Add-on Course

On,

PSpice for Circuits and Electronics

Duration: 30 Hours

Course Learning Objectives:

- To get acquainted with PSpice software and its various features.
- To use PSpice for analysing and designing electrical circuits.
- To use PSpice for analysing and designing electronics circuits

Module-1

General description and types of SPICE software, Types of analysis can be performed on electrical and electronic circuits, Limitations of PSpice software.

Module-2

Describe circuits for pSpice simulation, create input files, output files and plot simulations, perform analysis for dc operating voltage and currents.

Module-3

Specify operating temperature, Model temperature dependent resistors, model dependent and independent voltage and current sources, understand types of dc analysis and their output variables.

Module-4

Understand the response of transient analysis and obtain their output variables, assign initial condition for transient analysis, perform analysis of circuits and set transient parameters, model transient voltage and current sources and specify their parameters.

Model 5

Model ac voltage and current sources and specifying their parameters, understand the response of ac analysis and obtain their output variables, perform ac analysis of circuit and setting the ac parameters.

References:

1. Introduction to PSpice using OrCAD for circuits and electronics, by Muhammad H. Rashid, Pearson, 3rd edition.
2. Electrical Circuit Analysis, by Hayt and Kimmerly, Mc Graw Hill, 5th edition
3. Electronic Circuits, by

COURSE PLAN

Semester: IV **Year: 2020-21**

MICROPROCESSOR (ADD-ON COURSE)			
No. of Lecture Hours / Week	3P	CIA Marks	05
L:T:P	0:0:3	SEE Marks	NA
Exam Hours	03		
Credits	NA		

Course Objectives

Course Objectives:

- To expose students to the operation of typical microprocessor (8085) trainer kit.
- To study programming based on 8086 microprocessors.
- To study 8086 microprocessor-based ALP using arithmetic, logical and shift operations.
- To study to interface 8086 with I/O and other devices.

Course Outcomes

At the end of the course the student will be able to:

CO1: Describe the general architecture of a microcomputer system and architecture &organization of 8085 & 8086 Microprocessor.

CO2: Demonstrate ability to handle Data Transfer, Arithmetic and Code Conversion operations using assembly language programming.

CO3: Understand the architecture and operation of Programmable Interface Devices and realize the programming & interfacing of it with 8085 microprocessors.

Graduate Attributes (As Per NBA)

Engineering Knowledge,Individual And Team Work,Communication.

Bloom's Taxonomy

Remembering	Understanding	Applying	Analyzing	Evaluation	Creating
L1	L2	L3	L4		

List of Experiments

Sl.No	Name of the Experiment	Duration in Hrs	Mode of Conduction
Part A: Introduction to 8085 Microprocessor			
1	• Introduction to 8085 Microprocessor. • Evolutions of Microprocessor. • Features of 8085 Microprocessor. • Pin Diagram of 8085 Microprocessor. • Block Diagram of 8085 Microprocessor. • Instruction Set & Programming Techniques	03	Theoretical
Part B: Assembly Programming			
2	Program to interchange the contents of any 10 memory location.	15	Practical
3	To transfer bytes from one memory location to another with and without overlapping.		
4	Program to insert/delete a string from the list.		
5	Program to sort given numbers in ascending/descending order.		
6	Program to find twos compliment of a number.		
7	Program to find if a given number is even/odd.		
8	Program to Add two 8-bit numbers.		
9	Program to Subtract two 8-bit numbers.		
10	Program to Multiply two 8-bit numbers.		
11	Program to Divide two 8-bit numbers.		
12	Program to find whether given number is positive or negative.		
13	Program to find largest/Smallest number in an array.		
14	Program to display Hexadecimal Up/Down Counter		
15	Program to display BCD Up/Down Counter.		
16	Program to convert ASCII to Binary.		
17	Program to convert Binary to ASCII		
Part C: Interfacing Programs:			
18	Program to Interface Stepper motor in Clockwise/ Anticlockwise direction.	10	Practical
19	Program to Interface DAC waveform • Square • Triangle • Sawtooth		
20	Program to Interface ADC waveform		
Quiz/Assessment Test		2	Theoretical / Practical

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Department of Electrical & Electronics Engineering

Course Plan

Semester: V **Year: 2020-21**

Course Title	**Simulation of Programmable Logic Controller (PLC) Ladder Programs Using LogixPro Simulator**		
Total Teaching Hours	30	Teaching hours/week	03 Hrs (1 Hr Tutorial (Instructions) + 2 Hrs Execution in PC)
Course Plan prepared by	Prof. Kirankumar H.	Prerequisites	Digital System Design (18EE35)
		Approved by	

Course Learning Objectives

1) To understand the basics of PLCs and Ladder Logic
2) To understand the different instructions of Ladder Logic and simulating some illustrative Programs.
3) To develop ladder logic for some real time applications.

COURSE CONTENT

Experiments Details		
Expt. 1	Developing ladder logic programs of logic gates	03 Hours
Expt. 2	Developing ladder logic programs for Boolean Expressions	03 Hours
Expt. 3	Developing ladder logics to program Timers	03 Hours
Expt. 4	Developing ladder logics to program Counters	03 Hours
Expt. 5	Developing ladder logics using Math Instructions	03 Hours
Expt. 6	Developing ladder logics using Compare Instructions	03 Hours
Expt. 7	Developing ladder logics using Move Instructions	03 Hours
Expt. 8	Developing ladder logics using Program Control Instructions	03 Hours
Expt. 9	Developing ladder logics using Data Manipulation Instructions	03 Hours
Expt. 10	Developing Ladder Programs for some real-time applications (e.g. Motors Start/Stop and their control in sequence etc.)	03 Hours

References

1) Programmable Logic Controllers, Frank D. Petruzella, Mc Graw Hill Education, 4th edition, 2011
2) Programmable Logic Controllers and Industrial Automation, Madhuchhanda Mitra and Samarjit Sen Gupta, Penram International Publishing (India) Pvt. Ltd., 2007
3) Programmable Logic Controllers, W. Bolton, Elsevier, 5th edition, 2010

Add-on course details

Title of the course: Mathematical Modeling of Electrical Components and Machine Learning.

