



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: 2021-22

Programme: UG-B. Tech (EEE)

Semester: VIII

Name of the Course: Energy Storage and Battery Management (Professional Elective – VI)

Course Code: V18EET41

Course Outcomes (Along with Knowledge Level):

S.No.	CO No.	Course Outcome	BTL
1.	CO1	Understand need of energy storage systems	K2
2.	CO2	Determine various types of energy storage and various devices used for the purpose	K3
3.	CO3	Examine various real time applications	K3
4.	CO4	Interpret the role of battery management system	K3
5.	CO5	Illustrate the requirements of Battery Management System	K3
6.	CO6	Interpret the concept associated with battery charging / discharging process	K3

Text Books:

1. "James M. Eyer, Joseph J. Iannucci and Garth P. Corey", "Energy Storage Benefits and Market Analysis", Sandia National Laboratories, 1st edition, 2004.
2. The Electrical Energy Storage by IEC Market Strategy Board.

Reference Books:

1. "Jim Eyer, Garth Corey", Energy Storage for the Electricity Grid: Benefits and Market Potential Assessment Guide, Report, Sandia National Laboratories, Feb 2010.
2. Plett, Gregory L. Battery management systems, Volume I: Battery modeling. Artech House, 1st edition, 2015.
3. Plett, Gregory L. Battery management systems, Volume II: Equivalent-circuit methods. Artech House, 1st edition, 2015.
4. Bergveld, H.J., Kruijt, W.S., Notten, P.H.L "Battery Management Systems -Design by Modelling" Philips Research Book Series 2002.
5. <https://nptel.ac.in/content/storage2/courses/108103009/download/M9.pdf>.

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

Cos		CO1	CO2	CO3	CO4	CO5	CO6
Targeted Proficiency Level		80%	75%	70%	75%	70%	70%
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:							
CO.No.	Course Outcome	Intended Learning Outcomes (ILO)	e-resources link(s)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
C01	Understand need of energy storage systems	INTRODUCTION TO ENERGY STORAGE: Necessity of Energy Storage	https://en.wikipedia.org/wiki/Energy_storage	K2	1	Lecture with Discussion	Power Point Presentation
		DIFFERENT TYPES OF ENERGY STORAGE METHODS: Classification of Energy Storage Methods	https://en.wikipedia.org/wiki/Energy_storage	K2	1	Lecture with Discussion	Power Point Presentation
		Mechanical Energy Storage Devices	https://en.wikipedia.org/wiki/Energy_storage	K2	2	Lecture with Discussion	Power Point Presentation
		Thermal Energy Storage Devices	https://en.wikipedia.org/wiki/Energy_storage	K2	2	Lecture with Discussion	Power Point Presentation
		Electrochemical Energy Storage Devices	https://en.wikipedia.org/wiki/Energy_storage	K2	2	Lecture with Discussion	Power Point Presentation
		Chemical Energy Storage Devices	https://en.wikipedia.org/wiki/Energy_storage	K2	2	Lecture with Discussion	Power Point Presentation
		Electrical Energy Storage Devices and comparison of energy storage technologies	https://en.wikipedia.org/wiki/Energy_storage	K2	1	Lecture with Discussion	Power Point Presentation

CO2	Determine various types of energy storage and various devices used for the purpose	Emerging needs for EES, More renewable energy, less fossil fuel, Smart Grid uses	https://www.iec.ch/b asecamp/electrical-energy-storage	K2	1	Lecture with Discussion	Power Point Presentation
		The roles of electrical energy storage technologies, the roles from the viewpoint of a utility	https://www.iec.ch/b asecamp/electrical-energy-storage	K2	1	Lecture with Discussion	Power Point Presentation
		The roles from the viewpoint of consumers and in viewpoint of generators of renewable energy	https://www.iec.ch/b asecamp/electrical-energy-storage	K2	1	Lecture with Discussion	Power Point Presentation
CO3	Examine various real time applications	Classification of EES systems	https://www.iec.ch/b asecamp/electrical-energy-storage	K2	1	Lecture with Discussion	Power Point Presentation
		Mechanical storage systems: Pumped hydro storage (PHS), Compressed Air Energy Storage (CAES) and Flywheel energy storage (FES)	https://www.iec.ch/b asecamp/electrical-energy-storage	K3	2	Lecture with Discussion	Power Point Presentation
		Electrochemical storage systems: Secondary batteries- Lead acid battery (LA), Nickel cadmium and nickel metal hydride battery (NiCd, NiMH)	https://www.iec.ch/b asecamp/electrical-energy-storage	K3	2	Lecture with Discussion	Power Point Presentation
		Electrochemical storage systems: Secondary batteries- Lithium ion battery (Li-ion), Metal air battery (Me-air), Sodium sulphur battery (NaS), Sodium nickel chloride battery (NaNiCl)	https://www.iec.ch/b asecamp/electrical-energy-storage	K3	2	Lecture with Discussion	Power Point Presentation
		Flow batteries: Redox flow battery (RFB), Hybrid flow battery (HFB)	https://www.iec.ch/b asecamp/electrical-energy-storage	K3	2	Lecture with Discussion	Power Point Presentation

		Chemical energy storage: Hydrogen (H ₂), Synthetic natural gas (SNG)	https://www.iec.ch/basercamp/electrical-energy-storage https://en.wikipedia.org/wiki/Battery_management_system https://www.allaboutcircuits.com/technical-articles/introduction-to-battery-management-systems/	K3	2	Lecture with Discussion	Power Point Presentation		
		Introduction to Battery Management System	https://byjus.com/chemistry/difference-between-cell-and-battery/#:~:text=A%20cell%20is%20a%20single,also%20includes%20molten%20salt%20type. https://www.vedantu.com/chemistry/difference-between-cell-and-battery https://electricalschool.org/nominalvoltagebattery/?nab=0&utm_referrer=https%3A%2F%2Fwww.google.com%2F	K2	1	Lecture with Discussion	Power Point Presentation		
		Cells & Batteries		K2	1	Lecture with Discussion	Power Point Presentation		
		Types of Cells & Batteries		K2	2	Lecture with Discussion	Power Point Presentation		
		Nominal voltage and capacity		K2	1	Lecture with Discussion	Power Point Presentation		
CO4	Interpret the role of battery management system								


Battery C rate and its Calculation	https://www.power-sonic.com/blog/what-is-a-battery-rating/#:~:text=The%20Rating%20is,1%20Amps%20for%20one%20hour.	K3	2	Lecture with Discussion	Power Point Presentation	
Energy and Power	https://www.science.org.au/curious/technology-batteries#:~:text=A%20battery%20is%20a%20device,be%20used%20to%20do%20work.	K2	1	Lecture with Discussion	Power Point Presentation	
Cells connected in Series, Cells connected in Parallel	https://www.electrical4u.com/series-parallel-battery-cells/#:~:text=When%20in%20a%20battery%20connected%20or%20simply%20series%20battery.	K3	1	Lecture with Discussion	Power Point Presentation	
Electrochemical Cells	https://byjus.com/chemistry/electrochemical-cell/	K2	1	Lecture with Discussion	Power Point Presentation	
Lithium-ion Cells	https://investingnews.com/daily/resources-	K2	1	Lecture with Discussion	Power Point Presentation	

				systems volume-2- equivalent-circuit- methods- d187893994.html http://mocha- java.uccs.edu/ECE572/720/	K2	1	Lecture with Discussion	Power Point Presentation	
	State-of charge estimation		http://mocha- java.uccs.edu/ECE572	K2	1	Lecture with Discussion	Power Point Presentation		
	Cell total energy		http://mocha- java.uccs.edu/ECE572	K2	1	Lecture with Discussion	Power Point Presentation		
	Cell total power		http://mocha- java.uccs.edu/ECE572	K2	1	Lecture with Discussion	Power Point Presentation		
	Battery state of charge estimation (SOC)		http://mocha- java.uccs.edu/ECE572	K2	1	Lecture with Discussion	Power Point Presentation		
	voltage-based methods to estimate SOC		http://mocha- java.uccs.edu/ECE572		1	Lecture with Discussion	Power Point Presentation		
	Model-based state estimation, Battery Health Estimation		http://mocha- java.uccs.edu/ECE572		1	Lecture with Discussion	Power Point Presentation		
	Lithium-ion aging: Negative electrode		http://mocha- java.uccs.edu/ECE572		1	Lecture with Discussion	Power Point Presentation		
	Lithium ion aging: Positive electrode, Cell Balancing, Causes of imbalance, Circuits for balancing		http://mocha- java.uccs.edu/ECE572		2	Lecture with Discussion	Power Point Presentation		
C06	Interpret the concept associated with battery charging/ discharging process								

Course End Survey Questionnaire:

S. No.	COs	Question	Blooms Knowledge Level
1.	CO1	Rate your level of understanding the need of energy storage systems in the present scenario?	K2
2.	CO2	Have you understood the roles and responsibilities of energy storage systems in various aspects? Rate your level?	K3
3.	CO3	Are you able to choose the suitable type of energy storage device as per your need/requirement?	K3
4.	CO4	At what rate would you able to interpret the role of battery management system?	K3
5.	CO5	Are you able to illustrate the requirements of Battery Management System?	K3
6.	CO6	At what rate would you able to interpret the concept associated with battery charging / discharging process?	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. U. Chandra Rao Sr. Assistant Professor	VIII Semester (A&B)	8500117207 & usuchand816@srivasaviengg.ac.in	

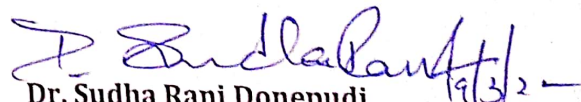
Name of the Course Coordinator (with designation):

Mr. U. Chandra Rao
Sr. Assistant Professor

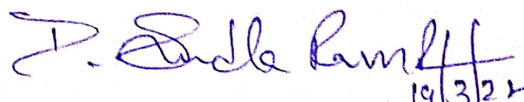
Signature of the Course Coordinator:


19/3/2022

Signature of the Module Coordinator:


Dr. Sudha Rani Donepudi 19/3/22

Signature of the Head of the Department:


