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SRI VASAVI ENGINEERING COLLEGE (AUTONOMOUS)

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

Department of Electronics and Communication Engineering

Academic Year: 2022-23

Skill Oriented Course-I

S. No.	SEM & Section	Title	Date (From-to)
1.	III SEM ECE- A & B	Interfacing with Arduino	14 th to 19 th NOV 2022
2.	III SEM ECE-C & ECT		7 th to 12 th NOV 2022

Skill Oriented Course-II

S. No.	SEM & Section	Title	Date (From-to)
1.	IVSEM ECE-C & ECT	Sensor interfacing and cloud computing	27 th March to 1 st April 2023
2.	IVSEM ECE A & B	Basic Digital Circuit Design with VHDL and QUESTASIM Tool	27 th March to 1 st April 2023

<u>Vision</u>

• To develop the department into a centre of excellence and produce high quality, technically competent and responsible Electronics and communication engineers

- To create a learner centric environment that promotes the intellectual growth of the students.
- To develop linkages with R & D organizations and educational institutions for excellence in teaching, learning and consultancy practices.
- To build the student community with high ethical standards.



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Skill Oriented Course-III

S. No.	SEM & Section	Title	Date (From-to)
1.	V SEM ECE A & C	Python Programming	02-09-2022 to 29-09-2022
2.	V SEM ECT & B	Python Programming	29-08-2022 to 07-09-2022

Skill Oriented Course-IV

S. No.	SEM & Section	Title	Date (From-to)
1.	VI SEM ECE-A,B,C & ECT	Analytical	02-01-2023 to 09-01-2023

Skill Oriented Course-VI

S. No.	SEM & Section	Title	Date (From-to)
1.	VII SEM ECE-A,B,C & ECT	Python Programming	8-9-2022 to 13-9-2022

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Department of Electronics and Communication Engineering

Interfacing with Arduino

Day 1: Introduction to Arduino

Morning Session:

- Overview of Arduino and Its Applications
- Understanding the Arduino Board
- Introduction to Arduino IDE
- Writing and Uploading First Arduino Sketch
- Afternoon Session:
- Basic Arduino Programming Concepts
- Hands-on: Blinking LED Your First Arduino Project

Day 2: Arduino Inputs - Button and Potentiometer

Morning Session:

- Introduction to Digital and Analog Inputs
- Interfacing Push Buttons: Reading Digital Inputs
- Afternoon Session:
- Interfacing Potentiometer: Reading Analog Inputs
- Project: Volume Control using Potentiometer

Day 3: Arduino Outputs - Motors and LEDs Morning Session:

- Introduction to Motor Control with Arduino
- Interfacing DC Motors: Basic Motor Control
- Afternoon Session:
- Interfacing Servo Motors: Precise Motor Control
- Project: Creating Motion with Servo Motors

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Department of Electronics and Communication Engineering

Day 4: Advanced Outputs - LCD Display and Seven-Segment Display

Morning Session:

- Introduction to Display Devices
- Interfacing LCD Display: Displaying Text and Numbers
- Afternoon Session:
- Interfacing Seven-Segment Display: Numeric Display
- Project: Creating a Simple Digital Counter

Day 5: Communication with Arduino - Serial Communication Morning Session:

- Introduction to Serial Communication
- Communicating with Arduino through Serial Monitor
- Afternoon Session:
- Hands-on: Building a Basic Serial Communication Project
- Q&A and Troubleshooting

Day 6: Arduino and Sensors Integration

Morning Session:

- Introduction to Basic Sensors (e.g., Temperature Sensor)
- Interfacing Sensors with Arduino
- Afternoon Session:
- Project: Sensor-Based LED Control
- Project: Building a Simple Alarm System

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Department of Electronics and Communication Engineering

Sensor Interfacing and Cloud Computing

Topics Covered:

Day 1 - Session 1:

Introduction to Embedded Systems

- Advantages
- Day-to-day applications
- Introduction to IoT
- Applications of IoT

Day 1 - Session 2:

- Demo Project 1- IoT Diva
- IoT protocols-Classification and end applications
- Communication Technologies in IoT- LoRa, ZigBee, Bluetooth etc.,

Day 2 - Session 1:

- ESP32 board layout and architecture
- Introduction to Arduino IDE
- Arduino Language Reference
- Introduction to Blynk Cloud Platform •

Day 2 - Session 2:

- Working with basic codes on dev platform
- Developing code for analog and digital sensor interfacing
- Rain drop Sensor principle and operation
- Interfacing rain drop sensor with ESP32 and data uploading to cloud •

Day 3 - Session 1:

- Soil moisture Sensor principle and operation
- Interfacing soil drop sensor with ESP32 and data uploading to cloud
- Project 2- Agri-monitoring system using IoT

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Day 3 - Session 2:

- DHT11 (temperature and humidity) sensor principle and operation
- Interfacing DHT11 with ESP32 and data uploading
- MQ135 Sensor principle and operation
- Interfacing AirQualitySensor with ESP32 board
- Project 3- Implementing a weather station using IoT

Day 4 - Session 1:

- Introduction to ThingSpeak Cloud Platform
- Ultrasonic Sensor principle and operation
- Interfacing Ultrasonic sensor with ESP32 board and data uploading to ThingSpeak
- Project 4- Smart Garbage management system

Day 4 - Session 2:

- Introduction to actuators & classification
- Relay principle and operation
- Interfacing Relay with ESP32
- Interfacing water pump with ESP32
- Project 5- Smart Home Automation

Day 5 - Session 1:

- Project 6- OK Google
- Project 7- Controlling AC appliances from Computer

Day 5 - Session 2:

- Demo Projects
- Introduction to Amazon Web Services (AWS-Cloud)
- Project 8- Implementation of Water Quality monitoring system using IoT
- Project 9- Husky-The Smart Speaker
- Project 10- Implementation of IoT based Health Monitoring system

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- Project 11- Controlling a linear actuator for wide applications •
- Project 12- Smart Electricity monitoring using IoT •

Day 6 - Session 1:

- Interactive Activity 1: Automation challenge •
- Interactive Activity 2: Guess the Buzz- Quiz Show on IoT and applications •
- Day 6 Session 2: •
- Program Feedback •
- Valedictory •
- Certificate & Prize Distribution, Vote of Thanks

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Department of Electronics and Communication Engineering

Basic Digital Circuit Design with VHDL and QUESTASIM

Day1: Introduction to Digital Circuit Design and VHDL Basics

- Introduction to digital circuit design
- Overview of digital circuit and their applications
- Overview of VHDL and Questasim
- VHDL syntax and data types
- Behavioral modeling with VHDL
- Creation of a basic project in Questasim

Day2: Combinational Circuit Design and Simulation

- Combinational circuit design principles
- VHDL modeling of combinational circuits
- Simulation of combinational circuits using QuestaSim
- Lab: Design and simulation of a simple combinational circuit.

Day3: Sequential Circuit Design and simulation

- Sequential circuit design principles
- VHDL modeling sequential circuits
- Simulation of sequential circuits using Questasim
- Lab: Design and simulation of simple sequential circuit

Day4: State Machine Design with VHDL and simulation

- State machine design principles
- VHDL modeling of state machines
- Simulation of state machines using Questasim
- Lab: Design and simulation of a simple state machine

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Day5: Advanced Topics in Digital Circuit Design and Project Work

- Using VHDL for control logic design
- Design optimization and performance analysis with Questasim
- Final Project work incorporating the topics covered in the previous days
- Presentation of final project to the class •

Day6: Project Presentation and Wrap-UP

- Final project presentation by students •
- Review of key concepts and topics covered throughout the course •
- Open discussion and Q & A session
- Course evaluation and feedback

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Python Programming

Topics Covered:

- Regular Expressions & Database Connectivity •
- GUI applications using tkinter module •
- Working with Arrays using Numpy
- Data Analysis using Pandas
- Data Visualization & Case Studies •

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ANALYTICAL

Topics Covered:

- Number System
- Ages
- Average
- Boats and Streams
- Simple interest &Compound Interest
- H.C.F and L.C.M
- Mensuration
- Mixture and Allegations
- Partnership
- Percentage
- Permutations and Combinations
- Pipes and Cistern
- Probability
- Problems on Trains
- Profit and Loss
- Races and Games
- Ratio and Proportion
- Simple Interest
- Time and Work
- Time, Speed and Distance
- Chain Rule..
- Blood Relations
- Cause and Effect
- Calendar & Clock
- Coding and Decoding
- Cubes and Cuboids
- Direction Sense
- Letter and Number Series
- Odd Man Out Series
- Order and Ranking
- Seating Arrangement
- Syllogism
- Venn Diagrams

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