline

		types – wheels and tyres				
<b>Unit 3: STEERING SYSTEM (9)</b>						
20	CO.3 (K3)	Steering geometry - camber, castor	K2	1	Lecture	Offline
21		king pin rake, combined angle toe in, center point steering	K3	2	Lecture	Offline
22		Types of steering mechanism – Ackerman steering mechanism	K3	1	Lecture	Offline
23		Davis steering mechanism,	K3	1	Lecture	Offline
24		steering gears– types,	K3	2	Lecture	Offline
25		steering linkages.	K3	2	Lecture	Offline
<b>Unit 4: SUSPENSION SYSTEM, BRAKING SYSTEMS &amp; ELECTRICAL SYSTEM (15)</b>						
26	CO.4 (K3)	Introduction to suspension systems	K2	1	Lecture	Offline
27		rigid axle suspension system, torsion bar, shock absorber, Independent suspension system	K3	2	Lecture	Offline
28		Introduction to Braking systems	K2	1	Lecture	Offline
29		Mechanical brake system	K3	1	Lecture	Offline
30		hydraulic brake system	K3	1	Lecture	Offline
31		master cylinder, wheel cylinder tandem master cylinder requirement of brake fluid	K3	2	Lecture	Offline
32		pneumatic and vacuum brakes	K3	1	Lecture	Offline
33		Introduction to Electrical Systems	K2	1	Lecture	Offline
34		Charging circuit	K3	1	Lecture	Offline
35		generator, current – voltage regulator – starting system,	K3	1	Lecture	Offline
36		bendix drive mechanism solenoid switch	K3	1	Lecture	Offline
37		lighting systems, horn, wiper,	K2	1	Lecture	Offline
38		fuel gauge – oil	K2	1	Lecture	Offline

		pressure gauge, engine temperature indicator etc				
<b>Unit 5: ENGINE SPECIFICATION AND SAFETY SYSTEMS (8)</b>						
39	CO.5 (K2)	Introduction	K1	1	Lecture	Offline
40		Engine Specifications – power, speed, torque	K2	1	Lecture	Offline
41		Engine Specifications – no. of cylinders, arrangement, lubrication, cooling	K2	1	Lecture	Offline
42		Introduction to Safety	K2	1	Lecture	Offline
43		safety systems - seat belt, air bags	K2	1	Lecture	Offline
44		bumper, anti-lock brake system (ABS)	K2	1	Lecture	Offline
45		wind shield, suspension sensors	K2	1	Lecture	Offline
46		traction control, mirrors, central locking and electric windows, speed control.	K2	1	Lecture	Offline
<b>Unit 6: ENGINE SERVICE (7)</b>						
47	CO.6 (K3)	Introduction	K2	1	Lecture	Offline
48		service details of engine cylinder head	K3	1	Lecture	Offline
49		valves and valve mechanism	K3	1	Lecture	Offline
50		piston connecting rod assembly	K3	1	Lecture	Offline
51		cylinder block, crank shaft and main bearings	K3	1	Lecture	Offline
52		Engine reassembly	K3	1	Lecture	Offline
53		Precautions	K2	1	Lecture	Offline
<b>Total Periods: 67</b>						



CO- PO & PSO matrix:

Course Outcome	PO 1 (3)	PO 2 (4)	PO 3 (5)	PO 4 (4)	PO 5 (3)	PO 6 (3)	PO 7 (3)	PO 8 (3)	PO 9 (2)	PO 10 (2)	PO 11 (3)	PO 12 (1)	PS O1 (3)	PS O2 (3)
C0.1	1	1	1	1	-	-	-	-	-	2	-	3	1	-
C0.2	1	1	1	1	-	-	-	-	-	2	-	3	1	-
C0.3	1	1	1	1	-	-	-	-	-	2	-	3	1	-
C0.4	1	1	1	1	-	-	-	-	-	2	-	3	1	-
C0.5	1	1	1	1	-	-	-	-	-	2	-	3	1	-
C0.6	1	1	1	1	-	-	-	-	-	2	-	3	1	-
CO	1	1	1	1	-	-	-	-	-	2	-	3	1	-

Name of the Course In-charge: Dr. S.S.R. Kousik

Qualification: PhD

Designation: Assistant Professor

Department: Mechanical Engineering

Signature of the Course In-charge:

Signature of the Course Coordinator:

Signature of the Module Coordinator:

Remarks of the Head of the Department:

## **Detailed Syllabus**

**UNIT – I INTRODUCTION:** Components of four wheeler automobile – chassis and body – power unit – power transmission – rear wheel drive, front wheel drive, 4 wheel drive – types of automobile engines, engine construction, turbo charging and super charging – engine lubrication, splash and pressure lubrication systems, oil filters, oil pumps – crank case ventilation – engine service, reborning, decarbonisation, Nitriding of crank shaft.

**UNIT – II TRANSMISSION SYSTEM:** Clutches, principle, types, cone clutch, single plate clutch, multi plate clutch, magnetic and centrifugal clutches, fluid fly wheel – gear boxes, types, sliding mesh, construct mesh, synchromesh gear boxes, epicyclic gear box, over drive torque converter. propeller shaft – Hotch – Kiss drive, Torquetube drive, universal joint, differential rear axles – types – wheels and tyres.

**UNIT – III STEERING SYSTEM:** Steering geometry – camber, castor, king pin rake, combined angle toein, center point steering. Types of steering mechanism – Ackerman steering mechanism, Davis steering mechanism, steering gears– types, steering linkages.

**UNIT – IV SUSPENSION SYSTEM:** Objects of suspension systems – rigid axle suspension system, torsion bar, shock absorber, Independent suspension system.

**BRAKING SYSTEM:** Mechanical brake system, hydraulic brake system, master cylinder, wheel cylinder tandem master cylinder requirement of brake fluid, pneumatic and vacuum brakes.

**ELECTRICAL SYSTEM:** Charging circuit, generator, current – voltage regulator – starting system, bendix drive mechanism solenoid switch, lighting systems, horn, wiper, fuel gauge – oil pressure gauge, engine temperature indicator etc.

**UNIT – V ENGINE SPECIFICATION AND SAFETY SYSTEMS:** Introduction- engine specifications with regard to power, speed, torque, no. of cylinders and arrangement, lubrication and cooling etc. Safety: Introduction, safety systems - seat belt, air bags, bumper, anti-lock brake system (ABS), wind shield, suspension sensors, traction control, mirrors, central locking and electric windows, speed control.

**UNIT – VI ENGINE SERVICE:** Introduction, service details of engine cylinder head, valves and valve mechanism, piston connecting rod assembly, cylinder block, crank shaft and main bearings, engine reassemblyprecautions

# LESSON PLAN

Academic Year: 2022-23  
 Year/ Semester: V semester (III/I )  
 Name of the Course: Internal Combustion Engines  
 Course Code: V18MEPE1  
 Course Outcomes (Along with Knowledge Level) :

Programme: B. Tech  
 Section: A & B

CO#	After successful completion of the course, the student will be able to:	Knowledge Level	Proficiency level	Attainment levels		
				1	2	3
C304 .1	Understand the affects of various losses that occur in the actual engine operation and the working principles of I.C. Engines.	K2	50%	40%	50%	60%
C304 .2	Illustrate the function of fuel supply, ignition, lubrication and cooling systems of I.C. Engines.	K2	50%	40%	50%	60%
C304 .3	Interpret the combustion phenomena in S.I. and C.I. Engines and effect of various engine operating parameters on it.	K3	50%	40%	50%	60%
C304 .4	Calculate the performance parameters of I.C. Engines.	K3	50%	40%	50%	60%
C304 .5	Understand the classification and basic principles of compressors.	K2	50%	40%	50%	60%

Text Books/ Reference Books suggested:

**TEXT BOOKS:**

1. Internal Combustion Engines, Ganesan,V., Tata McGraw Hill Publishing Company.
2. A Course in Internal Combustion Engines, Mathur, M.L. and Sharma, R.P., DhanpatRai and Sons.
3. I.C. Engines Fundamentals, Heywood J., McGraw Hill publications.

**REFERENCES:**

1. Thermal Engineering, R.K.Rajput, Lakshmi Publications.
2. Heat engines, Vasandani, Kumar Publications.
3. Thermal Engineering, PL Ballany, Khanna Publications.

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hrs Required	Pedagogy	Teaching aids
<b>Unit – I AIR STANDARD &amp; ACTUAL CYCLES (11)</b>						
1	C304.1 (K2)	<b>Understand</b> about COs and POs	-	1	Lecture	Offline
2		Introduction to I.C.Engines	K2	1	Lecture	Offline
3		Classification of I.C.Engines	K2	1	Lecture	Offline
4		Working of 4-stroke SI &CI Engines	K2	1	Lecture	Offline
5		Working of 2-stroke Engine.	K2	1	Lecture	Offline
6		Valve & port timing diagram	K2	1	Lecture	Offline
7		Comparison of cycles	K2	1	Lecture	Offline
8		Time loss factor	K2	2	Lecture	Offline
9		Heat loss factor	K2	1	Lecture	Offline
10		Exhaust loss due to gas exchange process	K2	1	Lecture	Offline

11		Loss due to rubbing friction	K2		Lecture	Offline
<b>Unit -2 : Engine Systems(11)</b>						
12	C304.2 (K2)	Engine systems, Requirement of fuel supply system	K1	1	Lecture	Offline
13		Components & working of simple carburettor	K2	1	Lecture	Offline
14		Types of diesel injection systems in IC Engines	K2	2	Lecture	Offline
15		Requirements of ignition system	K1	1	Lecture	Offline
16		Types of ignition systems	K2	3	Lecture	Offline
17		Types of lubrication systems	K2	2	Lecture	Offline
18		Types of cooling systems	K1	1	Lecture	Offline
<b>Unit-3 : Combustion Phenomenon in SI &amp; CI Engines (17)</b>						
20	C304.3 (K2)	Introduction to combustion in SI & CI engines	K2	2	Lecture	Offline
21		Stages of combustion in SI Engines	K3	1	Lecture	Offline
22		Factors Influencing the Flame Speed	K2	1	Lecture	Offline
23		Phenomenon of knock in si engines	K3	1	Lecture	Offline
24		Effect of Engine Variables on Knock	K2	1	Lecture	Offline
25		Types of Abnormal Combustion	K2	1	Lecture	Offline
26		Combustion Chambers for SI Engines	K3	1	Lecture	Offline
27		Stages of Combustion in CI Engines	K3	1	Lecture	Offline
28		Factors Affecting the Delay period in ci engines	K2	1	Lecture	Offline
29		Phenomenon of knock in CI Engines	K3	2	Lecture	Offline
		DI Combustion Chambers for CI engines	K3	1	Lecture	Offline
		Indirect Combustion Chambers for CI Engines	K3	2	Lecture	Offline
		Rating of I.C Engine Fuels	K2	1	Lecture	Offline
		Rating of Fuels	K2	1	Lecture	Offline
<b>Unit-4 : Measurement &amp; Performance of I.C Engines (10)</b>						
47	C304.5 (K3)	Introduction to Measurements and Testing	K3	1	Lecture	Offline
48		Willans Line method & Morse test to find FP	K3	1	Lecture	Offline
49		Measurement of fp by retardation test	K3	1	Lecture	Offline
50		Measurement of ip	K3	1	Lecture	Offline
51		Performance parameters and Characteristics	K3	1	Lecture	Offline
52		problems	K3	1	Lecture	Offline
53		problems	K3	1	Lecture	Offline
54		problems	K3	1	Lecture	Offline
55		ENGINE PERFORMANCE CHARACTERISTICS	K3	1	Lecture	Offline
56		HEAT BALANCE	K3	1	Lecture	Offline
<b>Unit-5 : Compressors (13)</b>						
58	C304.6 (K2)	Reciprocating Compressors: Principle of operation	K1	2	Lecture	Offline
59		Work required, Isothermal Efficiency	K2	1	Lecture	Offline
60		Volumetric efficiency	K2	1	Lecture	Offline
61		Effect of clearance	K2	1	Lecture	Offline
62		Multi Stage Compression, saving of work	K2	1	Lecture	Offline

63		Minimum work condition for two stage compression	K2	2	Lecture	Offline
64		<b>Rotary Compressor:</b> Roots Blower-Mechanical details & Principle of working	K2	1	Lecture	Offline
65		vane sealed compressor - Mechanical details & Principle of working	K2	1	Lecture	Offline
66		Lyshoml compressor - Mechanical details & Principle of working	K2	1	Lecture	Offline
67		Efficiency considerations & Misc...	K1	2	Lecture	Offline
<b>Total Periods :</b>				<b>62</b>		

CO- PO & PSO matrix:

Course Outcome	PO1 (3)	PO2 (4)	PO3 (5)	PO4 (4)	PO5 (3)	PO6 (3)	PO7 (3)	PO8 (3)	PO9 (2)	PO10 (2)	PO11 (3)	PO12 (1)	PSO1 (3)	PSO2 (3)
C304.1 (3)	1	1	1	1	-	-	-	-	-	2	-	3	1	-
C304.2 (3)	2	1	1	1	-	-	-	-	-	3	-	3	2	-
C304.3 (3)	1	1	1	1	-	-	-	-	-	2	-	3	1	-
C304.4 (2)	2	1	1	1	-	-	-	-	-	3	-	3	2	-
C304.5 (2)	1	1	1	1	-	-	-	-	-	2	-	3	1	-
C304.6 (2)	2	1	1	1	-	-	-	-	-	3	-	3	2	-
C304	1.5	1	1	1	-	-	-	-	-	1.5	-	3	1.5	-

Name of the Course In-charge: S.S.R. Kousik

Qualification: PhD

Designation: Assistant Professor

Department: Mechanical Engineering

Signature of the Course In-charge:

Signature of the Course Coordinator:

Signature of the Module Coordinator:

Remarks of the Head of the Department:

**Detailed Syllabus**

UNIT – I Air standard and actual cycles: Comparison of cycles, Time Loss Factor, Heat Loss Factor, Exhaust Blow down, Loss due to gas exchange process, Loss due to Rubbing Friction. Basics of IC Engines: Classification, working principles of two stroke and four stroke S.I. and C.I. Engines, Valve timing and port timing diagrams.

UNIT – II Engine systems: Requirements of fuel supply system, components and working of simple carburettor, types of diesel injection system, requirements of ignition system, types of ignition systems, types of lubrication systems, types of cooling system.

UNIT – III Combustion in S.I. Engines and C.I. Engines: Normal Combustion and abnormal combustion, Stages of combustion in S.I. Engine, Types of Abnormal combustion, Pre-ignition and knocking , Fuel requirements, fuel rating, Anti knock additives, Detonation and its Control. Stages of combustion in C.I. Engines: Four stages of combustion, Delay period, Factors influencing delay period, Diesel knock, Control of diesel knock, types of combustion chamber, Fuel requirements and fuel rating.

UNIT – IV Measurement, Testing and Performance of IC Engines: Engine performance Parameters, Measurement of engine power, determination of IP,BP, FP, IMEP, BMEP, various efficiencies, engine performance characteristics and affecting variables, preparation of the Heat balance sheet.