19/3/22

LESSON PLAN

Programme : B. Tech - Electrical & Electronics Engineering

Semester: V

Course Code : V18EET12

Academic Year: 2021-22

Course Name : Switchgear and Protection

[L : 3; T:1; P : 0 (4 credits)]

Course Outcomes (Along with Knowledge Levels)

After successful completion of course the student will able to

CO No.	Course Outcome	Knowledge Level
CO1	Understand the principles of arc interruption for application to circuit breakers of oil, air, vacuum, SF6 gas type.	K2
CO2	Understand the constructional features and working of different types of electromagnetic relays	K2
CO3	Use suitable relay for different types of protection	K3
CO4	Relate the appropriate protective scheme for Generators and Transformers against internal and external faults.	K3
CO5	Choose suitable protective scheme for the protection of feeders & bus bars.	K3
CO6	Illustrate operation of static relays & digital relays & concept of grounding	K2

Text Books/ Reference Books suggested:

1. Power System Protection and Switchgear by Badari Ram, D.N Viswakarma, TMH Publications.
2. Power System Protection and Switchgear by B. ravindranath, M. chander new age international Publications.
3. Power system protection- Static Relays with microprocessor applications. By T.S.Madhava Rao, TMH
4. Fundamentals of Power System Protection by Paithankar and S.R. Bhide, PHI, 2003.
5. Art & Science of Protective Relaying – by C R Mason, Wiley Eastern Ltd.
6. Protection and SwitchGear by BhaveshBhalja, R.P. Maheshwari, NileshG.Chothani, Oxford University Press, 2013.

Proficiency and Attainment Levels for Course Outcomes in Percentages

Course Outcomes	Proficiency Level	Attainment Levels		
		Level 1	Level 2	Level 3
CO1	60%	40%	50%	60%
CO2	60%	40%	50%	60%
CO3	60%	40%	50%	60%
CO4	60%	40%	50%	60%
CO5	60%	40%	50%	60%
CO6	60%	40%	50%	60%
External	60%	40%	50%	60%

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching Aids
UNIT-I: Circuit Breakers						
1	Understand the principles of arc interruption for application to circuit breakers of oil, air, vacuum, SF6 gas type. (K2)	Understand the function of circuit breaker and working of MCB	K2	2	Lecture with discussion	Blackboard
		Understand the elementary principles of arc interruption, restriking, recovery voltages	K2	2	Lecture	Blackboard
		RRRV, average & max. RRRV	K2	1	Lecture with discussion	Blackboard
		Understand the methods of arc interruption, current chopping & resistance switching	K2	2	Lecture with discussion	Blackboard
		Understand the construction and operation of different types of circuit breakers, ratings & specifications, Auto reclosing	K2	5	Lecture	Blackboard/ PPT
Number of hours required				12		
UNIT-II: Electromagnetic Protection						
2	Understand the constructional features and working of different types of electromagnetic relays. (K2)	Understand the construction and principle of operation of electromagnetic relays	K2	4	Lecture	Blackboard/ PPT
		Classification of over current relays DMT & IDMT relays	K2	2	Lecture	Blackboard
Number of hours required				6		
Unit-III : Application of relays						
3	Use suitable relay for different types of protection (K3)	Over current & under voltage relays	K3	1	Lecture	Blackboard
		Directional & Differential relays, universal torque equation	K3	3	Lecture	Blackboard
		Distance relays	K3	1	Lecture	Blackboard
		Impedance, reactance & mho relays	K3	3	Lecture	Blackboard
		Off set mho relays	K3	1	Lecture	Blackboard
		Characteristics of distance relays & comparison	K3	1	Lecture	Blackboard
Number of hours required :				10		
Unit-IV: Protection of Generators & Transformers						
4	Relate the appropriate	Protection of Generators against stator faults	K2	2	Lecture	Blackboard

protective scheme for Generators and Transformers against internal and external faults.(K3)	Rotor Faults & Abnormal Conditions	K2	3	Lecture	Blackboard
	Restricted Earth Fault & Interturn Fault Protection, problems	K2	2	Lecture with discussion	Blackboard
	Protection of Transformers- Percentage Differential Protection, Buchholz Relay Protection, problems	K2	3	Lecture with discussion	Blackboard
	Numerical problems- Design of CTs Ratio	K3	2	Discussion	Blackboard
Number of hours required			12		

Number of hours required

UNIT-V: Feeder and Bus bar Protection

5	Choose suitable protective scheme for the protection of feeders & bus bars.(K3)	Protection of Lines-Over current, Carrier Current	K2	2	Lecture With discussion	Blackboard
		Three Zone Distance relay using Impedance Relays, problems on PSM,TMS	K3	2	Lecture with discussion	Blackboard
		Translay Relay	K2	1	Lecture	Blackboard
		Protection of Bus-Bars	K3	2	Lecture with discussion	Blackboard
		Differential Protection	K3	1	Discussion	Blackboard
Number of hours required			8			

Number of hours required

UNIT-VI: Static, Digital Relays & Neutral Grounding

6	Illustrate operation of static relays & digital relays & concept of grounding(K2)	Static Relay Components-Static Over Current Relay	K2	2	Lecture with discussion	Blackboard
		Static Distance Relay	K2	1	Lecture with discussion	Blackboard
		Microprocessor Based Digital Relays	K2	2	Lecture with discussion	Blackboard
		Effects of un grounded neutral	K2	1	Discussion	Blackboard
		Methods of neutral grounding & its practices	K2	2	Discussion	Blackboard
Number of hours required			8			

Number of hours required

Total number of hours required : 56


CO - PO MAPPING

CO/PO	PO1 (K3)	PO2 (K4)	PO3 (K5)	PO4 (K5)	PO5 (K3)	PO6 (K3)	PO7 (K3)	PO8 (K3)	PO9 (K6)	PO10 (K2)	PO11 (K6)	PO12 (K1)	PSO1 (K3)	PSO2 (K3)
EET12.1(K2)	1	1	1	1		1					1		1	1
EET12.2(K2)	1	1	1	1		1					1	3	2	2
EET12.3(K3)	2	1	1	1		2					1	3	2	2
EET12.4(K3)	2	1	1	1		2					1	3	1	1
EET12.5(K2)	1		1	1		1					1	3	2	2
EET12.6(K3)	2	1	1	1		2					1	3	1.5	1.5
EET12	1.5	1	1	1		1.5								

Course End Survey Questionnaire


- 1 Did you understand the basic principles of arc interruption in circuit breakers of oil,air,vacuum & SF6 gas type?
- 2 Are you able to extract the constructional features & working of different types of electromagnetic relays?
- 3 Are you able to apply suitable relay for different types of protection?
- 4 Can you relate protective schemes of Generators & Transformers against different faults?
- 5 Are you able to apply protective scheme for the protection of feeders & bus bars?
- 6 Did you understand the operation of static & digital relays & the concept of grounding?

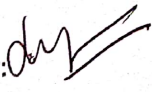
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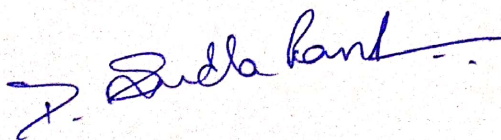
S.No.	Name of Instructor with designation	Year/Section	Contact No. & e-mail:	Signature of Course Instructor
1	Mr. U. Chandra Rao Sr. Assistant Professor	V Semester (A&B)	8500117207 & usuchand816@srivasaviengg.ac.in	

Name of the Course Coordinator (with designation):

Mr. U. Chandra Rao
Sr. Assistant Professor

Signature of the Course Coordinator: 

Signature of the Module Coordinator: 





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Pedatadepalli, Tadepalligudem, W.G.Dt, A.P-534101

Department of Mechanical Engineering

LESSON PLAN

Academic Year: 2021-2022

Programme: B.Tech

Year/ Semester: V

Section: A&B

Name of the Course: Metal Cutting & Machine Tools

Course Code: V18MET17

Course Outcomes:-

COs	After successful completion of the course, the student will be able to :	Knowledge Level	Proficiency Level	Attainment Level (%)		
				1	2	3
CO1	Examine the mechanism of chip formation in machining and explain different parameters involved in machining process	3	55%	55	60	65
CO2	Describe various types of lathe machines and their operations	3	55%	55	60	65
CO3	Explain the construction and working of shaper, slotter, planar, drilling and boring.	2	55%	55	60	65
CO4	Explain the construction and working of various milling and grinding machines	2	55%	55	60	65
CO5	Illustrate the basic principle and working of Ultrasonic machining, Abrasive jet machining and Electrochemical machining.	3	55%	55	60	65
CO6	Illustrate the basic principle and working of Electric discharge machining, electron beam machining, Laser beam machining.	3	55%	55	60	65

TEXT BOOKS :

1. Workshop Technology – B.S.RaghuWamshi – Vol II
2. Workshop Technology—S.K.Hajara Choudhury- Vol II
3. Advanced machining processes/ VK Jain/ Allied publishers.
4. Manufacturing science by Amitabha ghosh and Ashok kumar mallik/ East-West Press

REFERENCES :

1. Metal cutting Principles by M.C. Shaw
2. Metal cutting and machine tools by Boothroyd
3. Production Technology by H.M.T. (Hindustan Machine Tools).
4. roduction Engineering, K.C Jain & A.K Chitale, PHI Publishers
5. Manufacturing technology II, P.N Rao
6. Technology of machine tools, S.F.Krar, A.R. Gill, Peter SMID

S.No	CO	Knowledge Level ILO	Intended learning outcomes	No. of Hours Required	Pedagogy	Teaching aids	Remarks
UNIT-I							
1	CO1	K2	Explain about Elementary treatment of metal cutting theory	1	Lecture	Black Board	
2	CO1	K2	Classify Geometry of single point tool angles	1	Lecture	PPT & Models for single point cutting tool	
3	CO1	K2	Explain of Chip formation & types of chips	1	Lecture	PPT	
4	CO1	K2	Understand Build up edge and its effects	1	Lecture & Visual	Black Board	
5	CO1	K2	Explain mechanics of orthogonal cutting	1	Lecture & Visual	Black Board	
6	CO1	K3	Construct the Merchant's force diagram	1	Lecture & Visual	Black Board	