Semester: VI

Syllabus

Course content	Duration in hours	Mode of conduction
Introduction: Introduction to Sci-lab, Simple programming in Sci lab and modelling of simple systems, Introduction to Xcos and other facilities.	**10**	**Classroom/ practical**
Controller Design: P-type controller, PI-type controller, PID-type controller, Boost converter, buck converter, buck-boost converter, Design of on-off controllers, Introduction and dynamics of Drones.	**12**	**Class room/ practical**
Machine learning: Definition of Machine learning, Types of machine learning systems & algorithms: Supervised and Unsupervised learning and their implementation using Scikit	**08**	**Class room / practical**
Examination on the same	**3**	

Staff in Charge: Prof. Vijay Bagewadi, and Prof.Pranesh Kulkarni

Karnatak Law Society's
Vishwanathrao Deshpande Institute of Technology
(Approved by AICTE, New Delhi, Affiliated to VTU, Belgavi)
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Department of Electrical & Electronics Engineering

Proposal for Add-on Course

Title: *Computer Aided Electrical Drawing* for 7th Semester

Course objectives:

- To introduce students to AutoCAD software.
- To discuss the substation equipment, their location in a substation and development of a layout for substation.
- To develop wiring plan and circuit diagram of residential building.

AutoCAD software to be used for drawing

Contents	Teaching Hours
Introduction to AutoCAD: Procedure to install AutoCAD, AutoCAD user interface, drawing basic blocks with AutoCAD, design centre. **Single Line Diagrams**: Single Line Diagrams of Generating Stations and Substations Covering Incoming Circuits, Outgoing Circuits, Busbar Arrangements (Single, Sectionalised Single, Main and Transfer, Double Bus Double Breaker, Sectionalised Double Bus, One and a Half Circuit Breaker Arrangement, Ring Main), Power Transformers, Circuit Breakers, Isolators, Earthing Switches, Instrument Transformers, Surge or Lightning Arresters, Communication Devices (Power- Line Carrier) and Line Trap.	10
Wiring Systems: Typical house wiring, Scheme of distribution of electrical energy, Methods of wiring, Systems of wiring, Choice of wiring systems, Earthing systems.	05
Internal Wiring: General rules for wiring, lighting sub-circuit, wiring plan and circuit diagram of residential building.	15

Course Outcomes: At the end of the course the student will be able to**:**

- Develop a layout for substation using the standard symbols for substation equipment.
- Select a suitable wiring scheme for a given residential building.
- Draw wiring plan and circuit diagram of residential building.

Reference Books:

- J. B. Gupta, "A course on electrical installation estimating and costing", Katson Books, 9th Edition, 2014
- M.S. Indira, "CAD for Electrical Engineers", Sanguine, 2nd Edition, 2015

Course Instructors:

Prof. Rajeshwari Nanannavar

Prof. Varaprasad Gaonkar

B.E. ELECTRICAL AND ELECTRONICS ENGINEERING

Choice Based Credit System (CBCS) and Outcome Based Education (OBE)

Semester : 8th **Duration : 30 Hours**

ADDON Course title: Domestic Wiring and Troubleshooting of Electrical Equipment's
Faculty In charge: Prof. Subrahmanya Hegde & Prof.Manjunatha D
Supporting staff: Shri. Shashishekar Bhat

Course Objectives:

- Student will able to handle basic electrical equipment's.
- Student will able to do home wiring.
- Student will able to understand domestic wiring procedures practically.
- Student will able to troubleshoot some of the domestic electrical appliances.
- Student will able to understand the domestic wiring safety precautions.

Course content	Duration in hours	Mode of conduction
Domestic wiring planning, Load calculation and Estimation Domestic Electrical load calculation, Selection of conductor size , Protection equipment selection , Wiring layout, Material and wiring cost estimation.	**3**	**Classroom**
Various types of wiring schemes for different cases and system Different types of wiring- conduit, casing and capping, concealed. One lamp controlled by one switch, independent control of two lamps, calling bell wiring, two way control of lamp, three way control of lamp, room wiring, bed room wiring, godown wiring, hospital wiring, meter board wiring.	**18**	**Class room/ practical**
Trouble shooting of electrical equipment Series test lamp, supply testing, finding of fault and troubleshooting of electrical appliances like- mixer, fan, iron box , fluorescent lamp.	**6**	**Class room / practical**
Testing of protection equipment Testing of fuse, MCB and earthing efficiency	**1.5**	**Practical**
General electric safety rules Importance of electric safety, precaution against electric shock, general safety rules for domestic wiring.	**1.5**	**Classroom**

Course Outcomes:

CO1: Able to understand wiring planning, conduction and cost estimation, wiring safety precautions.

CO2: Able to identify the problems and troubleshoot the domestic appliances

Text Book	
1	"Electrical equipment and hand book", Philip Kaimey, 2003 McGraw- Hill.
Reference Book	
1	"Electrical Wiring Residential ", Ray C Mullin and Phil Simmons