UNIT – V Compressors: Reciprocating Compressors : Principle of operation, work required, Isothermal efficiency, volumetric efficiency and effect of clearance, multi stage compression, saving of work, minimum work condition for two stage compression. Rotary Compressors: Roots Blower, vane sealed compressor, Lysholm compressor – mechanical details and principle of working – efficiency considerations.



**SRI VASAVI ENGINEERING COLLEGE (Autonomous)**

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

Department of Computer Science and Engineering(Accredited by NBA)

---

**Lesson Plans For the A.Y 2022-23**

<b>S.No</b>	<b>Semester</b>	<b>Course</b>
1	III	OOPS through C++
2	IV	Design Analysis and Algorithms
3	V	Operating Systems
4	VI	Computer Networks
5	VII	Advanced Java & Web Technologies
6	VIII	Software Project Management

## OOPs Through C++

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: III

Section: A,B,C& D

Name of the Course: OOPs Through C++

Course Code: V20CST03

---

### LESSON PLAN

**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	Differentiate Procedural Oriented Programming and Object-Oriented Programming.	K2
2.	CO2	Develop programs using Classes and Objects.	K3
3.	CO3	Demonstrate Constructors, destructors & Operator-Overloading.	K3
4.	CO4	Construct Classes using inheritance and Exceptions.	K3
5.	CO5	Demonstrate Files and Generic Programming.	K3

Text Books:

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

Reference Books:

1. Object Oriented Programming C++, Joyce Farrell, Cengage.
2. Mastering C++, Venugopal, Raj Kumar, Ravi Kumar, TMH.
3. The Complete Reference C++, Herbert Schildt, 4<sup>th</sup> Edition, Mcgraw Hill.
4. Object Oriented Programming With C++, R. Subburaj, Vikas Publishing House.

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

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



**Lecture Plan:****UNIT-1**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO1	Define Object-Oriented Programming	K1	1	Lecture	BB/ICT
2		Describe about Data Types, Variables, Constants, Operators.	K2	1	Lecture	BB/ICT
3		Explain decision Statements &Control Structures with examples	K2	1	Lecture	BB/ICT
4		Discuss about Arrays, Namespace, Default Arguments, Constant Arguments	K2	1	Lecture	BB/ICT
5		Discuss Parameter Passing Techniques	K2	2	Lecture	BB/ICT
6		Explain about Features of Object Oriented Programming	K2	1	Lecture+ Discussion	BB/ICT
7		Illustrate Arrays with example programs	K2	2	Lecture	BB/ICT
8		Total		9		

**UNIT-2**

1	CO2	Define class and object with examples	K1	2	Lecture	BB/ICT
2		Explain about Access specifiers, Scope Resolution Operator,Static Member variables	K2	1	Lecture	BB/ICT
3		Describe about Static Member Functions, Array of Objects with examples	K3	2	Lecture+ Discussion	BB/ICT
4		Illustrate Inline Functions, Overloading Member Functions with example programs.	K3	1	Lecture	BB/ICT
5		Explain about Objects as Function Arguments with examples.	K2	1	Lecture	BB/ICT
6		Explain about Friend Functions, Friend Class with an example program.	K2	1	Lecture	BB/ICT
7		Construct Local Class, Empty Class with an example program.	K3	2	Lecture+ Discussion	BB/ICT
8		Construct Nested Classes with an example program and explain.	K3	1	Lecture	BB/ICT
9		Prepare a program using the concept Return by Reference	K3	1	Lecture	BB/ICT
10		Total		12		

### UNIT-3

1	CO3	Define Constructor	K1	1	Lecture	BB/ICT
2		Explain the characteristics of a constructor.	K2	1	Lecture	BB/ICT
3		Demonstrate about Constructor with default arguments, Parameterized constructors,	K3	2	Lecture	BB/ICT
4		Illustrate about Overloading constructors, Copy constructors with an example.	K3	1	Lecture	BB/ICT
5		Construct Dynamic Constructors and Destructors	K3	1	Lecture	BB/ICT
6		Explain about Anonymous Objects.	K2	1	Lecture	BB/ICT
7		Explain Operator overloading and its rules with an example.	K2	1	Lecture	BB/ICT
8		Demonstrate unary and binary operators	K3	2	Lecture+ Discussion	BB/ICT
9		Demonstrate about this keyword, Constraint on Increment and Decrement Operators	K3	1	Lecture	BB/ICT
10		Illustrate Overloading with Friend Functions with an example	K3	1	Lecture	BB/ICT
11		Explain about Type Conversions	K2	1	Lecture	BB/ICT
12		Total		13		

**UNIT-4**

1	CO4	Define inheritance	K1	1	Lecture	BB/ICT
2		Explain about types of inheritances(Single Inheritance, Multiple Inheritance, Multilevel Inheritance, Hierarchical Inheritance, Hybrid Inheritance)	K2	1	Lecture	BB/ICT
3		Illustrate example programs on Single Inheritance, Multiple Inheritance, Multilevel Inheritance, Hierarchical Inheritance, Hybrid Inheritance	K3	3	Lecture	BB/ICT
4		Demonstrate Virtual Base Classes with example programs.	K3	2	Lecture	BB/ICT
5		Explain about Constructor in Derived Classes. qualifier classes and inheritance.	K2	2	Lecture	BB/ICT
6		Explain about Early Vs Late Binding, Pure Virtual Functions, Virtual Destructor		1	Lecture	BB/ICT
7		Define Exception handling	K1	1	Lecture	BB/ICT
8		Explain about the keywords in exception handling with an example	K2	1	Lecture	BB/ICT
9		Demonstrate Multiple Catch Statements.	K3	1	Lecture	BB/ICT
10		Illustrate about Catching Multiple Exceptions with an example.	K3	1	Lecture	BB/ICT
11		Explain about Re-throwing Exception	K2	1	Lecture	BB/ICT
12		Total		15		

## UNIT-5

1	CO 5	Define file and file mode parameters.	K1	1	Lecture	BB/ICT
2		Explain about File Opening Modes, File Stream Classes, I/O manipulators	K2	1	Lecture	BB/ICT
3		Describe about Classes for File Handling	K2	1	Lecture	BB/ICT
4		Explain Sequential Access Files, Random Access Files with suitable examples.	K2	1	Lecture	BB/ICT
5		Explain about Error Handling Functions	K2	1	Lecture	BB/ICT
6		Define Template, Class Template and Function Template.	K1	2	Lecture	BB/ICT
7		Demonstrate about Class Templates and function Templates.	K3	1	Lecture	BB/ICT
8		Explain about Standard Template Library.	K2	2	Lecture	BB/ICT
9		Explain about Sequential Containers & Associative Containers.	K2	2	Lecture	BB/ICT
10		Total		12		

**Total No. of Classes: 61**

# Design and Analysis of Algorithms

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: IV

Section: A,B,C& D

Name of the Course: Design and Analysis of Algorithms Course Code: V20CST06/C211

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

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

S.No.	CO No.	Course Outcome
1	C211.1	Demonstrate asymptotic notation and divide and conquer technique [K3]
2	C211.2	Use greedy technique to solve various problems [K3]
3	C211.3	Demonstrate dynamic programming technique to various problems [K3]
4	C211.4	Develop algorithms using backtracking technique [K3]
5	C211.5	Demonstrate branch and bound technique to various problems [K3]

### **Text Books:**

1. Fundamentals of computer algorithms E. Horowitz S. Sahni, University Press.

### **Reference Books:**

1. Introduction to Algorithms Thomas H. Cormen, PHI Learning.
2. The Design and Analysis of Computer Algorithms, Alfred V. Aho, John E. Hopcroft, Jeffrey D.Ullman.
3. Fundamentals of Data Structures and algorithms by C V Sastry, Rakesh Nayak, Ch. Raja Ramesh, Distributed by WILEY publications, New Delhi.
4. Algorithm Design, Jon Kleinberg, Pearson.

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

Cos		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level (Marks In %)		60	60	60	60	60
Targeted level of Attainment	Level 3	60	60	60	60	60
	Level 2	50	50	50	50	50
	Level 1	40	40	40	40	40

**Lecture Plan:**

<b>UNIT - 1: Introduction , Divide &amp; Conquer</b>						
<b>S. No.</b>	<b>Course Outcome</b>	<b>Intended Learning Outcome (ILO)</b>	<b>Knowledge Level of ILO</b>	<b>No. of Hours Required</b>	<b>Pedagogy</b>	<b>Teaching Aid</b>
1	V20CST06.1	Dissemination of Department Vision, Mission PO's, PSO's and CO's. Define Algorithm, Properties of Algorithm	K1	01	Lecture	ICT/BB
2		Discuss Algorithm Specification-Pseudo Code Conventions, Recursive Algorithms	K2	02	Lecture	ICT/BB
3		Explain Performance Analysis-Space Complexity, Time Complexity	K2	02	Lecture	ICT/BB
4		Describe Asymptotic Notations- Big oh notation, Omega notation, Theta notation and Little oh notation	K2	02	Lecture	ICT/BB
5		Estimate Practical Complexities, Estimate Performance Measurement	K2	02	Lecture	ICT/BB
6		Describe General Method of DAC	K1	01	Lecture	ICT/BB
7		Use Divide and Conquer to Binary Search	K3	02	Lecture + Discussion	ICT/BB
8		Use D&C to Find the minimum and maximum	K2	02	Lecture	ICT/BB
9		Apply Divide and Conquer to Merge Sort	K3	02	Lecture + Discussion	ICT/BB
10		Apply Divide and Conquer to Quick Sort, Performance Measurement	K3	02	Lecture + Discussion	ICT/BB
			<b>Total</b>	<b>18</b>		

<b>UNIT - 2: The Greedy Method</b>						
<b>S. No.</b>	<b>Course Outcome</b>	<b>Intended Learning Outcome (ILO)</b>	<b>Knowledge Level of ILO</b>	<b>No. of Hours Required</b>	<b>Pedagogy</b>	<b>Teaching Aid</b>
1	V20CST06.2	Describe General Method	K1	01	Lecture	ICT/BB
2		Solve Knapsack Problem	K3	02	Lecture + Discussion	ICT/BB
3		Solve Job Sequencing with deadlines	K3	02	Lecture + Discussion	ICT/BB
4		Explain Spanning Trees, Find Minimum Cost Spanning Trees(Prim's and Kruskal's algorithms)	K3	02	Lecture + Discussion	ICT/BB
5		Choose Optimal Merge Patterns	K3	02	Lecture + Discussion	ICT/BB
6		Solve Single Source Shortest Path Problem	K3	02	Lecture + Discussion	ICT/BB
				<b>Total:</b>	<b>11</b>	

<b>UNIT - 3: Dynamic Programming</b>						
<b>S. No.</b>	<b>Course Outcome</b>	<b>Intended Learning Outcome (ILO)</b>	<b>Knowledge Level of ILO</b>	<b>No. of Hours Required</b>	<b>Pedagogy</b>	<b>Teaching Aid</b>
1	V20CST06.3	Solve Single Source shortest Paths General Weights	K3	02	Lecture + Discussion	ICT/BB
2		Solve All Pairs Shortest Path Problem	K3	02	Lecture + Discussion	ICT/BB
3		Solve 0/1 Knapsack Problem	K3	02	Lecture + Discussion	ICT/BB
4		Explain Optimal Binary Search Trees	K3	02	Lecture + Discussion	ICT/BB
5		Explain String Edition	K3	02	Lecture + Discussion	ICT/BB
6		Solve Reliability Design	K3	03	Lecture + Discussion	ICT/BB
				<b>Total:</b>	<b>13</b>	

<b>UNIT - 4: Backtracking</b>						
<b>S. No.</b>	<b>Course Outcome</b>	<b>Intended Learning Outcome (ILO)</b>	<b>Knowledge Level of ILO</b>	<b>No. of Hours Required</b>	<b>Pedagogy</b>	<b>Teaching Aid</b>
1	V20CST06.4	Explain General method	K2	01	Lecture	ICT/BB

2		Solve N-Queen Problem	K3	01	Lecture + Discussion	ICT/BB
3		Employ Backtracking to solve Sum of Subsets Problem	K3	02	Lecture + Discussion	ICT/BB
4		Demonstrate Graph Coloring	K3	02	Lecture + Discussion	ICT/BB
5		Demonstrate Hamiltonian Cycles	K3	02	Lecture + Discussion	ICT/BB
			<b>Total:</b>	<b>08</b>		

<b>UNIT - 5: Branch and Bound</b>						
<b>S. No.</b>	<b>Course Outcome</b>	<b>Intended Learning Outcome (ILO)</b>	<b>Knowledge Level of ILO</b>	<b>No. of Hours Required</b>	<b>Pedagogy</b>	<b>Teaching Aid</b>
1	V20CST06.5	Describe the General method of Branch and Bound technique	K1	01	Lecture	ICT/BB
2		The 15-Puzzle: an Example, Bounding		01	Lecture + Discussion	ICT/BB
3		Demonstrate the FIFO Branch and Bound solution	K3	01	Lecture + Discussion	ICT/BB
4		Apply Branch and Bound to 0/1 Knapsack problem using LC BB & FIFO BB	K3	03	Lecture + Discussion	ICT/BB
5		Solve Travelling Salesperson problem using LC BB	K3	02	Lecture + Discussion	ICT/BB
6		Basic Concepts of NP-hard and NP-complete problems.		02	Lecture	ICT/BB
			<b>Total:</b>	<b>10</b>		

**Total Number of Hours: 60**



# Operating Systems

Academic Year: 2022-23

Year/ Semester: V

Name of the Course: Operating Systems

Programme: B.Tech

Section: A,B,C& D

Course Code:V20CST10

## LESSON PLAN

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

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

S.No.	CO No.	Course Outcome	BTL
1.	CO1	Describe Operating System Services and System Calls	K2
2.	CO2	Illustrate Process Management Concepts and CPU Scheduling Algorithms	K3
3.	CO3	Demonstrate Process Synchronization primitives and Process Deadlocks	K3
4.	CO4	Illustrate Memory Management Techniques and Page Replacement Algorithms	K3
5.	CO5	Describe File System Concepts and Mass Storage Structures	K2

### **Text Books:**

1. Operating System Concepts, AbrahamSilberschatz, ,Peter Baer Galvin,Greg Gagne, 9th Edition, John Wiley and Sons Inc., 2012

### **Reference Books:**

1. Operating Systems – Internals and Design Principles, William Stallings, 7th Edition, Prentice Hall, 2012
2. Modern Operating Systems, Andrew S. Tanenbaum, Third Edition, Addison Wesley,2007

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

Cos		C01	C02	C03	C04	C05
Targeted Proficiency Level		65	60	60	60	65
Targeted level of Attainment	Level 3	65	60	60	60	65
	Level 2	55	50	50	50	55
	Level 1	45	40	40	40	45