7	CO1	K3	Calculate cutting forces	1	Lecture & Visual	Black Board	
8	CO1	K2	Explain cutting speeds, feed, depth of cut	1	Lecture & Visual	Black Board	
9	CO1	K2	Understand tool materials coolants tool life	1	Lecture & Visual	Black Board	
UNIT-II							
11	CO2	K2	Explain Principle of working of Engine lathe, specification of lathe	1	Lecture & Visual	Black Board	
12	CO2	K2	Classify Types of lathe	1	Lecture & Visual	Black Board	
13	CO2	K2	Classify Work holders	1	Visual & Interaction	Black Board	
14	CO2	K2	Classify tool holders	1	Visual & Interaction	Black Board	
15	CO2	K3	Demonstrate Half nut mechanism for Thread cutting	1	Visual & Interaction	PPT	
16	CO2	K3	Demonstrate Taper turning and attachments	1	Lecture	Black Board	
17	CO2	K3	Demonstrate Apron mechanism	1	Lecture & Visual	PPT	
18	CO2	K2	Explain Miscellaneous Work and holders	1	Lecture	PPT	
19	CO2	K2	Illustrate Turret and capstan lathes	1	Lecture	Black Board	
UNIT -III							
21	CO3	K2	Explain principal parts, working of shaper ,specification	1	Lecture	Black Board	
22	CO3	K2	Operations performed by shaper	1	Lecture	Black Board	
23	CO3	K2	Explain principal parts, working of planar	1	Lecture	PPT	
24	CO3	K2	Specifications, operations performed by planar	1	Lecture & Visual	PPT	
25	CO3	K2	Explain principal parts, working of slotter	1	Lecture & Visual	Black Board	
26	CO3	K2	Specifications, operations performed by slotter	1	Lecture & Visual	PPT	
27	CO3	K2	Explain t Principle of working of drilling machine	1	Lecture & Visual	Black Board	
28	CO3	K2	Explain specifications, types drilling machines	1	Lecture & Visual	Black Board	

29	CO3	K2	Explain tool holding devices	1	Lecture & Visual	PPT	
30	CO3	K2	Explain work holding devices	1	Lecture & Visual	Black Board	
31	CO3	K2	Describe the nomenclature of Twist drill	1	Lecture & Visual	PPT	
32	CO2	K2	Explain Types of Boring Machines, jig boring machine	1	Lecture & Visual	Black Board	
33	CO3	K2	Applications of jig boring	1	Visual & Interaction	Black Board	
34	CO3	K2	Explain Deep hole Drilling Machine	1	Visual & Interaction	Black Board	
UNIT –IV							
36	CO4	K2	Explain Principles of working of milling machine and specifications	1	Lecture	Black Board	
37	CO4	K2	Classification of Milling Machines	1	Lecture	Black Board	
38	CO4	K2	Principle features of horizontal, vertical and universal Milling Machine	1	Lecture	PPT	
39	CO4	K2	Explain Milling machine cutters	1	Lecture & Visual	Black Board	
40		K2	Describe Types of operations	1	Lecture & Visual	Black Board	
41	CO4	K2	Work and tool holding devices	1	Lecture & Visual	PPT	
42	CO4	K2	Explain Methods of indexing Accessories to milling machine	1	Lecture & Visual	Black Board	
43	CO4	K2	Classify of grinding machines	1	Lecture	Black Board	
44	CO4	K2	Explain cylindrical and surface grinding machines, tool and cutter grinding machines	1	Lecture	Black Board	
45	CO4	K2	Explain different types of abrasives, bonds	1	Lecture	Black Board	
46	CO4	K2	Understand specification and selection of a grinding wheel	1	Lecture & Visual	Black Board	
47	CO4	K2	Explain about Lapping, Honing & Broaching operations, comparison to grinding	1	Lecture & Visual	Black Board	
UNIT-V							
49	CO5	K2	Discuss need for non-	1	Lecture	Black	

			traditional machining methods			Board	
50	CO5	K2	Classify of modern machining processes	1	Lecture	Black Board	
51	CO5	K2	Explain Elements and working principle of the Ultra Sonic machining process	1	Lecture	PPT	
52	CO5	K3	Calculate material removal rate in USM	1	Lecture & Visual	Black Board	
53	CO5	K2	Explain Applications, advantages and limitations.	1	Lecture & Visual	Black Board	
54	CO5	K3	Illustrate Abrasive jet machining working principle	1	Lecture & Visual	PPT	
55	CO5	K2	Explain Applications , advantages and limitations	1	Lecture & Visual	Black Board	
56	CO5	K3	Illustrate Fundamentals of electro chemical machining and working principle	1	Lecture & Visual	Black Board	
57	CO5	K3	Illustrate electrochemical grinding, honing	1	Lecture & Visual	PPT	
58	CO5	K3	Find metal removal rate in ECM	1	Lecture	Black Board	
59	CO5	K2	Explain Applications , advantages and limitations	1	Lecture	Black Board	
UNIT-VI							
61	CO6	K3	Illustrate Principle of EDM, working	1	Lecture	Black Board	
62	CO6	K3	Develop Power circuits for EDM, wire EDM process	1	Lecture	Black Board	
63	CO6	K2	Explain Applications , advantages and limitations	1	Lecture	PPT	
64	CO6	K3	Illustrate Electron Beam Machining Basic principle, working	1	Lecture & Visual	Black Board	
65	CO6	K2	Explain Applications , advantages and limitations	1	Lecture & Visual	Black Board	
66	CO6	K3	Illustrate Laser Beam Machining Basic principle	1	Lecture & Visual	PPT	
67	CO6	K2	Explain Applications , advantages and limitations	1	Lecture & Visual	Black Board	
			Total Classes	62			

Name of the Teacher: S.ChandraSekhar

Qualification:M.Tech

Designation: Assistant professor

Department: Mechanical Engineering

Signature of the Staff member:

Remarks of the Course Coordinator:

Remarks of the Module Coordinator:

Remarks of the Head of the Department:

CO-PO Mapping:-

CO	PO1(3)	PO2(4)	PO3(5)	PO4(4)	PO5(3)	PO6(3)	PO7(3)	PO8(3)	PO9(2)	PO10(2)	PO11(3)	PO12(1)
CO1 (3)	2	1	---	1					3			3
CO2 (3)	2	1	---	1					3			3
CO3 (2)	1	1	1	1					2			3
CO4 (2)	1	1	1	1					2			3
CO5 (3)	2	1	1	1					3			3
CO6 (3)	2	1	1	1					3			3

Course-PO Mapping:-

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	PO11	PO12	PSO1	PSO2
CO	1.66	1	0.66	1	-	-	-	-	2.66	-	-	3	1.66	1.66

CO- PSO matrix:-

Course Outcome	PSO1 K(3)	PSO2 K(3)
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CO1 (3)	2	2
CO2 (3)	2	2
CO3 (2)	1	1
CO4 (2)	1	1
CO5 (3)	2	2
CO6 (3)	2	2
C303	1.66	1.66

DETAILED SYLLABUS:

UNIT – I

FUNDAMENTALS OF MACHINING:-

Elementary treatment of metal cutting theory – element of cutting process –geometry of single point tool angles, chip formation and types of chips – built up edge and its effects chip breakers, mechanics of orthogonal cutting –Merchant’s force diagram, cutting forces, cutting speeds, feed, depth of cut, tool life, coolants, tool materials.

UNIT – II

LATHE MACHINES:-

Engine lathe, principle of working, specification of lathe, types of lathe, work holders tool holders, taper turning, thread turning for lathes and attachments. Turret and capstan lathes, collet chucks, other work holding, tool holding devices.

UNIT – III

SHAPING, SLOTTING AND PLANNING MACHINES:-

Principles of working – principal parts – specifications, operations performed

DRILLING & BORING MACHINES:-

Principles of working, specifications, types, operations performed – tool holding devices – twist drill– Boring Machines – jig boring machine, deep hole Drilling machine.

UNIT – IV

MILLING MACHINES:-

Principles of working, specifications, classification of Milling Machines, Principle features of horizontal, vertical and universal Milling Machine, machining operations, types of cutters, methods of indexing.

FINISHING PROCESSES:-

Theory of grinding, classification of grinding machines, cylindrical and surface grinding machines, tool and cutter grinding machines, different types of abrasives, bonds, specification and selection of a grinding wheel. Lapping, Honing & Broaching operations.

UNIT – V

Need for non-traditional machining -Ultrasonic machining (USM), Abrasive jet machining (AJM), Electro-chemical machining (ECM)- Basic principle, equipment, applications, advantages and limitations.

UNIT – VI

Electric Discharge Machining (EDM), Electron Beam Machining (EBM), Laser Beam Machining (LBM)- Basic principle, equipment, applications, advantages and limitations.

TEXT BOOKS:-

1. Production Technology by R.K. Jain and S.C. Gupta.
2. Workshop Technology – B.S. Raghuwanshi – Vol II/Dhanpat Rai & Co. (P) Ltd
4. Elements of Workshop Technology Vol 2- S K Hajra choudhury/Asia Publishing House
3. Advanced machining processes/ VK Jain/ Allied publishers.

REFERENCES:-

1. Metal cutting Principles by M.C. Shaw
2. Metal cutting and machine tools by Boothroyd
3. Manufacturing technology II, P.N Rao
4. Production Technology by H.M.T. (Hindustan Machine Tools).
5. Modern Machining Process / Pandey P.C. and Shah H.S./ TMH.
6. New Technology / Bhattacharya A/ The Institution of Engineers, India 1984.

