



Karnatak Law Society's
Vishwanathrao Deshpande Institute of Technology
(Approved by AICTE, New Delhi. Affiliated to VTU, Belagavi)
(Recognised Under Section 2(f) by UGC, New Delhi)

Udyog Vidya Nagar, Haliyal – 581329, Dist: Uttar Kannada (Karnataka)
Phone: 08284-220861, 220334, 221409, Fax: 08284-220813

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

www.klsvdit.edu.in

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ADD-ON COURSE SYLLABUS

Semester: III

Academic Year: 2022-23 (Odd)

Title: Introduction to Arduino

Course Learning Objectives:

- To understand basics of Arduino IDE.
- To understand basics of Arduino programming.
- To understand how to interface different peripherals and control them with Arduino.

Sl. No.	Experiments	Duration
1	Introduction to Arduino Uno. Arduino Uno specifications, I/O ports, Introduction to IDE, Blink with internal LED, Blink with external LED.	03 Hours
2	Read digital input with Arduino Uno, pull up and pull down, Control LED with push button, Switch bounce.	03 Hours
3	Read analog input with Arduino Uno, control light with LDR, analog in serial out, interfacing thermistor and humidity sensor.	03 Hours
4	Interfacing 16*2 LCD with Arduino, Displaying a string.	03 Hours
5	Interfacing Real Time Clock (RTC) with Arduino, Alarm clock with Arduino.	03 Hours
6	Interfacing Gas sensor with Arduino.	03 Hours
7	Interfacing IR obstacle sensor and Ultrasonic sensor with Arduino.	03 Hours
8	Interfacing fire sensor and servomotor with Arduino.	03 Hours
9	Introduction to IoT and NodeMCU.	03 Hours
10	Controlling NodeMCU with blink app.	03 Hours
Total		30 Hours

Course Outcomes:

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

- Write a programme for specific application using IDE.
- Interface different peripherals and control them with Arduino.

Conduct of Practical Examination:

One objective type (MCQ) examination will be conducted at the end of the semester for maximum of 10 Marks.

Syllabus prepared by:
Prof. Varaprasad Gaonkar

Approved by:
Miss. Rashmi Palankar (GTTC Dharwad)



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ADD-ON COURSE SYLLABUS

Semester: V

Academic Year: 2022-23 (Odd)

Title: Electric Vehicles

Course content	Duration in hours	Mode of conduction
Module 1: Sustainable Transportation, Population, Energy, and Transportation, Environment, Economic Growth, New Fuel Economy Requirement, A Brief History of HEVs, Why EVs Emerged and Failed in the 1990s, Architectures of HEVs, Series HEVs, Parallel HEVs, Series-Parallel HEVs, Complex HEVs, Diesel Hybrids, Other Approaches to Vehicle Hybridization, Hybridization Ratio, Interdisciplinary Nature of HEV.	08	Class room
Module 2: Electric Vehicles: Configurations of Electric Vehicles, Performance of Electric Vehicles, Tractive Effort in Normal Driving, Energy Consumption. Hybrid Electric Vehicles: Concept of Hybrid Electric Drive Trains, Architectures of Hybrid Electric Drive Trains.	08	Class room
Module 3: Electric Propulsion EV consideration, DC motor drives and speed control, Induction motor drives, Permanent Magnet Motor Drives, Switch Reluctance Motor Drive for Electric Vehicles, Configuration and control of Drives.	05	Class room
Module 4: Introduction to Sci-lab, Simple programming in Sci lab and modelling of simple systems, Introduction to Xcos and other facilities.	08	Practical
Examination on the same	02	
Staff in Charge: Prof. Gururaj Joshi		



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ADD-ON COURSE SYLLABUS

Semester: VII

Academic Year: 2022-23 (Odd)

Title: Simulation of Programmable Logic Controller (PLC) Ladder Programs

Course Objectives:

- To learn the basics of PLC hardware and PLC ladder programming
- To discuss the different important instructions used in ladder programming
- To write ladder programs for few real time examples

COURSE CONTENT

01	Developing ladder programs using Bit Instructions	02 Hours
02	Developing ladder programs for logic functions: AND, OR, NOT	02 Hours
03	Developing ladder programs for logic functions: NAND, NOR, XOR	02 Hours
04	Developing ladder programs for Boolean Expressions	02 Hours
05	Developing ladder programs for Boolean Expressions	02 Hours
06	Developing ladder logics to program Timers	02 Hours
07	Developing ladder logics to program Counters	02 Hours
08	Developing ladder programs using Arithmetic Instructions	02 Hours
09	Developing ladder programs using Data Comparison Instructions	02 Hours
10	Developing ladder programs using Move Instructions	02 Hours
11	Developing ladder programs using Program Control Instructions	02 Hours
12	Application programs: (1) Turn ON of a motor after a small delay	02 Hours

	(2) START and STOP of multiple motors in a sequence	
13	Application programs: (1) DOL starter (2) Star-delta starter	02 Hours
14	Application programs: (1) Traffic control (2) Creating ON/OFF cycle (blinking) of a lamp	02 Hours
15	Application programs: (1) Items passing along a conveyor belt (2) Parking space	02 Hours
Total Hours		30 Hours
<p>Course Outcomes:</p> <p>At the end of the course the students will be able to:</p> <ul style="list-style-type: none"> • Understand the basics of PLCs and ladder programming • Understand the major instructions of ladder programming and illustrating them with programs • Develop ladder logic for some real time applications 		
<p>Reference Books:</p> <ul style="list-style-type: none"> • Programmable Logic Controllers, W. Bolton, Elsevier, 5th edition, 2010. • Programmable Logic Controllers, Frank D. Petruzella, Mc Graw Hill Education, 4th edition, 2011. 		
<p>Course Instructor:</p> <p>Prof. Kirankumar N. Hittanagi</p>		