### Lecture Plan:

SNo	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	C01	Dissemination of Department Vision, Mission, PEOs, POs, PSOs	-	-	-	
		Introduction of OS	K2	1	Lecture with Discussion	BB/ICT
		Operating-System Structure	K2	1	Lecture with Discussion	BB/ICT
		Operating-System Services	K2	1	Lecture with Discussion	BB/ICT
		User and Operating-System Interface	K2	1	Lecture with Discussion	BB/ICT
		System Calls	K2	1	Lecture with Discussion	BB/ICT
		Types of System Calls	K2	1	Lecture with Discussion and in class assignment	BB/ICT
<b>Total</b>				<b>6</b>		
2	C02	Process Concept and Process Scheduling	K3	2	Lecture with Discussion	BB/ICT
		Operations On Processes	K3	1	Lecture with Discussion	BB/ICT
		Inter Process Communication	K3	1	Lecture with Discussion	BB/ICT
		Threads overview	K3	1	Lecture with Discussion	BB/ICT
		Multithreading Models	K3	1	Lecture with Discussion	BB/ICT
		CPU Scheduling Basic Concepts and CPU Scheduling Criteria	K3	1	Lecture with Discussion	BB/ICT
		CPU Scheduling Algorithms	K3	3	Lecture with Discussion and in class Assignment	BB/ICT
<b>Total</b>				<b>10</b>		

3	C03	Critical Section Problem	K3	1	Lecture with Discussion	BB/ICT
		Peterson's Solution	K3	1	Lecture with Discussion	BB/ICT
		Synchronization Hardware	K3	1	Lecture with Discussion	BB/ICT
		Mutex Locks	K3	1	Lecture with Discussion	BB/ICT
		Semaphores	K3	1	Lecture with Discussion and in class Assignment	BB/ICT
		Classic Problems of Synchronization	K3	2	Lecture with Discussion and in class Assignment	BB/ICT
		Monitors	K3	1	Lecture with Discussion	BB/ICT
		System Model and DeadLock Characterization	K3	1	Lecture with Discussion	BB/ICT
		Methods for Handling Deadlocks	K3	1	Lecture with Discussion	BB/ICT
		Deadlock Prevention	K3	1	Lecture with Discussion	BB/ICT
		Deadlock Avoidance	K3	1	Lecture with Discussion and in class Assignment	BB/ICT
		Deadlock Detection	K3	1	Lecture with Discussion	BB/ICT
Recovery from Deadlock	K3	1	Lecture with Discussion	BB/ICT		
<b>Total</b>				<b>14</b>		
4	C04	Swapping and Contiguous Memory Allocation	K3	1	Lecture with Discussion	BB/ICT
		Segmentation	K3	1	Lecture with Discussion	BB/ICT

		Paging	K3	2	Lecture with Discussion and in class Assignment	BB/ICT
		Structure of the Page Table	K3	1	Lecture with Discussion	BB/ICT
		Demand Paging	K3	1	Lecture with Discussion	BB/ICT
		Page Replacement Algorithms	K3	2	Lecture with Discussion and in class Assignment	BB/ICT
		Allocation of Frames	K3	1	Lecture with Discussion	BB/ICT
		Thrashing	K3	1	Lecture with Discussion	BB/ICT
			<b>Total</b>	<b>10</b>		
5	C05	Overview of Mass-Storage Structure	K2	1	Lecture with Discussion	BB/ICT
		Disk Scheduling	K2	2	Lecture with Discussion and in class assignment	BB/ICT
		File Concept, Access Methods	K2	1	Lecture with Discussion	BB/ICT
		Directory and Disk Structure	K2	1	Lecture with Discussion	BB/ICT
		File-System Mounting	K2	1	Lecture with Discussion	BB/ICT
		File Allocation Methods	K2	1	Lecture with Discussion	BB/ICT
			<b>Total</b>	<b>7</b>		

**Total No. of Classes: 47**

# Computer Networks

Academic Year: 2022-23

Year/ Semester: VI

Name of the Course: Computer Networks

Programme: B.Tech

Section: A,B,C& D

Course Code: V20CST13

## COURSE OUTCOMES (Along with Knowledge Level):

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

S. No.	CO No.	Course Outcome
1	C311	Discuss fundamentals of network concepts and Reference Models. (K2)
2	C311	Discuss Communication media and switching techniques .[K2]
3	C311	Demonstrate Error control and Data link layer protocols.[K3]
4	C311	Apply Routing algorithms and congestion control algorithms [K3]
5	C311	Discuss Transport layer protocols and Application layer protocols [K2]

## **Text Books:**

1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI
2. Data Communications and Networks – Behrouz A. Forouzan, Third Edition TMH

## **Reference Books:**

1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Ed, Pearson Education
2. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson

## **Targeted Proficiency Level (For each course Outcome):**

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

**Lesson Plan:**

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		Describe Reference models- The OSI Reference Model	K1	2	Lecture	BB+ICT
3		Discuss TCP/IP Reference Model	K2	1	Lecture with Discussion	BB+ICT
4		Examples of Networks: Novell Networks, ARPANET, INTERNET	K2	2	Lecture	BB+ICT
5		Describe Network Topologies WAN, LAN, MAN.	K1	1	Lecture	ICT

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Describe Physical Layer – Transmission Media	K1	1	Lecture	ICT
2		Explain Different Kinds of Transmission Media	K2	2	Lecture	ICT
3		Describe Multiplexing Techniques: Frequency Division Multiplexing and Wavelength Division Multiplexing	K1	2	Lecture with seminar	ICT
4		Discuss Time Division Multiplexing	K2	1	Lecture with Discussion	ICT
5		Explain Circuit Switched Networks	K2	1	Lecture with Discussion	ICT
6		Explain Datagram Networks and Virtual Circuit Networks	K2	2	Lecture with Discussion in class Assignment	ICT

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Describe The Data Link Layer - Services Provided to the Network Layer	K1	1	Lecture	ICT
2		Explain Data Link Layer Design Issues	K2	1	Lecture	ICT
3		Illustrate Framing – Error Control – Flow Control, Error Detection and Correction – Error-Correcting Codes – Error Detecting code	K3	2	Lecture with Discussion and in class Assignment	ICT
4		Discuss MAC Protocols: ALOHA, CSMA	K2	2	Lecture with Discussion	ICT
5		Explain Elementary Data Link Protocols- A Utopian Simplex Protocol	K2	1	Lecture with Discussion	ICT
6		Discuss A Simplex Stop and Wait Protocol for an Error free channel-A Simplex Stop and Wait Protocol for a Noisy Channel.	K2	1	Lecture	ICT
7		Demonstrate Sliding Window Protocols	K3	3	Lecture with Discussion	ICT
8		Discuss HDLC, PPP and Piggybacking	K2	2	Lecture	ICT

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Describe The Network Layer - Design Issues and Services Provided to Transport Layer	K1	2	Lecture	ICT
2		Discuss Implementation of Connectionless Service- Implementation of Connection Oriented Service.	K2	2	Lecture with Discussion	ICT
3		Construct Shortest Path algorithm	K3	1	Lecture with Discussion	ICT
4		Describe Flooding	K2	1	Lecture	ICT
5		Illustrate Distance Vector Routing, Link State Routing, and Hierarchical Routing	K3	2	Lecture and in class Assignment	ICT
6		Differentiate Broadcast and Multicast Routing	K2	1	Lecture	ICT

7		Discuss Congestion Control Algorithms	K2	1	Lecture with Discussion	ICT
8		Demonstrate IP Addressing and Subnet Masking	K3	1	Lecture with Discussion and in class Assignment	ICT
9		Describe Quality of Service	K2	1	Lecture	ICT
10		Discuss QoS Improving Techniques: Leaky Bucket and Token Bucket Algorithms	K2	1	Lecture	ICT

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Describe Transport Layer – Services, Primitives and Sockets	K1	2	Lecture	ICT
2		Discuss Elements of Transport Protocols	K2	2	Lecture	ICT
3		Discuss The Internet Transport Protocols: TCP Segment Header and Primitives	K2	2	Lecture with Discussion	ICT
4		Discuss The Internet Transport Protocols: UDP, RPC, RTP, and RTCP Segment Headers and Primitives	K2	1	Lecture with Discussion	ICT
5		Discuss Congestion Control in TCP	K2	1	Lecture with Discussion	ICT
6		Discuss Application Layer – DNS: The DNS Name Space, Resource Records, Name servers.	K2	1	Lecture	ICT



S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
2		Describe Electronic Mail Message Transfer Agent: SMTP and Message Access Agent: POP	K2	2	Lecture	ICT
3		Discuss FTP: Control Connection and Data Connection	K2	1	Lecture with Discussion	ICT
4		Discuss HTTP: Connections, Methods, Message Headers, and Caching	K2	1	Lecture with Discussion	ICT
5		Explain Cryptography	K2	1	Lecture	ICT
6		Differentiate Public Key(RSA) and Private Key(DES) Cryptographic Algorithms	K2	2	Lecture with Discussion	ICT

**Total No. of Classes: 60**

# Advanced Java & Web Technologies

Academic Year: 2022-23

Year/ Semester: VII

Name of the Course: Advanced Java & Web Technologies

Programme: B.Tech

Section: A,B,C& D

Course Code: VI8CST27

## LESSON PLAN

Course Outcomes (Along with Knowledge Level):

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

S.No.	CO No.	Course Outcome	BTL
1.	CO1	Illustrate the basic concepts of HTML and CSS	K2
2.	CO2	Develop dynamic WebPages and validate with java Script.	K3
3.	CO3	Illustrate Extensible markup language	K3
4.	CO4	Illustrate the basic concepts of Angular JS and NODE JS.	K2
5.	CO5	Build database driven web applications using JSP	K3
6.	CO6	Develop web applications using PHP and MySQL	K3

### Text Books:

1. Programming the World Wide Web, 7th Edition, Robert W Sebesta, Pearson, 2013.
2. Node.js, MongoDB and Angular Web Development, 2nd Edition, Brad Dayley, Brendan Dayley, Caleb Dayley, Pearson Education, 2018
3. JSP: The Complete reference, Phil Hanna, The McGraw-Hill Companies, 2001

### Reference Books:

1. Web Technologies: HTML, JavaScript, PHP, Java, JSP, XML and AJAX, Black book, Dream Tech.
2. An Introduction to Web Design, Programming, Paul S Wang, Sanda S Katila, Cengage Learning
3. Web Technologies, 1st Edition 7th impression, Uttam K Roy, Oxford, 2012.

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

Cos		C01	C02	C03	C04	C05	C06
Targeted Proficiency Level		60	60	60	60	60	60
Targeted level of Attainment	Level 3	60	60	60	60	60	60
	Level 2	55	55	55	55	55	55
	Level 1	50	50	50	50	50	50

## Lecture Plan:

SNo	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	C01	Describe Basic Syntax, Standard HTML Document Structure	K1	1	Lecture	BB
		Describe Basic HTML Tags	K1	1	Lecture	BB+ICT
		Explain Lists, Tables, Images	K2	2	Lecture	BB+ICT
		Explain Forms, Frames	K2	2	Lecture	BB+ICT
		Discuss Cascading style sheets, levels of style sheets and its formats	K2	2	Lecture	BB+ICT
		List Properties of Cascading style sheets	K1	3	Lecture	BB+ICT
<b>Total</b>				<b>11</b>		
2	C02	Explain Objects, Primitives Operations and Expressions of JavaScript	K2	3	Lecture	BB+ICT
		Explain Output and Keyboard Input , Control Statements	K2	2	Lecture	BB
		Explain Object Creation and Modification, Arrays, Functions	K2	2	Lecture	BB
		Explain Constructors, Pattern Matching using Regular Expressions	K2	2	Lecture	BB
		Explain Events and Event handlings	K2	2	Lecture	BB
		Apply Positioning Moving with DHTML	K3	1	Lecture	BB+ICT
		Apply Changing Elements with DHTML	K3	1	Lecture	BB+ICT
<b>Total</b>				<b>13</b>		
3	C03	Demonstrate installing Node JS	K3	1	Lecture	BB+ICT
		Explain Working with Node Packages, and Creating a Node	K2	1	Lecture	BB
		List JS Application, Understanding Angular, Modules, Directives,	K1	2	Lecture with Discussion	BB+ICT
		Explain Data Binding, Dependency Injection, Services	K2	3	Lecture	BB+ICT
		Explain Separation of Responsibilities, Creating a Basic Angular Application.	K3	2	Lecture with Discussion	BB+ICT
<b>Total</b>				<b>9</b>		
4		Explain of XML , Syntax, XML Document Structure	K2	2	Lecture	BB+ICT

	<b>C04</b>	Explain XML, Document type Definition, XML schemas	K2	3	Lecture	BB
		Demonstrate Document object model, XSLT,	K3	3	Lecture with Discussion	BB+ICT
		Illustrate DOM and SAX parsers	K3	2	Lecture with Discussion	BB+ICT
<b>Total</b>				<b>10</b>		
5	<b>C05</b>	Explain Servlets, Life cycle of Servlet,	K2	1	Lecture	BB+ICT
		List the Limitations of servlets, JSP Overview,	K1	2	Lecture	BB
		Explain Components of a JSP Page: Directives, comments, Expressions, Scriptlets ,	K2	3	Lecture	BB
		Explain Components of a JSP Page: Declarations, implicit objects, Database Access, session tracking	K2	3	Lecture	BB+ICT
<b>Total</b>				<b>9</b>		
6	<b>C06</b>	Overview of PHP, General syntactic characteristics,	K2	1	Lecture	BB+ICT
		Explain Primitives operations, Expressions,	K2	1	Lecture	BB+ICT
		Apply Control statements, Arrays, Functions,	K3	2	Lecture	BB+ICT
		Apply Pattern Matching, Form Handling,	K3	2	Lecture	BB+ICT
		Examine Cookies, Session Tracking	K3	2	Lecture	BB+ICT
		Develop PHP with MySQL connectivity.	K3	2	Lecture	BB+ICT
<b>Total</b>				<b>10</b>		

**Total No. of Classes: 62**

# Software Project Management

Academic Year : 2022-23

Semester : VIII

Name of the Course: Software Project Management

Programme: B.Tech

Sections :A,B,C&D

Course Code: V18CST36

## 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	Describe Software Project Management Terminology and Methodology.	[K2]
2.	CO2	Describe various Software Lifecycle Models, Process Artifacts and Workflows.	[K2]
3.	CO3	Explain various Effort Estimation Techniques for Project Planning.	[K2]
4.	CO4	Demonstrate Risk Management Concepts.	[K3]
5.	CO5	Develop Project Status Reports for tracking and controlling Software Deliverables.	[K3]
6.	CO6	Describe Software Quality Metrics.	[K2]

### Text Books:

1. Software Project Management, Bob Hughes & Mike Cotterell, TMH
2. Software Project Management, Walker Royce, Pearson Education, 2005.
3. Software Project Management in Practice, Pankaj Jalote, Pearson

### Reference Books:

1. Software Project Management, Joel Henry, Pearson 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	70	70	70	70	70	70
	Level 2	65	65	65	65	65	65
	Level 1	60	60	60	60	60	60