Course Coordinator

Module Coordinator

Head of the Department



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Pedatadepalli, Tadepalligudem, W.G.Dt, A.P-534101

Department of Mechanical Engineering

LESSON PLAN

Academic Year: 2021-2022

Programme: B.Tech

Year/ Semester: V

Section: A&B

Name of the Course: Metal Cutting & Machine Tools

Course Code: V18MEL16

Course Outcomes:-

	After successful completion of the course, the student will be able to:	Knowledge Levels	Proficiency Level	Attainment Levels		
				80%	85%	90%
CO1	Understanding various mechanism used in different machine tools	2	75%	80%	85%	90%
CO2	Apply desired work holders and tool holder for specific work	3	75%	80%	85%	90%
CO3	operate different machine tools	3	75%	80%	85%	90%
CO4	produce different part features to the desired quality by selecting proper machine tool	3	75%	80%	85%	90%

S. No	CO	Knowledge Level	Contents	No. of Sessions Required	Pedagogy	Teaching aids	Remarks
1	CO1	2	Introduction of general purpose machines - lathe, drilling machine, milling machine, shaper, planing machine, slotting machine, cylindrical grinder, surface grinder and tool and cutter grinder	3	demonstration	Machine Tools	
2	CO2	3	Step turning and taper turning on	3	demonstr	Machine	

			lathe machine		ation	Tools	
3	CO3	3	Thread cutting and knurling on lathe machine.	3	demonstration	Machine Tools	
4	CO3	3	Drilling and tapping	3	demonstration	Machine Tools	
5	CO3	3	Shaping	3	demonstration	Machine Tools	
6	CO3	3	Slotting	3	demonstration	Machine Tools	
7	CO3	3	Pocket Milling, Gear cutting, T-slot Milling	3	demonstration	Machine Tools w	
8	CO3	3	Cylindrical grinding	3	demonstration	Machine Tools	
9	CO3	3	Grinding of tool angles.	3	demonstration	Machine Tools	
10	CO3	3	surface grinding	3	demonstration	Machine Tools	
11	CO4	3	Checking the quality of components	3	Checking equipments	Checking equipments	
			Total Classes	33			

Name of the Teacher: S.Chandra Sekhar

Qualification: M.Tech

Designation: Assistant professor

Department: Mechanical Engineering

Signature of the Staff member:

Remarks of the Course Coordinator:

Remarks of the Module Coordinator:

Remarks of the Head of the Department:

CO-PO Mapping:

CO	PO1(3)	PO2(4)	PO3(5)	PO4(4)	PO5(3)	PO6(3)	PO7(3)	PO8(3)	PO9(2)	PO10(2)	PO11(3)	PO12(1)
CO1(2)					1							3
CO2(3)					2							3
CO3(3)					2							3

CO4 (3)					2							3
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Course-PO Mapping:

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	PO11	PO12
CO	-	-	-	-	1.75	-	-	-	-	-	-	3

Detailed syllabus:

1. Introduction of general purpose machines -lathe, drilling machine, milling machine, shaper, planing machine, slotting machine, cylindrical grinder, surface grinder and tool and cutter grinder.
2. Step turning and taper turning on lathe machine
3. Thread cutting and knurling on -lathe machine.
4. Drilling and tapping
5. Shaping and planning
6. Slotting
7. Milling
8. Cylindrical surface grinding
9. Grinding of tool angles.

Course Coordinator

Module Coordinator

Head of the Department



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Pedatadepalli, Tadepalligudem, W.G.Dt, A.P-534101

LESSON PLAN

Academic Year: 2021-2022

Program: B.Tech

Semester: VIII

Section: A&B

Course Code: V18MET32

Name of the Course: Non Destructive Evaluation

	After successful completion of the course, the student will be able to:	Knowledge Level	Proficiency Level	Attainment Level		
CO1	Identify the flaws in manufacturing process through radiographic inspection	2	50%	50%	55%	60%
CO2	Explain the theory of wave propagation and inspect the components using ultrasonic test	2	50%	50%	55%	60%
CO3	Identify various surface, subsurface flaws with LPT and ECT	2	50%	50%	55%	60%
CO4	Explain the principle of eddy current test system, flaw detection and evolution	2	50%	50%	55%	60%
CO5	Demonstrate the flaw detection using IRT test	2	50%	50%	55%	60%
CO6	Find the industrial applications in railways, nuclear, aerospace etc	3	50%	50%	55%	60%

TEXT BOOK:

1. Non-destructive test and evaluation of Materials, J Prasad, GCK Nair, TMH Publishers.
2. Ultrasonic testing by Krautkramer and Krautkramer.
3. Non-destructive testing, Warress, JMcGonmade

REFERENCES:

1. Ultrasonic inspection training for NDT: E. A. Gingel, Prometheus Press.
2. ASTM Standards, Vol 3.01, Metals and alloys.
3. Non-destructive, Hand Book – R. Hamchand .

S.No	Course Outcome	<i>Intended Learning Outcomes (ILO)</i>	<i>Knowledge Level of (ILO)</i>	<i>No. of Hours Required</i>	<i>Pedagogy</i>	<i>Teaching aids</i>
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1		Disseminating Vision & Mission		1	Lecture	Black Board
2	CO1	Casting defects	2	1	Lecture	Black Board
3	CO1	Welding defects	2	1	Lecture	Black Board
4	CO1	Machining defects	2	1	Lecture	Black Board
5	CO1	Introduction to NDE	1	1	Lecture	Black Board
6	CO1	Methods and areas of NDE	1	1	Lecture	Black Board
7	CO1	Basic principle of Radiography	2	1	Lecture	Animated Video
8	CO1	Types of Radiography	2	1	Lecture	PPT
9	CO1	Advantages, limitations, applications of Radiography	2	1	Lecture	Black Board
10	CO1	Sources of Radiation	2	1	Lecture	Black Board
11	CO1	X-Ray Equipment	2	1	Lecture	PPT
12	CO1	X-rays interaction with matter	2	1	Lecture	Black Board
13	CO1	γ -ray production	2	1	Lecture	PPT
14	CO1	γ -ray equipment	2	1	Lecture	PPT
15	CO1	Properties of X-rays and γ -rays	2	1	Lecture	Black Board
16	CO1	Safety aspects of industrial radiography	2	1	Lecture	Black Board
17	CO1	Radiographic Techniques	2	1	Lecture	Black Board
18	CO1	Radiographic film evaluation	2	1	Lecture	PPT
19	CO2	Introduction to Ultrasonic testing	1	1	Lecture	PPT

20	CO2	Basic principle of UT	2	1	Lecture	Animated Video
21	CO2	Phenomenon of Wave propagation	2	1	Lecture	Black Board
22	CO2	Types of wave propagations	2	1	Lecture	PPT
23	CO2	Acoustic impedance	2	1	Lecture	Black Board
24	CO2	Mode conversion of sound waves	3	1	Lecture	PPT
25	CO2	Reflection, Refraction, diffraction	2	1	Lecture	PPT
26	CO2	Attenuation of sound, sound field	2	1	Lecture	Black Board
27	CO2	Piezo electric effect	2	1	Lecture	Black Board
28	CO2	Elements of piezo electric transducer	2	1	Lecture	Black Board
29	CO2	Types of transducers	2	1	Lecture	PPT
30	CO2	Variables effecting UT	2	1	Lecture	Black Board
31	CO2	Guidelines for acceptance and rejection	2	1	Lecture	Black Board
32	CO2	Advantages, limitations, applications of UT	2	1	Lecture	Black Board
33	CO3	Introduction to Liquid penetrant Test	1	1	Lecture	Black Board
34	CO3	Basic principle	2	1	Lecture	Animated Video
35	CO3	LP Test procedure	2	1	Lecture	PPT
36	CO3	LP System	2	1	Lecture	PPT
37	CO3	Advantages, limitations, applications of LPT	2	1	Lecture	Black Board
38	CO3	Introduction to Eddy current Test	2	1	Lecture	Black Board

39	CO3	Generation of Eddy currents	2	1	Lecture	Animated Video
40	CO3	Advantages, limitations, applications of eddy current Test	2	1	Lecture	Black Board
41	CO3	Factors effecting eddy current test	2	1	Lecture	Black Board
42	CO3	Eddy current test system	2	1	Lecture	PPT
43	CO3	Factors effecting Impedance diagram	2	1	Lecture	Black Board
44	CO3	Types of sensing elements	2	1	Lecture	PPT
45	CO4	Basic principle of magnetic particle test	2	1	Lecture	Animated Video
46	CO4	Types of magnetic materials	2	1	Lecture	Black Board
47	CO4	Magnetization and demagnetization of materials	2	1	Lecture	PPT
48	CO4	Magnetic particle test equipment and test procedure	2	1	Lecture	PPT
49	CO4	Standardization and calibration	2	1	Lecture	PPT
50	CO4	Interpretation and evaluation of MPPT	2	1	Lecture	Black Board
51	CO4	Advantages, limitations, applications of magnetic particle test	2	1	Lecture	Black Board
52	CO5	Fundamentals of Infrared and thermal testing	2	1	Lecture	Black Board
53	CO5	Active and passive techniques	2	1	Lecture	Black Board
54	CO5	Lock in and pulse thermography	2	1	Lecture	PPT
55	CO5	Contact and non contact thermal inspection methods	2	1	Lecture	PPT
56	CO5	Heat sensitive paints and papers	2	1	Lecture	PPT
57	CO5	Liquid crystals,	2	1	Lecture	PPT

		techniques for applying liquid crystals				
58	CO5	Temperature sensitive coatings	2	1	Lecture	Black Board
59	CO5	IR radiation and IR detectors	2	1	Lecture	PPT
60	CO5	IR imaging in aerospace applications	2	1	Lecture	Black Board
61	CO5	IR imaging in electronic applications	2	1	Lecture	Black Board
62	CO5	IR imaging in honey comb and sandwich structure	2	1	Lecture	Black Board
63	CO6	Span of NDT activities in railways	3	1	Lecture	Black Board
64	CO6	NDT activities in Nuclear, non nuclear, chemical industries and automotive industries	3	1	Lecture	Black Board
65	CO6	NDT activities in Offshore, gas and petroleum and coal mining industry	3	1	Lecture	Black Board
66	CO6	NDT activities in pressure vessels, castings, welded constructions	3	1	Lecture	Black Board
				66		

Name of the Teacher: S.Chandra Sekhar

Qualification: M.Tech

Designation: Assistant professor

Department: Mechanical Engineering

Signature of the Staffmember:

Remarks of the Course Coordinator:

Remarks of the Module Coordinator:

Remarks of the Head of the Department:

CO-PO Mapping:

CO	PO1(3)	PO2(4)	PO3(5)	PO4(4)	PO5(3)	PO6(3)	PO7(3)	PO8(3)	PO9(2)	PO10(2)	PO11(3)	PO12(1)
CO1 (2)	1	1	1						2			3
CO2 (2)	1	1	1						2			3
CO3 (2)	1	1	1						2			3
CO4 (2)	1	1	1						2			3
CO5 (2)	1	1	1						2			3
CO6 (3)	2	1	1						3			3
C411	1.166	1	1						2.166			3

CO- PSO matrix:

<i>Course Outcome</i>	PSO1 K3	PSO2 K3
CO1 (2)	1	1
CO2 (2)	1	1
CO3 (2)	1	1
CO4 (2)	1	1
CO5 (2)	1	1
CO6 (3)	2	2
CT32	1.16	1.16

Course Coordinator

Module Coordinator

Head of the Department



Sri Vasavi Engineering College (Autonomous)

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Pedatadepalli, Tadepalligudem, W.G.Dt, A.P-534101

Department of Mechanical Engineering

LESSON PLAN

Academic Year: 2021-2022

Programme: B.Tech

Year/ Semester: VII

Section: A&B

Name of the Course: Production Drawing Lab

Course Code: V18MEL13

Course Outcomes:-

CO's	After successful completion of the course, the student will be able to :	Knowledge Level	Proficiency Level	Attainment Level (%)		
				1	2	3
CO1	Recognize the need of limits, fits and tolerances, and apply the same on part drawings for manufacturing.	2	60%	65	70	75
CO2	Explain the basic concepts of Geometric Dimensioning and tolerancing, able to apply GD&T to the part drawing.	2	60%	65	70	75
CO3	Indicate various surface roughness symbols on part drawings for manufacturing.	2	60%	65	70	75
CO4	Estimate the raw material requirements, final cost of the component and heat treatment process.	2	60%	65	70	75
CO5	Develop skill to produce detailed drawings from assembly drawings.	3	60%	65	70	75
CO6	Construct press tools, die-casting dies and jigs and fixtures using computer aided design software.	3	60%	65	70	75

S.No	CO	Knowledge Level ILO	Intended learning outcomes	No. of Hours Required	Pedagogy	Teaching aids	Remarks
PART-A							
1	CO1	K2	Types of fits	3	Lecture	Black Board	
2	CO1	K2	exercises involving selection and interpretation of fits	3	Lecture	Black Board	
3	CO1	K2	estimation of limits from tables	3	Lecture	Black Board	
4	CO2	K2	Introduction to GD&T	1	Lecture	Black Board	
5	CO2	K2	terminology & basic rules	1	Lecture	Black Board	
6	CO2	K2	features and material conditions	1	Lecture	Black Board	
7	CO2	K2	maximum material condition, least material condition	1	Lecture	Black Board	
8	CO2	K2	regardless of feature's size, datums, datum reference frame	1	Lecture	Black Board	
9	CO2	K2	form tolerances, orientation tolerances, profile tolerances, runout tolerances	2	Lecture	PPT	
10	CO2	K2	size, location, orientation & form, choosing datums	2	Lecture	PPT	
11	CO2	K2	indication of form and position tolerances on drawings	2	Lecture	PPT	
12	CO2	K2	preparation of bill of material	1	Lecture	PPT	
13	CO3	K2	Definition, types of surface roughness indications	1	Lecture	Black Board	
14	CO3	K2	Surface roughness obtained from various manufacturing process	1	Lecture	Black Board	
15	CO4	K2	recommended surface roughness on mechanical components	1	Lecture	Black Board	
16	CO4	K2	heat treatment and surface treatment	1	Lecture	Black Board	

			symbols used on drawings.				
PART-B							
17	CO5	K3	Drawing of parts from assembly of stuffing box	6	Lecture	CAD Software	
18	CO6	K3	Lathe tailstock	6	Lecture	CAD Software	
19	CO6	K3	piercing and blanking die	12	Lecture	CAD Software	
20	CO6	K3	Die casting die	12	Lecture	CAD Software	
21	CO6	K3	Box jig	6	Lecture	CAD Software	
22	CO6	K3	machining fixture with indication of size, tolerance, roughness, form and position tolerances	6	Lecture	CAD Software	
Total Classes				73			

Name of the Teacher: S.Chandra Sekhar

Qualification: M.Tech

Designation: Assistant professor

Department: Mechanical Engineering

Signature of the Staff member:

Remarks of the Course Coordinator:

Remarks of the Module Coordinator:

Remarks of the Head of the Department:

CO-PO Mapping:

CO	PO1(3)	PO2(4)	PO3(5)	PO4(4)	PO5(3)	PO6(3)	PO7(3)	PO8(3)	PO9(2)	PO10(2)	PO11(3)	PO12(1)
CO1(2)					1							3
CO2(2)					1							3

CO3(2)					1							3
CO4(2)					1							3
CO5(3)					2							3
CO6(3)					2							3

Course-PO Mapping:

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	PO11	PO12
CO	-	-	-	-	1.33	-	-	-	-	-	-	3

DETAILED SYLLABUS:

PART-A

Limits, Fits and Tolerances: Types of fits, exercises involving selection and interpretation of fits and estimation of limits from tables.

Geometric Dimensioning and Tolerancing: Introduction to GD&T ,terminology & basic rules, features and material conditions, maximum material condition, least material condition, regardless of feature's size, datums, datum reference frame, **form tolerances, orientation tolerances, profile tolerances, runout tolerances.**

Adding GD&T to a drawing/design- size, location, orientation & form, choosing datums, indication of form and position tolerances on drawings, preparation of bill of material

Surface roughness and its indications: Definition, types of surface roughness indication- Surface roughness obtained from various manufacturing process, recommended surface roughness on mechanical components, heat treatment and surface treatment symbols used on drawings.

PART-B

Drawing of parts from assembly of stuffing box, Lathe tailstock, piercing and blanking die, Die casting die, Box jig, machining fixture with indication of size, tolerance, roughness, form and position tolerances using Computer aided design software.

TEXT BOOKS:

1. Production and Drawing – K.L. Narayana & P. Kanniah/New Age Publication
2. Tool Engineering & Design _ G.R. Nagpal/Khanna publishers, 1st edition, Khanna Publishers,2009
3. Machine Drawing with Auto CAD- Pohit and Ghosh, 1st edition, Pearso, 2017
4. Geometric dimensioning and tolerancing- James D. Meadows/B.S

REFERENCES:

1. Machine Drawing by Nagpal,1st edition, khanna publishers, 2009
2. Machine drawing, Ajeet Singh, 2nd edition, TMH, 2016
3. Engineering Metrology,R.K. Jain, Khanna Publications .

Course Coordinator

Module Coordinator

Head of the Department



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 2021-22

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

OOPs Through C++

Academic Year: 2021-22

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, 2nd Edition, Pearson.
2. C++ How to Program, Paul J. Deitel, Harvey Deitel, 6th 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, 4th 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: 2021-22

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:

UNIT - 1: Introduction , Divide & Conquer						
S. No.	Course Outcome	Intended Learning Outcome (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching Aid
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
			Total	18		

UNIT - 2: The Greedy Method						
S. No.	Course Outcome	Intended Learning Outcome (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching Aid
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
				Total:	11	

UNIT - 3: Dynamic Programming						
S. No.	Course Outcome	Intended Learning Outcome (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching Aid
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
				Total:	13	

UNIT - 4: Backtracking						
S. No.	Course Outcome	Intended Learning Outcome (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching Aid
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
			Total:	08		

UNIT - 5: Branch and Bound						
S. No.	Course Outcome	Intended Learning Outcome (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching Aid
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
			Total:	10		

Total Number of Hours: 60

Operating Systems

Academic Year: 2021-22

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
Total				6		
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
Total				10		

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		
Total				14		
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
Total				10		
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
Total				7		

Total No. of Classes: 47

Data Mining

Academic Year: 2021-22

Year/ Semester: VI

Name of the Course: Data Mining

Programme: B.Tech

Section: A,B,C& D

Course Code: V18CST20/313

COURSE OUTCOMES (Along with Knowledge Level):

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

S.No.	CO No.	Course Outcome
1	313.1	Explain the concept of Data Mining and its functionalities.[K2]
2	313.2	Discuss various Data Preprocessing Techniques [K2]
3	313.3	Demonstrate Association Analysis Techniques. [K3]
4	313.4	Illustrate various Classification Techniques.[K3]
5	313.5	Demonstrate Alternative techniques for Classification [K3]
6	313.6	Use different Clustering techniques to cluster data.[K3]

Text Books:

1. Data Mining Concepts and Techniques, Jiawei Han, Micheline Kamber, Jian Pei, 3rd Edition, Morgan Kaufmann Publishers

Reference Books:

1. Introduction to Data Mining, Pang-Ning Tan, Michael Steinbach, Vipin Kumar, 1st Edition, Pearson Education Inc.

2. Data Mining and Analysis, Mohammed J Zaki, Wagner Meira JR, 1st Edition, Cambridge University Press

Lecture Plan

UNIT - I

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.	CO1	Dissemination of Department Vision, Mission, PEOs, POs, PSOs, COs, Introduction: Identify what motivated Data Mining.	K1	1	Lecture	BB/ICT
2.		State the importance of Data Mining. Describe kinds of Data on which Data Mining can be done.	K1	2	Lecture	BB/ICT
3.		Illustrate Data Mining Functionalities.	K2	2	Lecture+ discussion	BB/ICT
4.		Illustrate Major Issues in Data Mining	K1	1	Lecture	BB/ICT
5.		Explain Attribute Types and Basic Statistical Descriptions of Data	K2	2	Lecture + discussion	BB/ICT
6.		Illustrate Data Visualization techniques.	K2	1	Lecture + discussion	BB/ICT
7.		Describe Data Similarity and Dissimilarity measures	K2	2	Lecture + discussion	BB/ICT
		Total		11		

UNIT – II

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Reqd.	Pedagogy	Teaching aids
1.	CO2	Data Pre-processing: Identify reasons for pre-processing the data.	K1	1	Lecture	BB/ICT
2.		Describe Descriptive Data Summarization.	K2	1	Lecture + discussion	BB/ICT
3.		Explain Data Cleaning techniques.	K2	2	Lecture + discussion	BB/ICT
4.		Discuss Data Integration and Data Transformation techniques	K2	2	Lecture + discussion	BB/ICT
5.		Explain Data Reduction techniques.	K2	2	Lecture + discussion	BB/ICT
6.		Discuss Data Discretization and Concept Hierarchy Generation.	K2	2	Lecture + discussion	BB/ICT
		Total			10	

UNIT - III

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Reqd.	Pedagogy	Teaching aids
1.	C03	Illustrate the concept of Association Analysis	K2	2	Lecture + discussion	BB/ICT
2.		Explain Frequent Itemset generation process.	K2	2	Lecture + discussion	BB/ICT
3.		Discover Association Rules from the given data.	K3	2	Lecture + discussion and In-class Assignment	BB/ICT
4.		Present a Compact representation of frequent itemsets.	K1	1	Lecture	BB/ICT
5.		Use FP-Growth Algorithm for Association Analysis.	K3	2	Lecture + discussion and In-class Assignment	BB/ICT
		Total			9	

UNIT - IV

S.N O	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Reqd.	Pedagogy	Teaching aids
1.	CO4	Classification : Describe the basic concepts of Classification	K1	1	Lecture	BB/ICT
2.		Illustrate the approach for solving a classification problem.	K2	1	Lecture + discussion	BB/ICT
3.		Explain the concept of a Decision Tree Induction	K2	2	Lecture + discussion	BB/ICT
4.		Construct a decision tree.	K3	1	Lecture + discussion and In-class Assignment	BB/ICT
5.		Describe the methods for expressing an attribute test conditions.	K2	1	Lecture + discussion	BB/ICT
6.		Identify the measures for selecting the best split.	K2	1	Lecture + discussion	BB/ICT
7.		Illustrate Tree Pruning	K3	2	Lecture + discussion and In-class Assignment	BB/ICT
			Total		09	

UNIT - V

S.N O	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Reqd.	Pedagogy	Teaching aids
1.	CO5	Classification : Alternative techniques Explain Bayes' Theorem	K2	2	Lecture+ discussion	BB/ICT
2.		Apply Naïve Bayesian Classification Algorithm	K3	2	Lecture + discussion and In-class Assignment	BB/ICT
3.		Explain the concept of Bayesian Belief Networks	K2	2	Lecture + discussion	BB/ICT
			Total		06	

UNIT – VI

S.N O	Course Outcome	Intended Learning Outcomes (ILO)	Knowle dge Level of ILO	No. of Hours Reqd.	Pedagogy	Teaching aids
1.	CO6	Explain the Concept of Cluster Analysis.	K2	1	Lecture + discussion	BB/ICT
2.		Describe different types of Clustering and Different Types of Clusters.	K2	2	Lecture + discussion	BB/ICT
3.		Apply k-means and its variants for clustering.	K3	3	Lecture + discussion and In-class Assignment	BB/ICT
4.		Describe k-means additional issues.	K1	1	Lecture	BB/ICT
5.		Describe k-means and different types of clusters.	K2	1	Lecture + discussion	BB/ICT
6.		Identify k-means strengths and Weaknesses	K1	1	Lecture	BB/ICT
7.		Express k-means as an Optimization Problem.	K2	1	Lecture + discussion	BB/ICT
8.		Apply Basic Agglomerative Hierarchical Clustering.	K3	1	Lecture + discussion and In-class Assignment	BB/ICT
9.		Discuss other Specific Techniques for Agglomerative Hierarchical Clustering	K2	1	Lecture + discussion	BB/ICT
10.		Explain Traditional Density: Center-Based Approach.	K2	1	Lecture + discussion	BB/ICT
11.		Apply the DBSCAN Algorithm.	K3	1	Lecture + discussion and In-class Assignment	BB/ICT
12.		List strengths and Weaknesses of DBSCAN Algorithm	K1	1	Lecture	BB/ICT
		Total		15		

Advanced Java & Web Technologies

Academic Year: 2021-22

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		CO1	CO2	CO3	CO4	CO5	CO6
Targeted Proficiency Level		60	60	60	60	60	60
Targeted level of Attainment	Level 3	60	60	60	60	60	60
	Level 2	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
Total				11		
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
Total				13		
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
Total				9		
4		Explain of XML , Syntax, XML Document Structure	K2	2	Lecture	BB+ICT

	C04	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
Total				10		
5	C05	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
Total				9		
6	C06	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
Total				10		

Total No. of Classes: 62

Software Project Management

Academic Year : 2021-22

Programme: B.Tech

Semester : VIII

Sections :A,B,C&D

Name of the Course: Software Project Management

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	CO4	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	CO5	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	CO6	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 2021-22

S.No	Semester	Course
1	III	Computer Organization and Architecture
2	IV	Database Management Systems
3	V	Unix Programming
4	VI	OOAD Through UML

Computer Organization and Architecture

Academic Year: 2021-22

Programme: B.Tech

Semester: III

Name of the Course: Computer Organization and Architecture Course Code: V20CST05

LESSON PLAN

Course Outcomes (Along with Knowledge Level):

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

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

TEXT BOOKS:

1. Computer Organization, Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 5th Edition, McGraw Hill Education.
2. Computer System Architecture, M. Morris Mano, 3rd Edition, Pearson Education.
3. David A. Patterson and John L. Hennessy, Computer Organization and Design: The Hardware/Software Interface, Fifth Edition, Morgan Kaufmann / Elsevier, 2014.

REFERENCE BOOKS:

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

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

Cos	CO	CO	CO	CO	CO
Targeted Proficiency Level	65	65	65	65	65
Targeted level of Attainment	Level 3	65	65	65	65
	Level 2	60	60	60	60
	Level 1	55	55	55	55

Lecture 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, CO'S and syllabus.		1	Lecture	ICT
2	Introduction & Instru	Describe various Functional units of a computer	K1	1	Lecture	BB

3	ction Sequencing and Addressing Modes	Illustrate the Basic Operational concepts	K2	2	Lecture with Discussion	BB/ICT
4		Discuss the Bus structures of computers.	K2	2	Lecture with Discussion	BB/ICT
5		Explain the instructions and instruction sequencing.	K2	2	Lecture with Discussion	BB/ICT
6		Illustrate the various addressing modes of instructions.	K2	3	Lecture with Discussion	BB/ICT
7		Discuss the basic input/output operation of computers.	K2	2	Lecture with Discussion	BB/ICT

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 2: Input/output Organization	Describe the Accessing Input/output devices	K1	2	Lecture	BB/ICT
2		Describe the Interrupts	K2	2	Lecture with Discussion	BB/ICT
3		Discuss the Handling Multiple	K2	1	Lecture with Discussion	BB/ICT

		Devices				
4		Explain the Direct Memory Access.	K2	4	Lecture with Discussion	BB/ICT
5		Explain the Buses and its types.	K2	3	Lecture with Discussion	BB/ICT

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3: Memory Organization	Describe the memory hierarchy	K1	1	Lecture	BB/ICT
2		Explain the main memory	K2	2	Lecture with Discussion	BB/ICT
3		Illustrate the auxiliary memory	K2	2	Lecture with Discussion	BB/ICT
4		Illustrate the Associative memory.	K2	3	Lecture with Discussion	BB/ICT
5		Illustrate the cache memory	K2	3	Lecture with Discussion	BB/ICT

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1		Describe the Fundamental	K1	1	Lecture	BB/ICT

	CO 4: Processing Unit	Concepts in execution of instruction.				
2		Describe the Execution of a Complete Instruction	K2	2	Lecture with Discussion	BB/ICT
3		Explain the Multiple-Bus Organization	K2	2	Lecture with Discussion	BB/ICT
4		Discuss the Hardwired Control unit	K2	2	Lecture with Discussion	BB/ICT
5		Discuss the Micro Programmed Control unit	K2	3	Lecture with Discussion	BB/ICT

S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 5: Pipelining & Parallelism	Describe the basic concepts of pipelining.	K2	1	Lecture with Discussion	BB/ICT
2		Discuss the data hazards.	K2	1	Lecture with Discussion	BB/ICT
3		Discuss the instruction hazards	K2	1	Lecture with Discussion	BB+ICT
4		Discuss the parallel processing challenges	K2	1	Lecture with Discussion	BB/ICT
5		Discuss the Flynn's classification	K2	2	Lecture with Discussion	BB/ICT
6		Discuss the Vector Architectures	K2	1	Lecture with Discussion	BB/ICT

7		Discuss the Hardware multithreading	K2	1	Lecture with Discussion	BB/ICT
8		Discuss the Multi-core processors and other Shared Memory Multiprocessors	K2	2	Lecture with Discussion	BB/ICT
9		Discuss the Introduction to Graphics Processing Units, Clusters	K2	2	Lecture with Discussion	BB/ICT
10		Discuss the Warehouse Scale Computers and other Message-Passing Multiprocessors.	K2	2	Lecture with Discussion	BB/ICT

Total No. of Classes: 60

Database Management Systems

Academic Year: 2021-22

Programme: B.Tech

Year/ Semester: IV

Name of the Course: Database Management Systems Course Code: V20CST08/C213

COURSE OUTCOMES (Along with Knowledge Level):

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

S.No.	CO No.	Course Outcome
1	C213.1	Describe Database Architecture and Data Models. [K2]
2	C213.2	Demonstrate Relational algebra and Relational calculus. [K3]
3	C213.3	Apply Normalization Techniques to Refine Schema. [K3]
4	C213.4	Explain Transaction Management and Concurrency Control. [K2]
5	C213.5	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, RamezElmasri,Shamkant B. Navathe ,7th Edition,Pearson Education.
3. Database Systems - The Complete Book, Hector Garcia- Molina, Jeffrey D Ullman, Jennifer Widom, 2nd Edition, Pearson.