## Lecture Plan 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 of the Dept and PEOs, Pos,& PSOs of the Programme			Lecture	BB
2	CO1	Describe Software Project Management Terminology. And comparison with other projects	K2	1	Lecture	BB
3		Describe software project management activities.	K2	1	Lecture	BB
4		Describe various Categories in software Projects	K2	1	Lecture	BB
5		Identify types of stake holders, objectives and goals in software project management.	K1	2	Lecture	BB
6		Describe Stepwise project planning and project scope and Objectives.	K2	1	Lecture	BB
7		Identify Project products and Deliverables.	K1	1	Lecture	BB
8		Outline Effort Estimation and Infrastructure.	K2	1	Lecture	BB+ICT

## Unit- 2

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO2	Outline various Life Cycle Models.	K1	1	Lecture	BB
2		Classify technologies: Process Models	K2	2	Lecture	BB
3		Describe Software Prototyping.	K2	1	Lecture	BB

4		Explain Iterative and Incremental Process Framework.	K2	1	Lecture	BB
5		Classify Project Life Cycle Phases.	K2	2	Lecture	BB+ICT
6		Explain various Artifacts of Software Process.	K2	2	Lecture	BB
7		Explain Process Workflows.	K2	2	Lecture	BB

### Unit-3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO3	Describe Software Effort Estimation Techniques.	K1	1	lecture	BB
2		Discuss Function Point Analysis.	K2	1	lecture with Discussion	BB
3		Explain SLOC: Software Metrics and Measurements.	K2	2	lecture	BB + ICT
4		Describe COCOMO: A Parametric Model	K2	2	lecture	BB + ICT
5		Discuss Use-Case based Estimation Techniques.	K2	1	lecture with Discussion	BB
6		Explain various Activity Identification Approaches: Sequencing and Scheduling Activities.	K2	2	lecture	BB
7		Discuss Network Planning Models in Project Scheduling: Critical Path Analysis.	K2	2	lecture with Discussion	BB

**Unit- 4**

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO4</b>	Describe various Risk Management Categories.	K1	2	Lecture	BB
2		Discuss concepts of Risk Identification, Assessment, Planning and Management.	K2	2	Lecture with discussion	BB+ICT
3		Demonstrate PERT Technique.	K3	1	Lecture	BB
4		Explain Monte Carlo Method for project estimation.	K2	1	Lecture	BB
5		Describe Resource Allocation types	K2	1	Lecture	BB

**Unit-5**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO5</b>	Describe the concept of Project Monitoring and Control.	K1	1	lecture	BB
2		Explain Progress Monitoring, and Cost Monitoring in Project Control.	K2	2	lecture	BB
3		Explain Earned Value Analysis in Cost Monitoring.	K2	2	lecture	BB + ICT
4		Discuss various Defects and Issues in Project Monitoring and Control.	K2	1	Lecture	BB + ICT
5		Develop Project Status Reports with Sample Case Study.	K3	1	lecture	BB



6		Discuss various types of resources and resource requirements in Software Project Management.	K2	2	lecture with discussion	BB
7		Explain the concept of Resource Allocation and Scheduling.	K2	1	Lecture with practical	BB

### Unit-6

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	<b>CO6</b>	Define Software Quality and Quality Factors.	K1	1	Lecture	BB + ICT
2		Explain Software Quality Planning.	K2	1	Lecture	BB + ICT
3		Outline various Quality Measures in Software Quality Management.	K1	2	Lecture	BB + ICT
4		Discuss Quantitative Approaches to Quality Management.	K2	2	Lecture with Discussion	BB + ICT
5		Describe importance of quality and ISO 9126.	K2	1	Lecture	BB + ICT
6		Explain the concepts of product Quality and Process Quality.	K2	1	Lecture	BB + ICT
7		Describe Statistical Process Control Capability Maturity Model.	K2	2	Lecture with Discussion	BB + ICT
8		Discuss various Techniques to Enhance Software Quality.	K2	2	Lecture with Discussion	BB + ICT

**Total No. of Classes: 60**



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

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

Department of Computer Science and Technology

---

## **Lesson Plans For the A.Y 2022-23**

<b>S.No</b>	<b>Semester</b>	<b>Course</b>
1	III	Data Structures
2	IV	Software Engineering
3	V	Artificial Intelligence
4	VI	Machine Learning
5	VII	Human Computer Interaction
6	VIII	Cyber Security

# Data Structures

Academic Year: 2022-23

Year/ Semester: III

Name of the Course: Data Structures

Programme: B.Tech

Course Code: V20CST04

## LESSON PLAN

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

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

S. No	CO.No	Course Outcomes	BTL
1	CO1	Illustrate the time and space complexities for searching and sorting algorithms.	K2
2	CO2	Demonstrate linked lists and their applications.	K3
3	CO3	Demonstrate Stacks and Queues.	K3
4	CO4	Illustrate basic operations on binary trees.	K3
5	CO5	Demonstrate Graphs and their applications.	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. 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.

### **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

## LESSON PLAN

### CO1

S. 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	K2	1	Lecture	BB
2		Classify different types of data Structures (Linear data structures and non-linear data structures)	K2	1	Lecture with Discussion	BB+ICT
3		Describe different algorithm notations i. Performance analysis: Space Complexity, time complexity ii. Asymptotic notation: Big O, Omega and Theta.	K1	2	Lecture	BB
4		Describe different searching algorithms (Linear search, Binary search, Fibonacci Search)	K2	3	Lecture with Discussion	BB
5		Explain different sorting techniques (Bubble Sort, Insertion Sort, Selection Sort, Quick Sort, Merge Sort, Radix Sort)	K2	8	Lecture with Discussion	BB
6		Discuss about hashing	K2	2	Lecture with Discussion	BB

17

### CO2

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Demonstrate single linked list by node representation and compute different operations on single linked list	K3	4	Lecture with Discussion and in class Assignment	BB
2		Develop different operations like insertion, deletion and display on double linked list.	K3	4	Lecture with Discussion and in class Assignment	BB
3		Demonstrate Circular Linked List	K3	1	Lecture with Discussion	BB+ICT

## CO3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Describe stack and array representation of stack	K2	1	Lecture with Discussion	BB
2		Describe representation of stack using linked list	K2	1	Lecture with Discussion	BB
3		Illustrate Towers of hanoi with an example	K3	2	Lecture with Discussion and in class Assignment	BB
4		Compute infix to postfix conversion	K3	2	Lecture with Discussion and in class Assignment	BB+ICT
5		Compute expression evaluation	K3	2	Lecture with Discussion and in class Assignment	BB+ICT
6		Describe Queue and its representation using array and its operations	K2	2	Lecture with Discussion and in class Assignment	BB+ICT
7		Explain representation of queue with linked list and its operations	K2	2	Lecture with Discussion	BB
8		Explain different applications of Queues	K2	1	Lecture with Discussion	BB
9		Describe Circular queue and its operations	K2	2	Lecture with Discussion	BB

15

**CO4**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Describe Tree and different types of Trees	K1	2	Lecture	BB+CRE
2		Explain Binary Tree, properties of Binary Trees and its representation	K2	1	Lecture with Discussion	BB
3		Develop different operations on Binary tree	K3	1	Lecture with Discussion and in class Assignment	BB
4		Describe different Tree Traversals (recursive and non-recursive)	K1	2	Lecture with Discussion	BB
		Describe Binary Search Tree and its operations	K3	3	Lecture with Discussion and in class Assignment	BB+ICT
5		<b>Explain about</b> Heaps, different types of heaps, properties and operations on heaps	K2	1	Lecture with Discussion	BB

**10**

**CO5**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO6	Describe graph, properties of graph, properties of graph, representation of graph and elementary operations on Graph	K1	2	Lecture	BB
2		Illustrate the graph traversal using Depth First Search, Breadth First Search techniques.	K3	2	Lecture	BB
3		Explain about Spanning Trees	K2	1	Lecture	BB
4		Construct Kruskal's Algorithm and Prims Algorithm for minimum spanning tree	K3	2	Lecture	BB
5		Construct single source shortest Path Algorithm	K3	1	Lecture with Discussion and in class Assignment	BB
6		Construct All pair shortest path algorithm to find shortest graph distances.	K3	1	Lecture with Discussion	BB

**9****Total No. of Classes: 60**

# Software Engineering

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: IV

Name of the Course: Software Engineering

Course Code: V20CST07/C212

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

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

S.No.	CO No.	Course Outcome
1	C212.1	Demonstrate the Software Development life cycle Models.[K3]
2	C212.2	Illustrate the Requirements engineering process and SRS document. [K3]
3	C212.3	Develop the Software Architecture and Design Modeling. [K2]
4	C212.4	Apply the Coding & Testing techniques and Risk management strategies (K3)
5	C212.5	Describe Project estimation techniques and Quality Management& Metrics [K2]

**Text Books:**

1. Software Engineering, A practitioner's Approach- Roger S.Pressman, 7th Edition, McGrawHill International Edition
2. Software Engineering, 9/e, Sommerville, Pearson.
3. Software Engineering, A Precise approach, PankajJalote, Wiley

**REFERENCES**

1. CMMI and Six Sigma: Partners in Process Improvement, Jeannine M. Siviyy, M. Lynn Penn, Robert W. Stoddard, 1st edition, Addison Wesley.
2. Software Engineering principles and practice, W S Jawadekar, 3rdEdition,TMH.

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

Cos		C01	C02	C03	C04	C05
Targeted Proficiency Level		65	65	65	60	60
Targeted level of Attainment	Level 3	65	65	65	60	60
	Level 2	55	55	55	50	50
	Level 1	45	45	45	40	40



**Lesson Plan:**

**Unit-I**

S. No	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		Outline Essence of Practice, List General Principles	K1	1	Lecture	BB
6		Describe software Myths.	K1	1	Lecture	BB
7		Demonstrate Waterfall model, Prototyping	K3	2	Lecture with Discussion and in class Assignment	BB
8		Demonstrate Iterative development	K3	1	Lecture with Discussion and in class Assignment	BB
9		Demonstrate Unified process	K3	1	Lecture with Discussion and in class Assignment	BB
10		Demonstrate RAD Model	K3	1	Lecture with Discussion and in class Assignment	BB
11		Demonstrate Spiral Model	K3	1	Lecture with Discussion	BB
12		Demonstrate Agile Process	K3	1	Lecture with Discussion	BB
<b>Total Hours</b>				<b>14 Hours</b>		

**Unit-II**

S. No	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. No	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
		Explain Cohesion and Coupling	K2	1	Lecture with	BB

					Discussion	
4		Explain documenting architecture design	K2	1	Lecture with Discussion	BB
5		Explain Design concepts	K2	2	Lecture with Discussion	BB+ICT
6		Explain Function-oriented design	K2	1	Lecture with Discussion	BB+ICT
7		Demonstrate Object oriented design	K3	1	Lecture with Discussion	BB+ICT
8		Explain different UML diagrams	K2	2	Lecture with Discussion	BB+ICT
9		Demonstrate Data flow Diagram	K3	1	Lecture	BB+ICTI
<b>Total Hours</b>				<b>13 Hours</b>		

#### Unit-IV

S. No	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	K2	1	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	K2	1	Lecture with	BB

		Strategies			Discussion	
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>10 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	1	Lecture	BB
3		Discuss Software Maintenance: Maintenance Process	K2	1	Lecture with Discussion	BB
4		Explain Reengineering	K2	1	Lecture with Discussion	BB
5		Explain Configuration Management	K2	1	Lecture with Discussion	BB
6		Describe Software Measurement and Metrics for software quality.	K2	1	Lecture with Discussion	BB
7		Explain Quality concepts	K2	1	Lecture with Discussion	BB
8		Distinguish Software Reviews and Formal technical reviews	K2	2	Lecture with Discussion	BB
9		Explain Statistical Software Quality Assurance and Software reliability	K2	2	Lecture with Discussion	BB
10		Explain SEI-CMM Model,	K2	1	Lecture with Discussion	BB+ICT
11		Explain Six Sigma	K2	1	Lecture with Discussion	BB+ICT
12		Explain ISO 9000 quality standards.	K2	1	Lecture with Discussion	BB+ICT
<b>Total Hours</b>				<b>14 Hours</b>		

**Total No. of Classes: 60**

# Artificial Intelligence

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: V

Name of the Course: Artificial Intelligence

Course Code: V20CSTPE03

## LESSON PLAN

**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	Discuss the foundations of AI.	K2
2	CO2	Identify Search Strategies for Problem Solving.	K2
3	CO3	Illustrate Adversarial Search for Game Playing.	K2
4	CO4	Discuss Reasoning approaches.	K2
5	CO5	Illustrate Knowledge Representation approaches.	K2

### **Text Books:**

1. Artificial Intelligence : A Modern Approach, Stuart J. Russell and Peter Norvig, 3rd Edition, PrenticeHall.
2. Artificial Intelligence, Elaine Rich, Kevin Knight, Shivashankar B Nair, 3rd Edition, Tata McGraw-Hill.

### **Reference Books:**

1. Artificial Intelligence, George F Luger, Pearson Education Publications.
2. Artificial Intelligence, Saroj Kaushik, 1st Edition, Cengage Learning.

### **Proficiency and Attainment Levels for Course Outcomes in Percentages**

Cos		CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level		60	60	60	60	60
Targeted level of Attainment	Level 3	60	60	60	60	60
	Level 2	50	50	50	50	50
	Level 1	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	Dissemination of Department Vision, Mission, PEOs, POs, PSOs	-	-	-	
		Explain AI Introduction	K2	1	Lecture	ICT
2		Explain what is AI	K2	1	Lecture With Discussion	ICT
3		Discuss foundations of AI	K2	2	Lecture With Discussion	ICT
4		Discuss history of AI	K2	2	Lecture With Discussion	ICT
5		Discuss the state of art of applications	K2	1	Lecture With Discussion	ICT
6		Describe agents, environments	K2	1	Lecture With Discussion	ICT
7		Discuss the concept of rationality	K2	1	Lecture With Discussion	ICT
8		Discuss the nature of environments	K2	1	Lecture With Discussion	ICT
9	Discuss the Structure of agents	K2	2	Lecture With Discussion	ICT	
<b>Total</b>				12		

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO2	Discuss Problem solving agents	K2	2	Lecture with Discussion and in class Assignment	ICT
2		Illustrate Example problems	K2	2	Lecture with Discussion and in class Assignment	ICT
3		Illustrate Searching for solutions	K2	2	Lecture with Discussion	ICT

					and in class Assignment	
4		Explain Uniformed search strategies	K2	2	Lecture with Discussion and in class Assignment	ICT
5		Explain Informed(Heuristic) search strategies	K2	2	Lecture with Discussion and in class Assignment	ICT
6		Explain Heuristic functions	K2	2	Lecture with Discussion and in class Assignment	ICT
7		Discuss Local search algorithms and optimization problems	K2	2	Lecture with Discussion and in class Assignment	ICT
<b>Total</b>				14		

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO3	Explain Games	K2	1	Lecture with Discussion	BB/ICT
2		Discuss Optimal decisions in games	K2	1	Lecture with Discussion	BB/ICT
3		Discuss Alpha-Beta pruning	K2	1	Lecture with Discussion	BB/ICT
4		Describe Imperfect real time decisions	K2	1	Lecture with Discussion	BB/ICT
5		Describe Stochastic games	K2	1	Lecture with Discussion	BB/ICT
6		Describe Partially observable games	K2	2	Lecture with Discussion	BB/ICT
7		Explain State of art of game programs	K2	2	Lecture with Discussion	BB/ICT

8		Discuss Alternative approaches	K2	1	Lecture with Discussion	BB/ICT
<b>Total</b>				10		

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO4	Explain Propositional Logic	K2	1	Lecture with Discussion	BB/ICT
2		Discuss Propositional Theorem proving	K2	2	Lecture with Discussion	BB/ICT
3		Discuss Syntax and Semantics of First order logic	K2	2	Lecture with Discussion	BB/ICT
4		Explain first order logic	K2	2	Lecture with Discussion	BB/ICT
5		Describe Forward chaining	K2	1	Lecture with Discussion	BB/ICT
6		Describe Backward chaining	K2	1	Lecture with Discussion	BB/ICT
7		Discuss Resolution	K2	2	Lecture with Discussion	BB/ICT
<b>Total</b>				11		

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO5	Explain Knowledge representation and mapping	K2	2	Lecture with Discussion	BB/ICT
2		Discuss the Approaches to knowledge representation	K2	2	Lecture with Discussion	BB/ICT
3		Describe Simple relational knowledge	K2	2	Lecture with Discussion	BB/ICT
4		Describe Inheritable knowledge	K2	2	Lecture with Discussion	BB/ICT



5		Describe Inferential knowledge	K2	2	Lecture with Discussion	BB/ICT
6		Describe Procedural knowledge	K2	1	Lecture with Discussion	BB/ICT
7		Discuss the Issues in knowledge representation	K2	1	Lecture with Discussion	BB/ICT
8		Explain the frame problem	K2	1	Lecture with Discussion	BB/ICT
<b>Total</b>				13		

**Total classes:60**

# Machine Learning

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: VI

Name of the Course: Machine Learning

Course Code: V20CST14

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

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

S. No.	C. No.	Course Outcome
1	C312	Explain the Basics of Machine Learning.[K2]
2	C312	Demonstrate Classification and Clustering Techniques. [K3]
3	C312	Construct Decision Trees and Random Forest. [K3]
4	C312	Illustrate the Working of Neuron and Perceptron Algorithm. [K2]
5	C312	Demonstrate the working of Multi-Layer Perceptron algorithm. [K3]

## **Text Books:**

1. Machine Learning: An Algorithmic Approach, Stephen Marshland, 2<sup>nd</sup> Edition, CRC press.
2. A First Course in Machine Learning, Machine Learning and Pattern Recognition Series, Simon Rogers, Mark Girolami, 2<sup>nd</sup> Edition, CRC Press.

## **Reference Books:**

1. Machine Learning: The art and Science of Algorithms that Make sense of Data, Peter Flach, Cambridge.
2. Machine Learning, Tom Mitchel, McGraw Hill Learning.

## **Targeted Proficiency Level (For each course Outcome):**

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

**Lesson Plan:**

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	ICT Chalk &Talk
2		Introduction to Machine Learning and Types of Machine Learning	K1	2	Lecture	ICT Chalk & Talk
3		Supervised Learning: Regression and Classification	K1	2	Lecture with Discussion	ICT Chalk & Talk
4		The Machine Learning Process	K2	2	Lecture	ICT
5		Terminology of ML: Weight Space, The Curse Of Dimensionality	K1	2	Lecture with Discussion	Chalk & Talk
6		Knowing What You Know: Testing Machine Learning Algorithms	K2	2	Lecture	Chalk & Talk
7		Some Basic Statistics. Averages Variance And Covariance, The Bias-Variance Trade-off	K2	2	Lecture	Chalk & Talk
8	CO 2	The General Problem, Probabilistic Classifiers: Bayes Classifier, Logistic Regression	K2	2	Lecture	Chalk & Talk
9		Non-Probabilistic Classifiers: K-Nearest Neighbor, SVM	K2	3	Lecture	ICT
10		Classifier performance: Accuracy, 0/1 loss, Sensitivity & Specificity	K2	1	Lecture	ICT
11	CO 3	Decision Trees: Construction of Decision Trees: Entropy, ID3	K2	3	Lecture with Discussion	ICT Chalk & Talk
12		Classification And Regression Trees (CART)	K2	3	Lecture	ICT Chalk & Talk
13		Ensemble Learning: Boosting - Adaboost, Stumping	K2	3	Lecture	Chalk & Talk
14		Bagging	K2	2	Lecture	ICT
15		Random Forests	K2	2	Lecture	ICT
16	CO 4	The Brain & The Neuron: Hebb's Rule, Mcculloch And Pitts Neurons & It's Limitations.	K1	3	Lecture	Chalk &Talk

17		Neural Networks, Perceptron: The Learning Rate, The Bias Input	K1	2	Lecture	Chalk &Talk
18		The Perceptron Learning Algorithm	K2	2	Lecture	ICT Chalk & Talk
19		An Example Of Perceptron Learning: Logic Functions Implementation	K2	2	Lecture with Discussion	ICT Chalk & Talk
20		Linear Separability	K2	1	Lecture	ICT Chalk &Talk
21		Linear Regression	K2	2	Lecture	ICT Chalk &Talk
22	CO 5	Multi-layer Perceptron: Going forward – Biases	K1	2	Lecture	ICT
23		Going backward – Back propagation of error:	K2	2	Lecture	ICT Chalk &Talk
24		The MLP algorithm, Initializing the weights, Activation functions.	K2	3	Lecture with Discussion	ICT Chalk &Talk
25		Sequential and batch training, Local Minima, Picking up momentum.	K2	3	Lecture with Discussion	ICT Chalk &Talk
26		Minibatches and Stochastic Gradient Decent, Other improvements.	K2	3	Lecture with Discussion	ICT Chalk &Talk
27		MLP in practice – Amount of training data, Number of hidden layers, when to stop learning	K2	3	Lecture	ICT

**Total No. of Classes: 60**

# Human Computer Interaction

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: VII

Name of the Course: Human Computer Interaction

Course Code:V18CST31

## LESSON PLAN

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

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

S.No.	CO No.	Course Outcome	BTL
1.	V18CST31.1	Describe the principles and characteristics of GUI.	K2
2.	V18CST31.2	Recognize how a computer system may be modified to include human diversity.	K2
3.	V18CST31.3	Select an effective style for a specific application.	K2
4.	V18CST31.4	Discuss Screen Designing mock-ups and carry out user and expert evaluation of interfaces.	K2
5.	V18CST31.5	Explain System Menus & Navigation Schemes	K2
6.	V18CST31.6	Discuss Device and Screen based controls.	K2

### **Text Books:**

1. "The Essential Guide to User Interface Design", Wilbert O. Galitz, 2<sup>nd</sup> edition, 2002, Wiley India Edition.
2. Prece, Rogers, "Sharps Interaction Design", Wiley India.
3. "Designing the user interfaces". Ben Shneidermann 3rd Edition, Pearson Education Asia.

### **Reference Books:**

1. "User Interface Design", Soren Lauesen, Pearson Education
2. "Essentials of Interaction Design", Alan Cooper, Robert Riemann, David Cronin, Wiley
3. "Human Computer Interaction", Alan Dix, Janet Finckay, GreGoryd, Abowd, Russell, Bealg, Pearson Education.

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

Cos		CO1	CO2	CO3	CO4	CO5	CO6
Targeted Proficiency Level		70	70	70	70	70	70
Targeted level of Attainment	Level 3	70	70	70	70	70	70
	Level 2	60	60	60	60	60	60
	Level 1	50	50	50	50	50	50

## Lecture Plan: UNIT-1

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1	CO1	Dissemination of Vision, Mission, PEOs,POs,PSOs		1	Lecture	ICT
2		<b>The User Interface:</b> Introduction Explain Importance of the User Interface, Importance and benefits of Good Design History of Human Computer Interface	K2	2	Lecture	BB
3		List Characteristics of Graphical and Web User Interface	K1	1	Lecture with Discussion	BB
4		Describe Graphical User Interface, popularity of graphics	K2	2	Lecture	BB
5		Explain concepts of Direct Manipulation, Graphical System advantage and disadvantage	K2	2	Lecture with Discussion	BB
6		List Characteristics of GUI	K1	1	Lecture	BB
7		Illustrate Web User Interface, popularity of web, Characteristics of Web Interface	K2	2	Lecture	BB
8		Discuss Merging of Graphical Business systems& the Web	K2	2	Lecture	BB
9		List Principles of User Interface Design.	K1	1	Lecture	BB
<b>Total</b>				<b>14</b>		

## UNIT-2

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1	CO 2	<b>The User Interface Design Process:</b> Explain Obstacles and Pitfall in the development Process, Usability	K2	2	Lecture	ICT
2		Describe The Design Team, Human Interaction with Computers	K2	2	Lecture	ICT
3		List Important Human Characteristics in Design	K1	1	Lecture	ICT
4		Illustrate Human Consideration in Design, Human Interaction Speeds	K2	2	Lecture	BB
5		Distinguish Performance versus Preference	K2	1	Lecture with	BB

					Discussion	
6		Explain Methods for Gaining and Understanding of Users.	K2	2	Lecture	BB
<b>Total</b>				<b>10</b>		

### UNIT-3

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1	CO 3	<b>Understanding Business Functions:</b> Define Business Definitions & Requirement analysis	K1	2	Lecture with discussion	ICT
2		Explain Determining Business Functions	K2	2	Lecture	BB
3		Describe Design standards or Style Guides	K2	2	Lecture	BB
4		Explain System Training and Documentation	K1	1	Lecture	BB
<b>Total</b>				<b>07</b>		

### UNIT-4

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1	CO 4	<b>Principles of Good Screen Design:</b> Explain Human considerations in screen Design	K2	2	Lecture with Discussion	ICT
2		List interface design goals	K1	1	Lecture	BB
3		Discuss test for a good design	K2	2	Lecture	ICT
4		Explain screen meaning and purpose	K2	2	Lecture with Discussion	BB
5		Describe Technological considerations in Interface Design.	K1	2	Lecture	BB
<b>Total</b>				<b>9</b>		

## UNIT-5

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1	CO5	<b>System Menus and Navigation Schemes:</b> Illustrate Structure, Functions	K2	2	Lecture	ICT
2		Describe Context, Formatting	K1	1	Lecture	BB
3		Explain Phrasing and Selecting, Navigating of Menus	K2	2	Lecture with Discussion	ICT
4		List Kinds of Graphical Menus Windows Interface	K1	1	Lecture	BB
5		Discuss Windows characteristic, Components of Window	K2	2	Lecture	BB
6		Explain Windows Presentation Styles	K2	1	Lecture with Discussion	BB
7		Discuss Types of Windows	K2	1	Lecture with Discussion	ICT
8		Explain Window Management, Web Systems	K2	2	Lecture	BB
<b>Total</b>				<b>12</b>		

## UNIT-6

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1	CO 6	<b>Device and Screen-Based Control:</b> Explain Device based controls, Operable Controls	K2	2	Lecture with Discussion	ICT
2		Discuss Text entry/read-Only Controls	K2	1	Lecture	BB
3		Explain Section Controls, Combining Entry/Selection Controls	K2	2	Lecture	ICT



4		Describe Other Operable Controls and Presentation Controls	K1	2	Lecture	BB
5		Illustrate Selecting proper controls	K2	1	Lecture	BB
<b>Total</b>				<b>8</b>		

**Total No. of Classes: 60**

## Cyber Security

Academic Year : 2022-23

Programme: B.Tech

Year/ Semester : VIII

Name of the Course: Cyber Security

Course Code: V18CST43

Course Outcomes (Along with Knowledge Level):

S.No.	CO No.	Course Outcome	BTL
1.	CO1	Describe about Cybercrimes.	K2
2.	CO2	Explain Cyber criminals and their attacks.	K2
3.	CO3	Illustrate Cybercrimes and security in mobile devices	K2
4.	CO4	Discuss about the Tools and methods used to overcome Cybercrimes.	K2
5.	CO5	Discuss about Cyber Laws and IT Acts.	K2
6.	CO6	Explain about Computer Forensics.	K2

**Text Books:** 1. Cyber Security: Understanding Cyber Crimes, Computer Forensics and Legal Perspectives, NinaGodbole, SunitBelapure, 1st edition, Wiley.

**Reference Books:** 1. Principles of Information Security, MichealE. Whitman and Herbert J. Mattord, 4th edition, Cengage Learning. 2. Information Security the complete reference, Mark Rhodes, Ousley, 2nd edition, MGH

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

## Lecture Plan:

S.No.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO1	<b>Unit-1</b> Introduction to Cybercrime Cybercrime: Definition and Origins of the Word	K2	1	Lecture	BB+ICT
		Cybercrime and Information Security			Lecture	BB+ICT
		Who are Cybercriminals?	K2	1	Lecture with Group Discussion	BB+ICT
		Classifications of Cybercrimes	K2	1	Lecture	BB+ICT
		Cybercrime: The Legal Perspectives Cybercrimes: An Indian Perspective	K2	1	Lecture	BB+ICT
		Cybercrime and the Indian ITA 2000	K2	1	Lecture with Group Discussion	BB+ICT
		A Global Perspective on Cybercrimes	K2	1	Lecture	BB+ICT
		Cybercrime Era: Survival Mantra for the Netizens	K2	1	Lecture	BB+ICT
2	CO2	<b>Unit-2:</b> Cyber offenses- How Criminals Plan Them				
		Introduction How Criminals Plan the Attacks	K2	1	Lecture	BB+ICT
		Social Engineering	K2	1	Lecture	BB+ICT
		Cyber stalking	K2	1	Lecture	BB+ICT
		Cyber cafe and Cybercrimes	K2	1	Lecture	BB+ICT
		Botnets: The Fuel for Cybercrime	K2	1	Lecture	BB+ICT
		Attack Vector Cloud Computing.	K2	1	Lecture	BB+ICT
3	CO3	<b>UNIT III: Cybercrime Mobile and Wireless Devices</b>				
		Introduction	K2	1	Lecture	BB+ICT
		Proliferation of Mobile and Wireless Devices	K2	1	Lecture	BB+ICT
		Trends in Mobility	K2	1	Lecture	BB+ICT
		Credit Card Frauds in Mobile and Wireless Computing Era	K2	1	Lecture with Group Discussion	BB+ICT
		Security Challenges Posed by Mobile Devices	K2	1	Lecture	BB+ICT
		Registry Settings for Mobile Devices	K2	1	Lecture	BB+ICT
		Authentication Service Security	K2	1	Lecture	BB+ICT
		Attacks on Mobile/CellPhones	K2	1	Lecture with Group	BB+ICT

					Discussion	
		Mobile Devices: Security Implications for Organizations	K2	1	Lecture	BB+ICT
		Organizational Measures for Handling Mobile	K2	1	Lecture	BB+ICT
		Organizational Security Policies and Measures in Mobile Computing Era	K2	1	Lecture	BB+ICT
		Laptops	K2	1	Lecture	BB+ICT
4	CO4	<b>UNIT IV: Tools and Methods Used in Cybercrime</b>				
		Introduction	K2	1	Lecture	BB+ICT
		Proxy Servers and Anonymizers	K2	1	Lecture	BB+ICT
		Phishing	K2	1	Lecture with Group Discussion	BB+ICT
		Password Cracking	K2	1	Lecture	BB+ICT
		Key loggers and Spywares	K2	1	Lecture	BB+ICT
		Virus and Worms	K2	1	Lecture with Group Discussion	BB+ICT
		Trojan Horses and Backdoors	K2	1	Lecture	BB+ICT
		Steganography	K2	1	Lecture	BB+ICT
		DoS and DDoS Attacks	K2	1	Lecture	BB+ICT
		SQL Injection	K2	1	Lecture	BB+ICT
		Buffer Overflow	K2	1	Lecture	BB+ICT
		Attacks on Wireless Networks	K2	1	Lecture with Group Discussion	BB+ICT
		Phishing and Identity Theft: Introduction	K2	1	Lecture	BB+ICT
		Phishing, Identity Theft (ID Theft)	K2	1	Lecture	BB+ICT
5	CO5	<b>UNIT V: Cybercrimes and Cyber security</b>				
		The Legal Perspectives	K2	1	Lecture	BB+ICT
		Introduction	K2	1	Lecture	BB+ICT
		Why Do We Need Cyber laws: The Indian Context	K2	1	Lecture	BB+ICT
		The Indian IT Act	K2	1	Lecture	BB+ICT
		Challenges to Indian Law and Cybercrime Scenario in India	K2	1	Lecture	BB+ICT
		Consequences of Not Addressing the Weakness in Information Technology Act	K2	1	Lecture	BB+ICT
		Digital Signatures and the Indian IT Act	K2	1	Lecture	BB+ICT
		Amendments to the Indian IT Act	K2	1	Lecture	BB+ICT
		Cybercrime and Punishment	K2	1	Lecture	BB+ICT

6	CO6	<b>Unit-6 Understanding Computer Forensics</b>				BB+ICT
		Introduction	K2	1	Lecture	BB+ICT
		Historical Background of Cyber Forensics	K2	1	Lecture	BB+ICT
		Digital Forensics Science	K2	1	Lecture with Group Discussion	BB+ICT
		The Need for Computer Forensics	K2	1	Lecture	BB+ICT
		Cyber forensics and Digital Evidence,	K2	1	Lecture	BB+ICT
		Forensics Analysis of E-Mail	K2	1	Lecture with Group Discussion	BB+ICT
		Digital Forensics Life Cycle	K2	1	Lecture	BB+ICT
		Chain of Custody Concept	K2	1	Lecture	BB+ICT
		Network Forensics	K2	1	Lecture	BB+ICT
		Approaching a Computer Forensics Investigation	K2	1	Lecture	BB+ICT
		Computer Forensics and Steganography	K2	1	Lecture	BB+ICT
		Relevance of the OSI 7 Layer Model to Computer Forensics	K2	1	Lecture	BB+ICT
		Forensics and Social Networking Sites- The Security/Privacy Threats	K2	1	Lecture	BB+ICT
		Computer Forensics from Compliance Perspective	K2	1	Lecture	BB+ICT
		Challenges in Computer Forensics	K2	1	Lecture with Group Discussion	BB+ICT
		Special Tools and Techniques	K2	1	Lecture	BB+ICT
		Forensics Auditing	K2	1	Lecture	BB+ICT
		Anti-forensics	K2	1	Lecture with Group Discussion	BB+ICT

Total Hours = 67

**2022-23**



# VASAVI ENGINEERING COLLEGE(Autonomous)

(Sponsored by Sri Vasavi Educational Society)

Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada  
Pedatadepalli, **TADEPALLIGUDEM – 534 101**, W.G. Dist, (A.P.)

## Department of Electronics and Communication Engineering

Academic year: 2021-22

Year/Semester: II/IV

Programme: B Tech

Branch: ECE

Section: A, B & C

Course Code: V20ECT09

Course Title: EMTL

Course Instructors: Sri.PVV.Satyanarayana  
Sri Nagaraju

Course Coordinator: Sri. PVV.SATYANARAYANA

## LESSON PLAN

Course Outcomes (Along with Knowledge Level): After completion of this course, the student shall be able to

Course code	Knowledge Level	Course Outcomes
	K3	Find static electric field intensity by using various laws of electrostatics.
	K3	Find static magnetic field intensity by using various laws of magnetostatics and also, Develop Maxwell's equations for time varying fields by applying the concept of displacement current density
	K3	Develop Wave equation & Propagation Characteristics of the EM Waves in different mediums.
	K3	Develop expression for reflection and transmission coefficient in perfect dielectric medium for normal and oblique incidence of wave.
	K3	Construct transmission line equations and also, Compute Primary and Secondary constants for a given transmission line
	K3	Develop input impedance relations for open and short circuit transmission lines and also, Calculate reflection coefficient, VSWR etc. using smith chart

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

COURSE OUTCOME	PROFICIENCY LEVEL	ATTAINMENT LEVEL
V20ECT10.1	60	60
V20ECT10.2	60	60
V20ECT10.3	65	65
V20ECT10.4	65	70
V20ECT10.5	65	70

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching Aids	Ref
1	-	Course Outcomes-Overview of the syllabus and vector calculus-Introduction, vector calculus	K2	1	Lecture	Chalk Board & ICT	T1
2		Explain the vector calculus-solve simple problems	K2	3	Lecture	Chalk Board & ICT	T1
<b>UNIT – I</b>							
<b>ELECTROSTATIC FIELDS</b>							
5	CO1 (K3)	Introduction to coordinate system- Cartesian, cylindrical and spherical	K2	1	Lecture With discussion	Chalk. board, PPT & ICT	T1, R1
6.		Explain different coordinate system- Transformation of one system to other and comparison	K2	1	Lecture with discussion & Problem solving	Chalk. board, ppt	T1
7.		Explain Vector analysis- Gradient, Curl and divergence. Definition of coulomb's law	K2	1	Lecture with discussion & Problem solving	Chalk. board, Ppt & ICT	T1
8		Explain Electric field intensity- Solve problems	K2	1	Lecture with discussion & Problem solving	Chalk. board, Ppt & ICT	T1, R1
9.		Find E field due to point charge-Electric flux, flux density	K2	1	Lecture with discussion & Problem solving	Chalk. board, Ppt & ICT	T1
10.		Define Gauss law and Apply Gauss Law to Find E due to point charge	K1	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	T1, R1
11.		Apply Gauss Law to Find E due to line, surface charges. Define Electric potential- problem solving	K3	2	Lecture with peer to peer learning & Problem solving	Chalk. board, Ppt & ICT	T1, R1
12.		Develop Maxwell's two equations for electrostatic fields	K3	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	T1, R1
13		Explain Energy density Solve Problems in energy density	K2	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	T1, R1
				K3	1	Lecture	Chalk. board, ppt & ICT
14.		Explain Convection and conduction currents	K2	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	T1, R1



15		Explain the Dielectric constant- Explain Continuity equation-Explain the Relaxation time	K2	1	Lecture& Problem solving	Chalk. board, ppt& ICT	T1, R1
16		Explain Poisson's equation Explain the Laplace's equation. Explain the Parallel plate capacitor Explain the Coaxial and spherical capacitors	K2	1	Lecture& Problem solving	Chalk. board, ppt& ICT	T1, R1
17		Solve the Problems on Capacitors	K3	1	Problem solving	Chalk. board, ppt& ICT	T1, R1
			<b>TOTAL</b>	<b>16</b>			

**UNIT – II MAGNETOSTATIC FIELDS & MAXWELL'S EQUATIONS (TIME VARYING FIELDS)**

18.	CO2 (K3)	Define Biot – Savart's Law and apply to find Magnetic field intensity H	K2	1	Lecture& Problem solving	Chalk. board, ppt& ICT	T1, R1
19		Explain Ampere's circuital law and also, apply to find magnetic field intensity H	K2	1	Lecture	Chalk. board, ppt& ICT	T1, R1
20		Define Magnetic flux, Flux Density-Develop Maxwell's two equations for magneto static fields	K1 K3	1	Lecture with discussion	Chalk. board, ppt& ICT	T1, R1
21		Explain the Magnetic scalar and vector potentials Ampere's force law -Explain Forces due to magnetic fields	K2	1	Lecture with discussion	Chalk. board, ppt& ICT	T1, R1
22		Explain the Inductances and magnetic energy, solve problems	K3	1	Lecture& Problem solving	Chalk. board, ppt& ICT	T1, R1
23		Solve problems related to magneto statics	K3	1	Problem solving& Peer to peer learning	Chalk. board, ppt& ICT	T1, R1
24		<u>Maxwell's Equation (Time varying field)</u> Explain Faraday's law and transformer emf Explain Inconsistency of Ampere's law	K2	2	Lecture	Chalk. board, ppt& ICT	T1,R1

25.		Interpret Displacement current density. Construct Maxwell's equations in different final forms (Differential & integral )and word statements	K3 K2 2		Lecture With Discussion	Chalk. board, ppt& ICT	T1, R1 T1, R1
26		Construct Boundary conditions of E and H fields in the interface between different mediums	K3	2	Lecture With Discussion	Chalk. board, ppt& ICT	T1, R1
27.		Solve the Problems related to time varying fields	K3	1	Problem solving – Peer to peer learning	Chalk. board, Ppt & ICT	T1, R1
			<b>TOTAL</b>	<b>12</b>			Chalk. board, ppt

### UNIT – IIIEM WAVE CHARACTERISTICS I

28	CO3 (K3)	Derive the Wave equations in lossy dielectric media, lossless, and free space	K3	1	Lecture with discussion	Chalk. board, Ppt & ICT	R1, O2
29		Define Uniform plane wave & Explain the Sinusoidal variations	K1	1	Lecture With discussion	Chalk. board, Ppt & ICT	R1, O2
		Develop the relation between E and H & Explain Intrinsic impedance	K3	1	Lecture With discussion	Chalk. board, Ppt & ICT	R1, O2
30		Develop expression for attenuation and phase constant in lossy dielectric medium	K3	1	Lecture With discussion	Chalk. board, ppt	R1, O2
31		Develop attenuation and phase constant in lossless dielectric medium	K2	1	Lecture With discussion	Chalk. board, ppt	R1, O2
32		Compute propagation Characteristics like phase velocity, intrinsic impedance of wave in lossy and lossless dielectric media	K3	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	R1, O2
33		Explain Conductors and dielectrics-Characterization	K2	1	Lecture	Chalk. board, Ppt & ICT	R1, O2
34		Develop wave equation and propagation Characteristics in good conductors	K3	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	R1, O2
35		Define Polarization,	K1	1	Lecture + Tutorial	Chalk. board, Ppt & ICT	R1, O2
36		Solve problems	K3				

37	CO4 (K3)	Develop expression for Reflection coefficient and transmission coefficient of plane waves for normal and oblique incidences of wave for perfect dielectric dielectric interface-Calculate Brewster angle	K2 K3	2	Lecture With Discussion & Problem solving	Chalk. board, Ppt & ICT	R1, O2
38		Calculate Critical angle and total internal reflection	K3	2	Lecture With Discussion & Problem solving	Chalk. board, Ppt & ICT	R1, O2
39		Explain Surface impedance	K2	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	R1, O2
40		State and Prove poynting theorem & also, Apply to find average power density	K3	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	R1, O2
41		Differentiate Complex, average and instantaneous pointing vector	K2	1	<b>Lecture With Discussion</b>	Chalk. board, Ppt & ICT	R1, O2
42		Solve the Problems	K3	1	Problem solving	Chalk. board, Ppt & ICT	R1, O2
			<b>TOTAL</b>		<b>14</b>		

#### UNIT – V TRANSMISSION LINES I

43	CO5 (K3)	Explain different types of transmission lines & Derive general transmission line equations	K3	<b>2</b>	<b>Lecture with Tools</b>	Chalk. board, ppt & ICT	R3
44		Compute Primary and secondary constants for a general transmission line	K3	<b>1</b>	Lecture & Problem solving	Chalk. board, Ppt & ICT	R3
45		Construct expression for attenuation and phase of transmission line	K3	2	Lecture & Problem solving	Chalk. board, Ppt & ICT	R3
46		Compute Propagation constant, phase and group velocities	K3	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	R3
47		Explain Infinite line concepts	K2	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	R3
48		Explain Lossless transmission line and characteristics	K2	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	R3
49		Develop Condition for distortion less transmission and characteristics	K2	1	Lecture & Problem solving	Chalk. board, Ppt & ICT	R3
		<b>TOTAL</b>		<b>9</b>			

UNIT – V TRANSMISSION LINES II							
50	CO6 (K3)	Derive Input Impedance relations -	K3	1	Lecture	Chalk and board	R3
51		Construct input impedance for Short circuit and Open circuit lines	K2	1	Lecture	Chalk and board	R3
52		Explain smith chart & its applications	K3	1	Lecture With Peer to peer learning	Chalk and board	R3
53		Calculate Reflection coefficient, VSWR, Input impedance & load impedance using analytical method and using smith chart	K3	2	Lecture Peer to peer learning	Chalk and board	R3
54		Explain UHF lines as circuit elements	K2	1	Lecture	Chalk and board	R3, R1
55		Explain $\lambda/4$ , $\lambda/2$ , $\lambda/8$ lines – impedance transformation	K2	1	Lecture	Chalk and board	R3
56		Solve Problems using Smith Chart	K3	2	Tutorial	PPT	R3, O2
57		Explain Single stub matching	K2	1	Lecture	Chalk and board	R3, O2
58		Calculate $\Gamma$ , S, $V_{max}$ , $V_{min}$ using Smith Chart	K3	3	Lecture With Discussion	Chalk and board	R3, O2
			<b>Total</b>		<b>12</b>		
59		Content Beyond the Syllabus – Introduction to Computational Electromagnetics and its applications	K2	1	Lecture	Chalk and board	Internet
		<b>Total No. of Hours</b>		<b>67</b>			

ICT: Interactive communication technology (i.e. white board pen tablet etc.)

Signature of the Course Instructors:

1. Sri G.S BHASKAR RAO    2. Sri pvsatyanarayana

Remarks of the Course Coordinator:

Remarks of the Module Coordinator:

Remarks of the Head of the Department:



## SRI VASAVI ENGINEERING COLLEGE (AUTONOMOUS)

(Sponsored by Sri Vasavi Educational Society)  
Approved by AICTE, New Delhi and Permanently Affiliated to JNTUK, Kakinada  
Pedatadepalli, **TADEPALLIGUDEM – 534 101**, W.G. Dist, (A.P.)

# Department of Electronics and Communication Engineering

## LESSON PLAN

Academic Year: 2022-2023

Programme: B.Tech

Semester: V-Sem

Section: A, B &amp; C &amp; ECT

Name of the Course: VLSI Design

Course Code: V20ECT10

### Course Outcomes (CO's) (Along with Knowledge Level (K)):

After going through this course the student will be able to

CO <sub>x</sub>	K <sub>x</sub>	Course Outcome
C311.1	K <sub>2</sub>	Understand different IC technologies and basic electrical properties of MOS, CMOS and Bi-CMOS Circuits. <b>(K2)</b>
C311.2	K <sub>3</sub>	Explain the basic electrical properties of MOS, CMOS and Bi-CMOS circuits. <b>(K2)</b>
C311.3	K <sub>3</sub>	Develop layouts for MOS & Bi-CMOS circuits USING Design rules <b>(K3)</b>
C311.4	K <sub>4</sub>	Compute the parameters of MOS circuits and assess the effects of scaling. <b>(K3)</b>
C311.5	K <sub>2</sub>	Design combinational circuits and subsystems. <b>(K4)</b>

### Text Books/ Reference Books suggested:

- Essentials of VLSI Circuits and Systems By Kamran Eshraghian, Douglas and A. Pucknell and Sholeh Eshraghian, Prentice-Hall of India Private Limited, 2005 Edition.
- CMOS DIGITAL INTEGRATED CIRCUITS ANALYSIS AND DESIGN –Sung-Mo Kang, Yusuf Leblebici, Tata McGraw-Hill Education, 2003
- Advanced Digital Design with the Verilog HDL, Michael D. Ciletti, Xilinx Design Series, Pearson Education
- Analysis and design of Digital Integrated Circuits in deep submicron technology, 3<sup>rd</sup> edition, David Hodges

**PREREQUISITES:**

Switching theory and Logic Design  
Digital Integrated circuits

COs	CO1	CO2	CO3	CO4	CO5
Targeted Proficiency Level	60%	60%	50%	50%	50%
Targeted Attainment Level	75%	65%	65%	70%	65%

Unit No.	CO <sub>x</sub> /K <sub>x</sub>	IL O	Contents	No. of Hours Require	Pedagogy	Teaching aids
-	-	-	<b>OBE- Department Vision, Mission, Course Outcomes</b>	1	Lecture	Chalk Board
<b>1</b>	<b>Review of Microelectronics and An Introduction to MOS</b>					
1.1	C311.1 (K2)	K1	Memorize the evolution of IC era & predictions in IC technology	2	Lecture	Chalk Board
1.2		K2	Discuss about Basic MOS Transistors	1	Lecture with Discussion	Chalk Board Projector Computer
1.3			Describe the NMOS Fabrication Processes	2	Lecture with Discussion	Chalk Board Projector Computer
1.4			Describe the PMOS Fabrication Processes	2	Lecture with Discussion	Chalk Board Projector
1.5			Describe the CMOS Fabrication Processes	2	Lecture with Discussion	Chalk Board Projector Computer
1.6			Discuss the BiCMOS technology & classify CMOS & bipolar technology	2	Lecture with Discussion	Chalk Board
			<b>Total No. of Hours for I Unit</b>	<b>11</b>		
<b>2</b>	<b>Basic Electrical Properties of MOS and BICMOS Circuits</b>					
2.1	C311.2	K2	Express the relationship between $I_{ds}$ vs $V_{ds}$ with respect to MOS transistors	2	Lecture with Discussion	Chalk Board
2.2		K2	Summarize the aspects of MOS transistors threshold voltage, trans conductance, output conductance & figure of merit	2	Lecture with Discussion	Chalk Board
2.3		K2	Describe the concepts of Pass transistor, NMOS Inverter, Pull-up to Pull-down Ratio for NMOS Inverter driven by another NMOS Inverter	2	Lecture with Discussion	Chalk Board
2.4		K2	Distinguish among the Alternative forms of Pull-Up.	2	Lecture with Discussion	Chalk Board
2.5			Explain about CMOS Inverter, MOS Transistor Circuit Model	2	Lecture with Discussion	Chalk Board
2.6		K2	Explain the concepts of Bi-CMOS Inverter, Latch-up in CMOS circuits and BiCMOS Latch-up Susceptibility	2	Lecture with Discussion	Chalk Board
			<b>Total No. of Hours for II Unit</b>	<b>12</b>		

<b>3</b>		<b>MOS and Bi-CMOS Circuit Design Processes</b>						
	3.1	C311.3 (K3)	K2	Distinguish between MOS Layers	2	Lecture with discussion	Chalk Board Projector Computer	
	3.2		K3	Sketch the Stick Diagrams for NMOS & CMOS circuits	3	Lecture with Peer to peer learning	Chalk Board Projector Computer	
	3.3		K1	Reproduce the design Rules and Layout, General Observations on the Design rules, 2 $\mu$ m Double Metal, Double Poly, CMOS/BiCMOS rules, 1.2 $\mu$ m Double Metal, Double Poly CMOS rules	3	Lecture (PPT)	Chalk Board Projector Computer	
	3.4		K3	Apply design rules to sketch Layout Diagrams of NAND and NOR gates and CMOS inverter, Symbolic Diagrams-Translation to Mask Form	3	Lecture with Peer to peer learning	Chalk Board Projector Computer	
	3.5		K3	Practice on Stick Diagrams and Layouts	3	Peer to peer learning	Class Room Exercise	
				<b>Total No. of Hours for III Unit</b>	<b>14</b>			
<b>4</b>		<b>Basic Circuit Concepts</b>						
	4.1	C311.4 (K3)	K3	Apply the concepts of Sheet Resistance, Sheet Resistance Concept Applied to MOS Transistors and Inverters	2	Lecture with Peer to peer learning	Chalk Board	
	4.2		K3	Apply the Area Capacitance of Layers, Standard Unit of Capacitance	2	Lecture with Peer to peer learning	Chalk Board	
	4.3		K3	Compute the Delay Unit, Inverter Delays, Propagation Delays	1	Lecture with peer to peer learning	Chalk Board	
	4.4		K2	Summarize the Wiring Capacitances, Fan-in and Fan-out characteristics Choice of layers	1	Lecture with discussion	Chalk Board	
				<b>Scaling Of MOS Circuits</b>				
	4.5		K2	Distinguish between different Scaling Models, Scaling Factors for Device Parameters	2	Lecture with discussion	Chalk Board	
	4.6		K2	Predict the Limits due to Sub Threshold Currents and limitations of scaling	2	Lecture with discussion	Chalk Board	
				<b>Total No. of Hours for IV Unit</b>	<b>10</b>			

<b>5</b>		<b>Subsystem design and layout</b>						
	5.1	C311.5 (K4)	K2	Describe the Architectural issues	1	Lecture with Peer to peer learning	Chalk Board	
	5.2		K2	Discuss about Switch logic and gate logic	3	Lecture with Peer to peer	Chalk Board	
				<b>Examples of Structured Design (Combinational Logic)</b>				
	5.3		K2	Analyze a parity generator	1	Lecture with Peer to peer learning	Chalk Board	
	5.4							
	5.5	K2	Illustrate Bus Arbitration Logic for n-line-Bus	2	Lecture with Peer to peer learning	Chalk Board		

			<b>An Illustration of Design Process</b>		
	5.6	K2	Illustrate the multiplier	1	Lecture with Peer to peer Chalk Board
	5.7	K2	Illustrate the design of ALU subsystem	1	Lecture with Peer to peer Chalk Board
	5.8	K3	Design Ripple carry adder	1	Lecture with Peer to peer learning Chalk Board
	5.9	K2	Design carry look ahead adder	2	Lecture with Peer to peer Chalk Board
			<b>Total No. of Hours for V Unit</b>	13	
			<b>Total Hours for VLSI Design</b>	<b>60</b>	

**CO- PO & CO-PSO matrix:**

### Course- PO Mapping

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	PO11	PO12	PSO1	PSO2
	K3	K4	K5	K5	K3	K3	K3	K3	K6	K2	K6	K1	K3	K3
CO1 (K2)	1	1	1	-	-	-	-	-	-	-	-	-	1	-
CO2 (K3)	2	1	1	1	2	-	-	-	-	-	-	-	2	-
CO3 (K3)	2	1	1	1	2	-	-	-	-	-	-	3	2	-
CO4 (K4)	2	1	1	1	2	-	-	-	-	-	-	3	2	-
CO5 (K2)	3	-	1	1	3	-	-	-	-	-	-	3	3	-
<b>Avg</b>														

**Details of Course Instructors:**

S.No.	Name of Course Instructor with designation	Section	Contact No. & e-mail:	Signature of Course Instructor
1	Smt.Y.Sujatha Sr.Asst.Professor	A		
2	Sri.P.V.V.Satyanarayana Sr.Asst.Professor	B		

Name of the Course Coordinator (**with designation**): Smt. Y.Sujatha & Sri P v v satyanarayana

Signature of the Course Coordinator:

Signature of the Module Coordinator:

Signature of the Head of the Department:





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

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

Department of Computer Science and Engineering(Artificial Intelligence)

## **Lesson Plans For the A.Y 2022-23**

<b>S.No</b>	<b>Semester</b>	<b>Course</b>
1	III	Advanced Python Programming
2	IV	Artificial Intelligence & its Applications

# Advanced Python Programming

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: III

Name of the Course: Advanced Python Programming Course Code: V20AIT02

## LESSON PLAN

**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	Demonstrate Regular Expressions and Database Connectivity.	K3
2.	CO2	Develop GUI interfaces using widgets.	K3
3.	CO3	Demonstrate statistical analysis using Numpy.	K3
4.	CO4	Demonstrate data analysis using pandas.	K3
5.	CO5	Develop different types of charts using matplotlib.	K3

### TEXT BOOKS:

1. Core Python Programming Dr. R Nageswara Rao Dreamtech publications.
2. Problem solving and python programming fundamentals and application: Numpy, Pandas and Matplotlib. HarshaBhasin.

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

Cos		CO1	CO2	CO3	CO4	CO5	CO6
Targeted Proficiency Level		70	70	70	70	70	70
Targeted level of Attainment	Level 3	70	70	70	70	70	70
	Level 2	60	60	60	60	60	60
	Level 1	50	50	50	50	50	50

**Lecture Plan:**

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours required	Pedagogy	Teaching aids
1	CO1	Dissemination of Course Outcomes		1	-	
		<b>Regular Expressions:</b> Explain Characters, Quantifiers & Special Characters.	K2	3	Lecture With Discussion	ICT
2		<b>Database Connectivity:</b> Describe advantages of a DBMS over files and Installation of MYSQL DB Software	K2	2	Lecture With Discussion	ICT
3		Demonstrate the use of MYSQL from Python to retrieve, insert, delete, and update operations on tables.	K3	3	Lecture With Discussion	ICT
4		Demonstrate the use of MYSQL from Python to delete, update operations on tables.	K3	3	Lecture With Discussion	ICT

12

S.No	Course Outcome	Intended Learning Outcomes(ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO2	<b>Graphical User Interface:</b> Explain GUI in python & The root window, fonts and colors,	K2	2	Lecture with Discussion	ICT
2		Explain working with containers, canvas, frame, widgets & button widgets,	K2	2	Lecture with Discussion	ICT
3		Explain arranging widgets in the frame, label widget & message widget,	K2	2	Lecture with Discussion	ICT
4		Develop programs using text widget & scrollbar widget	K3	2	Lecture with Discussion	ICT
5		Develop programs using check button widget, & Radio button widget,	K3	2	Lecture with Discussion	ICT
6		Develop programs using entry widget & listbox widget.	K3	2	Lecture with Discussion	ICT

12

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO3	Explain working with arrays using Numpy :Introduction to	K2	2	Lecture with	ICT

		Numpy,			Discussion	
2		Explain functions for generating sequences , Aggregate functions ,	K2	2	Lecture with Discussion	ICT
3		Demonstrate generating random numbers using Numpy , zeros, ones, eyes and full	K3	2	Lecture with Discussion	ICT
4		Demonstrate indexing , slicing & scalar with an array operations	K3	2	Lecture with Discussion	ICT
5		Demonstrate array with an array operations & joining arrays	K3	2	Lecture with Discussion	ICT
6		Demonstrate splitting arrays, variance, covariance, correlation.	K3	2	Lecture with Discussion	ICT

12

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO4	<b>Data Analysis using Pandas:</b> Explain creating pandas series	K2	2	Lecture with Discussion	ICT
2		Explain indexing, iloc, slicing and boolean index , sorting	K2	2	Lecture with Discussion	ICT
3		statistical analysis , and string functions ,	K3	2	Lecture with Discussion	ICT
4		Demonstrate creation data frames , dealing with rows , iterating a pandas data frame	K3	2	Lecture with Discussion	ICT
5		Demonstrate data frame methods (head, tail and describe), sorting	K3	2	Lecture with Discussion	ICT
6		Demonstrate statistical analysis , and string functions ,	K3	2	Lecture with Discussion	ICT
7		Demonstrate reading of formatted files, handling missing values.	K3	2	Lecture with Discussion	ICT

14

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO5	<b>Data visualization:</b> Describe plot function	K2	2	Lecture with Discussion	ICT
2		Demonstrate plotting lines and curves, Additional Arguments	K3	2	Lecture with Discussion	ICT
3		Demonstrate the bar Chart ,box plot	K3	2	Lecture with Discussion	ICT
4		Demonstrate frequency plots and histogram , the pie chart.	K3	2	Lecture with Discussion	ICT

8

**Total No. of Classes: 58**

# Artificial Intelligence & its Applications

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: IV

Name of the Course: Artificial Intelligence& its applications

Course Code: V20AIT08

## Course Outcomes (Along with Knowledge Level):

After Completing the course Student will be able to:

S.No.	CO No.	Course Outcome
1	C305 - E3	Discuss Problem Solving Agents and Environment. [K2]
2	C305 - E3	Identify Search Strategies for Non Deterministic and Unknown Environments. [K2]
3	C305 - E3	Illustrate Adversarial Search for Game Playing [K2]
4	C305 - E3	Discuss Reasoning approaches [K2]
5	C305 - E3	Illustrate Knowledge Representation approaches [K2]

## TEXTBOOKS:

1. Artificial Intelligence: A Modern Approach, Stuart J. Russell and Peter Norvig, 3<sup>rd</sup> Edition, PrenticeHall.
2. Artificial Intelligence, Elaine Rich, Kevin Knight, Shivashankar B Nair, 3<sup>rd</sup> Edition, TataMcGraw-Hill.

## REFERENCE BOOKS:

1. Artificial Intelligence, George F Luger, Pearson Education Publications.
2. Artificial Intelligence, SarojKaushik, 1<sup>st</sup> Edition, Cengage Learning.

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

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

## 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	-	1	-	
		Describe agents, environments	K2	1	Lecture	ICT
2		Discuss the concept of rationality	K2	1	Lecture With Discussion	ICT
3		Discuss the nature of environments	K2	1	Lecture With Discussion	ICT
4		Discuss the Structure of agents	K2	1	Lecture With Discussion	ICT
5		Discuss Problem solving agents	K2	1	Lecture With Discussion	ICT
6		Illustrate Example problems	K2	1	Lecture With Discussion	ICT
7		Illustrate Searching for solutions	K2	1	Lecture With Discussion	ICT
8		Explain Uniformed search strategies	K2	2	Lecture With Discussion	ICT
9		Explain Informed(Heuristic) search strategies	K2	2	Lecture With Discussion	ICT
10		Explain Heuristic functions	K2	1	Lecture With Discussion	ICT
<b>13</b>						

S.No	Course Outcome	Intended Learning Outcomes(ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Discuss Local search algorithms and optimization problems	K2	2	Lecture with Discussion	ICT
2		Explain Local Search in Continuous Spaces	K2	2	Lecture with Discussion	ICT
3		Illustrate Search with Non Deterministic Actions	K2	2	Lecture with Discussion	ICT
4		Illustrate Searching with Partial Observations	K2	2	Lecture with Discussion	ICT
5		Describe Online Search Agents	K2	2	Lecture with Discussion	ICT

6		Illustrate Unknown Environments	K2	2	Lecture with Discussion	ICT
<b>12</b>						

S.No	Course Outcome	Intended Learning Outcomes(ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Explain Games	K2	1	Lecture with Discussion	BB/ICT
2		Discuss Optimal decisions in games	K2	2	Lecture with Discussion	BB/ICT
3		Discuss Alpha-Beta pruning	K2	2	Lecture with Discussion	BB/ICT
4		Describe Imperfect real time decisions	K2	1	Lecture with Discussion	BB/ICT
5		Describe Stochastic games	K2	1	Lecture with Discussion	BB/ICT
6		Describe Partially observable games	K2	2	Lecture with Discussion	BB/ICT
7		Explain State of art Game programs	K2	2	Lecture with Discussion	BB/ICT
8		Discuss Alternative approaches	K2	1	Lecture with Discussion	BB/ICT
<b>12</b>						

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Explain Propositional Logic	K2	1	Lecture with Discussion	BB/ICT
2		Discuss Propositional Theorem proving	K2	2	Lecture with Discussion	BB/ICT
3		Discuss Syntax and Semantics of First order logic	K2	1	Lecture with Discussion	BB/ICT
4		Explain first order logic	K2	2	Lecture with Discussion	BB/ICT
5		Describe Forward chaining	K2	2	Lecture with Discussion	BB/ICT
6		Describe Backward chaining	K2	2	Lecture with Discussion	BB/ICT
7		Discuss Resolution	K2	2	Lecture with Discussion	BB/ICT
<b>12</b>						

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5	Explain Knowledge representation and mapping	K2	1	Lecture with Discussion	BB/ICT
2		Discuss the Approaches to knowledge representation	K2	2	Lecture with Discussion	BB/ICT
3		Describe Simple relational knowledge	K2	1	Lecture with Discussion	BB/ICT
4		Describe Inheritable knowledge	K2	2	Lecture with Discussion	BB/ICT
5		Describe Inferential knowledge	K2	2	Lecture with Discussion	BB/ICT
6		Describe Procedural knowledge	K2	1	Lecture with Discussion	BB/ICT
7		Discuss the Issues in knowledge representation	K2	1	Lecture with Discussion	BB/ICT
8		Explain the frame problem	K2	1	Lecture with Discussion	BB/ICT
<b>11</b>						

**Total classes:60**





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

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

## Department of Artificial Intelligence & Machine Learning

### Lesson Plans For the A.Y 2022-23

<b>S.No</b>	<b>Semester</b>	<b>Course</b>
1	III	Database Management Systems
2	IV	Java Programming

# Database Management Systems

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: III

Name of the Course: Database Management Systems

Course Code: V20AIT03

## LESSON PLAN

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

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

S. No	CO.No	Course Outcomes	BTL
1	CO1	Describe Database Architecture and Data Models.	K2
2	CO2	Demonstrate Relational algebra and Relational calculus.	K3
3	CO3	Apply Normalization Techniques to Refine Schema.	K3
4	CO4	Explain Transaction Management and Concurrency Control.	K2
5	CO5	Illustrate various database indexing techniques.	K2

### **Text Books:**

1. Database Management Systems, Raghu Ramakrishnan, Johannes Gehrke, 3rd Edition TATA McGraw Hill.
2. An Introduction to Database Systems, C.JDate, A.Kannan,S.JSwamynathan 8th Edition, Pearson Education.

### **Reference Books:**

1. Database Systems-Design, Implementation and Management, Peter Rob & Carlos Coronel 7th Edition, Course Technology Inc.
2. Fundamentals of Database Systems, Ramez Elmasri, Shamkant B. Navathe ,7th Edition, Pearson Education.
3. Database Systems - The Complete Book, Hector Garcia- Molina, Jeffry D Ullman, Jennifer Widom, 2nd Edition, Pearson.

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

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

### **Lecture Plan:**

**UNIT-I: An Overview of Database Systems and Database Design**

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	PPT
2	CO 1	Define Data, Database, Database Management System	K1	1	Lecture	PPT
3		Describe the disadvantages in Traditional File System and advantages of DBMS over file system	K1	1	Lecture with Discussion	PPT
4		Describe Data models	K2	1	Lecture	PPT
5		Discuss levels of abstraction in a DBMS		1	Lecture with Discussion	PPT
6		Describe data independence	K1	1	Lecture with Discussion	PPT
7		Illustrate the structure of DBMS	K2	1	Lecture with Discussion	PPT
8		Explain Client/Server Architecture	K2	1	Lecture with Discussion	PPT
9		Discuss E.F.Codd Rules		1	Lecture with Discussion	PPT
10		Describe introduction to Database Design: Database Design and ER Diagrams	K1	1	Lecture	PPT
11		Explain Entities, Attributes and Entity Sets	K2	1	Lecture With Discussion	PPT
12		Explain Relationships and Relationship Sets	K2	1	Lecture With Discussion	PPT
13		Illustrate Conceptual Design with the ER Model	K3	2	Lecture With Discussion	PPT
		<b>TOTAL</b>		<b>14</b>		

**UNIT-III: QUERIES, CONSTRAINTS, TRIGGERS AND SCHEMA  
REFINEMENT(NORMALIZATION)**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Explain The Relational Model: Integrity Constraints over Relations: Key Constraints, Foreign Key Constraints, General Constraints	K2	2	Lecture With Discussion	PPT
2		Demonstrate Enforcing Integrity Constraints	K2	1	Lecture With Discussion	PPT
3		Illustrate Querying relational data	K3	1	Lecture With Discussion	PPT
4		Illustrate Relational Algebra: Selection and Projection	K3	1	Lecture With Discussion	PPT
5		Illustrate Set Operations, Renaming, Joins, Division, More Example of Algebra Queries	K3	3	Lecture With Discussion	PPT
6		Describe views, tables	K2	1	Lecture With Discussion	PPT
7		Illustrate Destroying/altering tables and views	K3	1	Lecture With Discussion	PPT
8		Illustrate Relational Calculus: Tuple Relational Calculus	K3	1	Lecture With Discussion	PPT
9		Illustrate Domain Relational Calculus	K3	1	Lecture With Discussion	PPT
		<b>TOTAL</b>		<b>12</b>		

1	CO 3	Explain the Form of a Basic SQL Query	K2	1	Lecture with Demonstration	PPT
2		Illustrate Union,Intersect, Except and Nested Queries	K3	2	Lecture with Demonstration	PPT
3		Illustrate Aggregate Operators	K3	1	Lecture with Demonstration	PPT
4		Interpret Null Values	K2	1	Lecture with Demonstration	PPT
5		Illustrate Complex Integrity Constraints in SQL	K3	1	Lecture with Demonstration	PPT
6		Illustrate Triggers and Active Databases	K3	2	Lecture with Demonstration	PPT
7		Explain problems caused by Redundancy,Decomposition	K2	1	Lecture with Demonstration	PPT
8		Explain Purpose of Normalization or Schema Refinement	K2	1	Lecture With Discussion	PPT
9		Explain the Concept of Functional Dependency	K2	1	Lecture With Discussion	PPT
10		Illustrate Normal Forms Based on Functional Dependency (1NF, 2NF and 3 NF)	K3	2	Lecture With Discussion	PPT
11		Demonstrate Concept of Surrogate Key, Boyce-Codd Normal Form (BCNF)	K3	1	Lecture With Discussion	PPT
12		Illustrate Lossless Join and Dependency Preserving Decomposition, Fourth Normal Form (4NF)	K3	2	Lecture With Discussion	PPT
		<b>TOTAL</b>		<b>16</b>		

<b>UNIT-IV: TRANSACTION MANAGEMENT AND CONCURRENCY CONTROL</b>						
<b>S.No</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 4	Describe Transaction, Properties of Transactions, Transaction Log	K2	1	Lecture With Discussion	PPT
2		Explain Transaction Management with SQL Using Commit, Rollback and Savepoint.	K2	2	Lecture With Discussion	PPT
3		Describe Concurrency Control for Lost Updates, Uncommitted Data, Inconsistent Retrievals and The Scheduler	K2	2	Lecture With Discussion	PPT
4		Explain Concurrency Control with Locking Methods: Lock Granularity, Lock Types, Two Phase Locking for Ensuring Serializability	K2	3	Lecture With Discussion & Seminar	PPT
5		Explain Deadlocks, Concurrency Control with Time Stamp Ordering	K2	2	Lecture With Discussion	PPT
7		Describe Database Recovery Management: Transaction Recovery	K2	1	Lecture With Discussion	PPT
			<b>TOTAL</b>		<b>11</b>	

#### UNIT-V: STORAGE AND INDEXING

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Describe Overview of Storages and Indexing	K1	1	Lecture With Discussion	PPT

2	CO 5	Describe data on External Storage	K1	1	Lecture With Discussion	PPT
3		Explain File Organizations and Indexing: Clustered Indexes, Primary and Secondary Indexes	K2	2	Lecture With Discussion	PPT
4		Explain Index Data Structures: Hash-Based Indexing, Tree-Based Indexing	K2	2	Lecture With Discussion	PPT
5		Explain Comparison of File Organizations	K2	2	Lecture With Discussion	PPT
		<b>TOTAL</b>		<b>8</b>		

**TOTAL HOURS:61**

# Java Programming

Academic Year: 2022-23

Programme: B.Tech

Year/ Semester: IV

Name of the Course: Java Programming

Course Code: V20AIT06/C214

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

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

S.No.	CO No.	Course Outcome
1	C214.1	Describe Java Virtual Machine and Type Casting. [K2]
2	C214.2	Demonstrate Concepts like Constructors, Arrays, Nested Classes and Command Line Arguments. [K3]
3	C214.3	Implement Concepts of Inheritance and Exception Handling.. [K3]
4	C214.4	Develop Programs on Multi-Threading and Files. [K3]
5	C214.5	Implement Event Handling and Swings [K3]

## **Text Books:**

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

## **Reference Books:**

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

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

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

## **Lecture Plan:**



**UNIT-I: INTRODUCTION TO JAVA**

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	PPT
2	CO 1	Recall the Need of Object Oriented Programming and the Principles of Object Oriented Languages	K1	1	Lecture	PPT
3		Explain different applications of OOP	K2	1	Lecture with Discussion	PPT
4		Describe the history of Java	K2	1	Lecture	PPT
5		Discuss about different features of java	K2	1	Lecture with Discussion	PPT
6		Explain about Java Virtual Machine	K2	1	Lecture with Discussion	PPT
7		Discuss about Java Program Structure	K2	1	Lecture with Discussion	PPT
8		Discuss about Variables, Primitive Data types and Identifiers	K2	2	Lecture with Discussion	PPT
9		Discuss about String Class	K2	1	Lecture with Discussion	PPT
10		Discuss Precedence Rules and Associativity	K2	1	Lecture	PPT
11		Illustrate Primitive Type conversion and casting with an example	K2	1	Lecture With Discussion	PPT
12		Discuss briefly about control structures	K2	1	Lecture With Discussion	PPT
			<b>TOTAL</b>		<b>13</b>	

**UNIT-II: CLASSES AND OBJECTS**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2	Explain about classes and objects	K2	2	Lecture With Discussion	PPT
2		Discuss about how to create objects and method declaration	K2	1	Lecture With Discussion	PPT
3		Describe Constructors and Constructor Overloading	K2	2	Lecture With Discussion	PPT
4		Illustrate the use of this keyword with examples	K2	1	Lecture With Discussion	PPT
5		Discuss about the importance of Static keyword	K2	2	Lecture With Discussion	PPT
6		Explain about different types of Arrays	K2	2	Lecture With Discussion	PPT
7		Interpret Command line arguments	K3	1	Lecture With Discussion	PPT
8		Demonstrate Nested Classes	K3	1	Lecture With Discussion	PPT
9		Demonstrate Garbage Collector	K3	1	Lecture With Discussion	PPT
		<b>TOTAL</b>		<b>13</b>		

**UNIT-III: INHERITANCE AND EXCEPTION HANDLING**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Explain about different types of Inheritance	K2	1	Lecture with Demonstration	PPT
2		Illustrate the use of super keyword and final keyword	K2	1	Lecture with Demonstration	PPT
3		Explain the concept of Method Overriding	K2	1	Lecture with Demonstration	PPT
4		Explain about Abstract class	K2	1	Lecture with Demonstration	PPT
5		Explain about interface	K3	2	Lecture with Demonstration	PPT
6		Illustrate the procedure of creating packages and using packages	K3	2	Lecture with Demonstration	PPT
7		Explain the importance of C LASSPATH	K2	1	Lecture with Demonstration	PPT
8		Describe different types of Exceptions and procedure of Exception Handling	K2	2	Lecture With Discussion	PPT
9		Construct programs using Exception handling techniques like try... catch and finally block	K2	3	Lecture With Discussion	PPT
10		Interpret throw and throws statements with examples	K3	1	Lecture With Discussion	PPT
11		Interpret finally block with examples	K3	1	Lecture With Discussion	PPT
		<b>TOTAL</b>		<b>16</b>		

<b>UNIT-IV: MULTI-THREADING AND FILES</b>						
<b>S.No</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 4	Discuss about thread lifecycle	K3	1	Lecture With Discussion	PPT
2		Illustrate creation of Threads	K3	1	Lecture With Discussion	PPT
3		Interpret Thread Priorities and Thread Synchronization with examples	K3	2	Lecture With Discussion	PPT
4		Illustrate Communication between threads with example program	K3	2	Lecture With Discussion & Seminar	PPT
5		Illustrate various file operations like Reading data from and writing data to files	K3	3	Lecture With Discussion	PPT
7		Demonstrate Random Access Files	K3	1	Lecture With Discussion	PPT
			<b>TOTAL</b>		<b>10</b>	

**UNIT-V: EVENT HANDLING AND SWINGS**

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids	
1		Explain about applet class and its life cycle	K2	1	Lecture With Discussion	PPT	
2	CO 5	Discuss about AWT ,Components and Containers of AWT	K2	2	Lecture With Discussion	PPT	
3		Illustrate various Swings Components like Button,label,Checkbox, List boxes, Menu and Scrollbar with example programs	K3	3	Lecture With Discussion	PPT	
4		Interpret different types of layout managers with examples	K3	1	Lecture With Discussion	PPT	
5		Describe Event Delegation Model	K3	1	Lecture With Discussion	PPT	
6		Illustrate Source of Events and Event Listeners	K3	2	Lecture With Discussion	PPT	
7		Illustrate Adapter classes with example programs	K3	1	Lecture With Discussion	PPT	
		<b>TOTAL</b>			<b>11</b>		

**TOTAL HOURS:63**