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

Cos		C01	C02	C03	C04	C05
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: 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
		TOTAL		14		

UNIT-II: RELATIONAL MODEL, RELATIONAL ALGEBRA AND RELATIONAL CALCULUS

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
		TOTAL		12		

**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 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
		TOTAL		16		

UNIT-IV: TRANSACTION MANAGEMENT AND CONCURRENCY CONTROL						
S.No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
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
			TOTAL		11	

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
		TOTAL		8		

TOTAL HOURS:61

Unix Programming

Academic Year: 2021-22

Programme: B.Tech

Year/ Semester: V

Name of the Course: Unix Programming

Course Code: V18CST14/ C-305

LESSON PLAN

Course Outcomes (Along with Knowledge Level):

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

CO	Course Outcomes	Knowledge Level
1	Illustrate the UNIX basics and the working of the built in commands in Unix	K2
2	Demonstrate the file system and change the permissions associated with files	K2
3	Develop basic programs using shell script	K3
4	Demonstrate the grep family and data transforming programs sed, and awk	K2
5	Construct programs for process system calls	K3
6	Explain the concept of signals and its system call	K2

Text Books:

1. Introduction to Unix and shell programming, M G venkateshmurthy, Pearson education
2. Advanced programming in the unix environment, W. Richard Stevens, 3rd Edition, Pearson education.

REFERENCES

1. Unix and shell Programming, B.A. Forouzan& R.F. Giberg, Thomson, First Edition, NewDelhi, 2003.

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

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

Lecture Plan:

UNIT - I

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.	CO1	Dissemination of	K1	1	Lecture	PPT

		Department Vision, Mission, PEOs, POs, PSOs, COs, Introduction to Unix Programming and Describe Brief History			with discussion	
2.		Explain The UNIX Architecture and Basic features of UNIX	K2	1	Lecture with discussion	PPT
3.		Demonstrate General Purpose Utilities: cal, date, man, echo, bc, clear, passwd, who, whoami, uname and Directory Handling commands: pwd, cd, mkdir, rmdir	K2	1	Lecture with demonstration	PPT, CLI
4.		Demonstrate File Handling Utilities: cat, touch, cp, ls, rm, mv, nl, pg, tar, wc	K2	2	Lecture with demonstration	PPT, CLI
5.		Demonstrate Displaying Commands: more, head, tail and simple filter commands: cmp, comm., ulink, diff, head, tail, find, cut, paste, sort, uniq, tr, finger	K2	2	Lecture with demonstration	PPT, CLI
6.		Demonstrate Disk Utilities: du, df, mount, umount and Process Utilities: ps, kill	K2	1	Lecture with demonstration	PPT, CLI
7.		Demonstrate Networking Utilities – ping, telnet, rlogin, ftp	K2	1	Lecture with demonstration	PPT, CLI
Total Hours				9 Hours		

UNIT - II

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.	CO2	Discuss the Types of Files, Directories and Files,	K2	1	Lecture with discussion	PPT
2.		Explain the UNIX File	K2	1	Lecture	PPT

		System and Absolute and relative pathnames			with discussion	
3.		Discuss the File Attributes and Permissions	K2	1	Lecture with discussion	PPT
4.		Discuss File Command knowing the File Type	K2	1	Lecture with discussion	PPT
5.		Demonstrate Chmod Command Changing File Permissions	K2	2	Lecture with demonstration	PPT, CLI
6.		Demonstrate Chown Command Changing the Owner of a File and Chgrp Command Changing the Group of a File.	K2	1	Lecture with demonstration	PPT, CLI
7.		Explain Vi editor-editing with vi, moving the cursor, editing, copying and moving text, pattern searching.	K2	1	Lecture with demonstration	PPT, Live Demo
Total Hours				8 Hours		

UNIT - III

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.	CO3	Explain Shell Variables	K2	2	Lecture with discussion	PPT
2.		Examine The Export Command and Explain The .Profile File a Script Run During Starting	K2	1	Lecture with discussion	PPT
4.		Demonstrate The First Shell Script and read Command	K3	1	Lecture with demonstration	PPT
5.		Explain the Positional parameters and Explain The \$?Variable knowing the exit Status	K2	2	Lecture with discussion	PPT

6.	Demonstrate More about the Set Command and Practice The Exit Command	K3	1	Lecture with demonstration	PPT
7.	Practice on Branching Control Structures	K3	3	Lecture with demonstration	PPT
8.	Practice on Loop Control Structures	K3	2	Lecture with demonstration	PPT
9.	Examine The Continue and Break Statement	K3	1	Lecture with demonstration	PPT
10.	Demonstrate Expr Command: Performing Integer Arithmetic and Real Arithmetic in Shell programs	K3	2	Lecture with demonstration	PPT
11.	Explain The here document(<<) and Demonstrate the Sleep Command	K2	1	Lecture with demonstration	PPT
12.	Demonstrate Debugging Scripts and Demonstrate the Eval Command	K3	1	Lecture with demonstration	PPT
13.	Explain The ExecCommand.	K2	1	Lecture with demonstration	PPT
14.	Illustrate Command Line Structure	K3	1	Lecture with discussion	PPT
15.	Demonstrate Meta characters	K3	1	Lecture with demonstration	PPT
Total Hours			20 Hours		

UNIT - IV

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.	CO4	Demonstrate the Grep Family-egrep, fgrep	K2	2	Lecture with	PPT, CLI

					demonstration	
2.		Demonstrate the Stream Editor Sed	K2	2	Lecture with demonstration	PPT
3.		Demonstrate The AWK Pattern Scanning and processing Language	K2	3	Lecture with demonstration	PPT
Total Hours				07 Hours		

UNIT - V

S#	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.	CO5	Explain Process and its structure	K2	1	Lecture with discussion	PPT
2.		Explain the Process Identifiers	K2	1	Lecture with discussion	PPT
3.		Demonstrate Process Creation - fork(), Vfork(), exit() System calls	K3	1	Lecture with demonstration	PPT
4.		Demonstrate waiting for a process - wait(), waitpid() System calls	K3	1	Lecture with demonstration	PPT
5.		Explain Zombie Process	K2	1	Lecture with discussion	PPT
6.		Demonstration of exec system call.	K3	1	Lecture with demonstration	PPT
Total Hours				06 Hours		

UNIT - VI

S #	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids
1.	CO6	Explain Signal and signal function	K2	1	Lecture with discussion	PPT
2.		Explain unreliable signals	K2	1	Lecture with	PPT

					discussion	
3.		Explain Interrupted system calls	K2	1	Lecture with discussion	PPT
4.		Explain kill and raise Functions	K2	2	Lecture with demonstration	PPT
5.		Explain alarm, pause functions, abort, sleep functions	K2	3	Lecture with demonstration	PPT
Total Hours				08Hours		

Total No. of classes: 58

OOAD THROUGH UML

Academic Year: 2021-22

Programme: B.Tech

Year/ Semester: VI

Name of the Course: OOAD THROUGH UML Course Code: V18CST21/C314

COURSE OUTCOMES (Along with Knowledge Level):

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

S.No.	CO No.	Course Outcome
1	314.1	Discuss importance of modeling. [K2]
2	314.2	Describe classes and relationships. [K2]
3	314.3	Develop class diagrams and object diagrams. [K3]
4	314.4	Develop Interaction, Use case and Activity Diagrams.[K3]
5	314.5	Illustrate advanced behavioral modeling. [K3]
6	314.6	Develop component and deployment diagrams [K3]

TEXT BOOK:

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education.

REFERENCE BOOKS:

1. UML 2 Toolkit, Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY- Dreamtech India Pvt. Ltd.
2. Fundamentals of Object Oriented Design in UML, Meilir Page-Jones, Pearson Education.
3. Modeling Software Systems Using UML2, Pascal Roques, WILEY- Dreamtech India Pvt. Ltd. Targeted Proficiency and attainment Levels (for each Course Outcome):

Cos		CO 1	CO 2	CO 3	CO 4	CO 5	CO 6
Targeted Proficiency Level		75	60	75	60	60	75
Targeted level of Attainment	Level 3	75	60	75	60	60	75
	Level 2	65	50	65	50	50	65
	Level 1	55	40	55	40	40	55

Lecture Plan:

UNIT-I

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO1	Dissemination of Vision, Mission, PEOs, POs, PSOs		1	Lecture	BB
2		Introduction to UML: Introduction	K1	1	Lecture	BB
3		Importance of modeling - Principles of modeling	K1	1	Lecture	ICT
4		Object oriented modeling, Introduction to UML	K2	1	Lecture	ICT
5		Conceptual model of the UML	K2	2	Lecture	ICT+BB
6		Architecture	K2	1	Lecture	ICT
7		Software Development Life Cycle	K2	1	Lecture	ICT
			Total Hours		8 Hours	

UNIT-II

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hour	Pedagogy	Teaching aids
1	CO 2	Advanced Structural Modeling :Classes	K2	1	Lecture	BB
2		Relationships	K2	1	Lecture	BB
3		Common Mechanisms and Diagrams	K2	2	Lecture	ICT
4		Advanced classes	K2	1	Lecture	ICT+BB
5		Advanced relationships	K2	1	Lecture	ICT+BB
6		Interfaces	K2	1	Lecture	ICT+BB
7		Types and Roles-Packages.	K2	1	Lecture	BB
		Total Hours		8 Hours		

UNIT-III

S. N o.	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 3	Class & Object Diagrams: Terms, concepts	K2	2	Lecture	BB+ICT
2		Modeling techniques for Class Diagrams	K3	2	Lecture	BB+ICT
3		Modeling techniques for Object Diagrams.	K3	2	Lecture	BB+ICT
		Total Hours			6 Hours	

UNIT-IV

S. N o	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 4	Basic Behavioral Modeling-I: Interactions	K2	2	Lecture	BB+ICT
2		Interaction diagrams.	K3	2	Lecture with Discussion	BB+ICT
3		Basic Behavioral Modeling-II:Usecases	K2	2	Lecture	BB+ICT
4		Use case Diagrams	K3	2	Lecture with Discussion	BB+ICT
5		Activity Diagrams	K3	3	Lecture with Discussion	BB+ICT
		Total Hours		11Hours		

UNIT-V

S. N o	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO5	Advanced Behavioral Modeling: Events and signals	K2	1	Lecture	BB+ICT
2		State machines	K2	1	Lecture	BB+ICT
3		Processes and Threads	K2	1	Lecture	BB+ICT
4		Time and space	K2	2	Lecture	BB+ICT
5		State chart diagrams	K3	3	Lecture	BB+ICT
		Total Hours		9 Hours		

UNIT-VI

S. No	Course Outcome	Intended Learning Outcomes (ILO)	Knowledge Level of ILO	No. of Hours	Pedagogy	Teaching aids
1	CO 6	Architectural Modeling: Component	K2	2	Lecture	BB+ICT
2		Deployment	K2	2	Lecture	BB+ICT
3		Component Diagrams	K3	2	Lecture	BB+ICT
4		Deployment Diagrams.	K3	2	Lecture	BB+ICT
		Total Hours		8 Hours		

Total No. of classes: 60

2021-22



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 & ECT

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
UNIT – I							
ELECTROSTATIC FIELDS							
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
			TOTAL	16			

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
			TOTAL	12			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	Lecture With Discussion	Chalk. board, Ppt & ICT	R1, O2
42		Solve the Problems	K3	1	Problem solving	Chalk. board, Ppt & ICT	R1, O2
			TOTAL		14		

UNIT – V TRANSMISSION LINES I

43	CO5 (K3)	Explain different types of transmission lines & Derive general transmission line equations	K3	2	Lecture with Tools	Chalk. board, ppt & ICT	R3
44		Compute Primary and secondary constants for a general transmission line	K3	1	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
		TOTAL		9			

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 Γ , S, V_{max} , V_{min} using Smith Chart	K3	3	Lecture With Discussion	Chalk and board	R3, O2
			Total		12		
59		Content Beyond the Syllabus – Introduction to Computational Electromagnetics and its applications	K2	1	Lecture	Chalk and board	Internet
		Total No. of Hours		67			

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

Signature of the Course Instructors:

1. Sri P.Nagaraju

2. Sri pvvsatyanarayana

Remarks of the Course Coordinator:

Remarks of the Module Coordinator:

Remarks of the Head of the Department:



SRI VASAVI ENGINEERING COLLEGE(A)

Pedatadepalli, TADEPALLIGUDEM-534101, W.G.Dist.

Department of Electronics & Communication Engineering

LESSON PLAN

Academic Year: 2021-2022

Programme: B.Tech

Semester: V Semester

Sections: A,B,C&ECT

Name of the Course: MICROPROCESSORS AND MICROCONTROLLERS

Course Code: V18ECT12

Course Outcomes(Along with Knowledge Level):

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

CO-1: Describe the basic architecture and Modes of 8086 microprocessor (K2).

CO-2: Construct assembly language programs for arithmetic and Logical Operations - (K3).

CO-3: Describe the basic peripherals interfacing and its programming techniques (K2)

CO-4: Illustrate the Architecture and features of Intel 8051 Microcontroller (K3)

CO-5: Explain the Architecture and features of PIC microcontroller (K2)

CO-6: Discuss the Architecture and features of Atmega328 Microcontroller (K2)

Text Books suggested:

1. Microprocessors and Interfacing, Douglas V Hall, Mc–Graw Hill,2nd Edition.(T1).
2. A.K.Ray,K.M.Bhurchandi, “Advanced Microprocessors and Peripherals”,Tata McGraw Hill Publications,2000.(T2)
3. N.Sentil Kumar, M.Saravanan, S.Jeevananthan, “Microprocessors and Microcontrollers”, Oxford University Press, 2010. (T3).

Reference Bookssuggested:

1. Ajay V. Deshmukh , “Microcontrollers” ,Tata McGraw–Hill Publications,2012.(R1)
2. Krishna Kant, “Microprocessors and Microcontrollers”, PHI Publications, 2010.(R2).
3. Raj Kamal , “Microcontrollers” ,Pearson Education Publications,2009.(R3).

Targeted Proficiency Level (For each course Outcome): CO1-60%

CO2-60%

CO3-65%

CO4-65%

CO5-60%

CO6-65%

Targeted level of Attainment (for each Course Outcome):

CO1-70%

CO2-70%

CO3-70%

CO4-70%

CO5-70%

CO6-70%



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Department of Electronics & Communication Engineering

S#	Course Outcome	Intended Learning Outcomes(ILO)	Knowledge Level of ILO	No. of Hours Required	Pedagogy	Teaching aids	Book reference
1	-	Outcomes, Vision, Mission, PSOs	-	1	Lecture with Discussion	Chalk & Board	-
Total no. of hours:1							
UNIT I : Introduction to Microprocessors							
2	CO1(K2)	Evolution of Microprocessors, Family of Intel Microprocessors	K2	1	Lecture with discussion	Chalk & Board	T1,T2
		Explain the 8086 microprocessor Architecture (BIU&EU)	K2	3	Lecture with discussion	Chalk & Board	T1,T2
		Explain Physical address calculation	K2	1	Lecture with discussion	Chalk & Board	T1,T2
		Pin description of 8086 microprocessor	K2	2	Lecture with discussion	Chalk & Board	T1,T2
		Explain I/O Addressing capability, General bus operation	K2	1	Lecture with discussion	Chalk & Board	
		Explain the Minimum mode	K2	1	Lecture with discussion	Chalk & Board	T2
		Explain the Maximum mode of 8086 system and timings	K2	1	Lecture with discussion	Chalk & Board	T1,T2
		Introduction to interrupts and available interrupts(IVT)	K2	1	Lecture with discussion	Chalk & Board	T1,T2
		Explain the interrupt structure and ISR	K2	1	Lecture with discussion	Chalk & Board	T1,T2
							12
2	CO2(K3)	Explain about program development steps	K2	1	Lecture with discussion	Chalk & Board	T2
		Illustrate the Instruction set of 8086	K2	3	Lecture with discussion	Chalk & Board	T1,T2



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Department of Electronics & Communication Engineering

		Discuss the Addressing mode of 8086	K2	1	Lecture with discussion	Chalk & Board	T1,T2	
		Describe the Assembler directives and operators.	K2	1	Lecture with discussion	Chalk & Board	T1,T2	
		Construct simple Assembly language programs	K3	1	Lecture with discussion	Chalk & Board	T2	
		Explain Programming with an assembler(program development tool)	K2	1	Lecture with discussion	Chalk & Board	T2	
		Writing programs with assembler (MASM/TASM)	K2	2	Lecture with discussion	Chalk & Board		
								10
4	CO3 (K2)	Explain the Semiconductor memory interfacing	K2	1	Lecture with discussion	Chalk & Board	T2	
		Explain the operation and structure of 8254 programmable timer/counter	K2	2	Lecture with discussion	Chalk & Board	T2	
		Explain the Programmable interrupt controller 8259A along with software and hardware interrupt applications	K2	2	Lecture with discussion	PPT	T2	
		Explain the DMA Controller 8237	K2	1	Lecture with discussion	PPT	T2	
		Illustrate PIO 8255, modes of operation of 8255	K2	2	Lecture with discussion	PPT	T2	
		Explain about keyboard interfacing and various displays interfacing	K2	2	Lecture with discussion	PPT	T2	
		Explain the Interfacing to D/A and A/D converters	K2	1	Lecture with discussion	PPT	T2	
		Expalin the Stepper motor interfacing.	K2	1	Lecture with discussion	PPT	T2	
								12



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Department of Electronics & Communication Engineering

5	CO4 (K3)	Differentiate the Microcontrollers Vs Microprocessor	K1	1	Lecture with discussion	Chalk & Board	T2,R1
		Discuss 8051 Architecture	K2	1	Lecture with discussion	PPT	T2,R1
		Explain the operation of the I/O ports and timers/counters	K2	2	Lecture with discussion	Chalk & Board	T2,R1
		Explain the memory organization, serial communication	K2	2	Lecture with discussion	Chalk & Board	T2,R1
		Discuss 8051 addressing modes	K2	1	Lecture with discussion	Chalk & Board	T2,R1
		interrupts and instructions	K2	1	Lecture with discussion	Chalk & Board	T2,R1
		Construct simple Assembly language programs using a programming tool	K3	2	Lecture with discussion	Chalk & Board	T2,R1
							10
6	CO5(K2)	Outline the features of PIC Microcontrollers along with their families	K1	1	Lecture with discussion	Chalk & Board	R1
		Explain the memory organization, timers	K2	2	Lecture with discussion	Chalk & Board	R1
		Discuss PIC16Cx/7X interrupts	K2	2	Lecture with discussion	Chalk & Board	R1
		Explain PIC 16F877 Architecture	K2	1	Lecture with discussion	PPT	R1
		Explain instruction set of PIC 16F877	K2	2	Lecture with discussion	Chalk & Board	R1
							8
7	CO6(K2)	Introduction to ATMEGA controllers	K2	1	Lecture with discussion	Chalk & Board	
		Explain the Architecture of Atmega 328 controller	K2	1	Lecture with discussion	PPT	



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Department of Electronics & Communication Engineering

	Explain the PIN configuration of Atmega 328 controller	K2	1	Lecture with discussion	Chalk & Board	
	Explain the programming concepts with Arduino	K2	2	Lecture with discussion	Chalk & Board	
	Explain the data types and variables	K2	1	Lecture with discussion	Chalk & Board	
	Explain the control functions and loop statements	K2	2	Lecture with discussion	Chalk & Board	
Total no. of hours:						8
Total no. of hours:						60

S.No.	Name of Course Instructor	Semester & section
1	T.SREENIVASU	V-A&B
2	Y.Y.S.MANOOGNA	V-C
3	Dr. E. KUSUMA KUMARI	V-ECT

Signature of the Course Coordinator:

Signature of the Module Coordinator:

Signature of the Head of the Department: