



GSSG TECH SOLUTIONS LLP

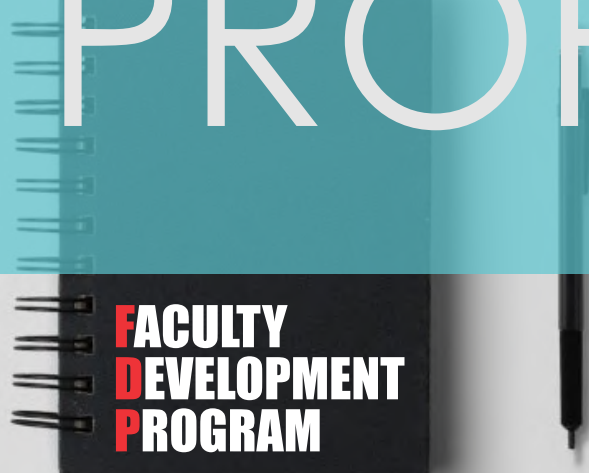
AN ISO 9001:2015 CERTIFIED ORGANISATION



Teamwork
QUALITY
EXCELLENCE



PROPOSAL



**FACULTY
DEVELOPMENT
PROGRAM**

A UNIT OF MSME
MICRO, SMALL & MEDIUM ENTERPRISES

OUR COMPANY



GSSG Tech Solutions LLP can be summarized as a center for Research and Development of Industrial custom products. Our traditional business model is aimed to develop innovative products in the field of Electronics & Electrical based Home/Industrial Automation, Energy saving devices, Embedded Projects. The in-house R&D unit along with skilled Engineers and Technicians guide the way through towards new ideas and product possibilities.

WHY CHOOSE US ?



TEKNIK loves young Entrepreneurs and hobbyists, hence we like to encourage youths to develop themselves technically through our Industrial Classrooms. We have indulged ourselves in professional industrial training sessions aimed for Engineering Students and faculties on Industrial Microcontrollers, Embedded System, 3D Modeling & Printing, VLSI, PLC and automation, Raspberry Pi, IOT, Image Processing, PCB design & Fabrication, Cyber Security, Artificial Intelligence, Machine Learning Programming Languages like Python, Java, Android etc.



WE
Think Global
Act Local



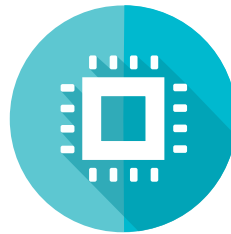


OUR OTHER SERVICES



Integrated IT Solutions

Be it pure IT solutions or if you want to integrate your hardware to the web, you are fortunately at the right place.



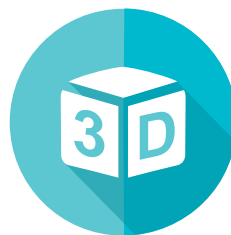
Embedded Product R&D

Designing your Personal/Industrial projects/product have been never so easy and pocket-friendly.



Home/Industrial Automation

Create your smart home with TEKNIK, get the most comfortable and effortless experience at home. All kind of Home/Industrial automation based on IOT at your fingertips.



3D Printing Services

Hardware Projects have never been so easy without a 3D printer. Get your customized object moulded in a day.



FACULTY DEVELOPMENT PROGRAM

This Faculty Development Program (FDP) intends to provide assistance to facilitate up-gradation of knowledge, skill and intends to provide opportunities for induction training to teachers employed in disciplines Engineering & Technology.

A award Faculty Development Program (FDP) to cover areas such as technical education policy, new concepts, methods and techniques, theory and skills development and up gradation of pedagogy educational technology, motivation, communication skills, management and other relevant issues to keep pace with the changing scenario in Technical Education.

The scheme is designed to enhance the teaching and other skills of the faculty. And to make them aware about modern teaching tools and methodologies. It provide an opportunity to acquire knowledge about current technological developments in relevant fields. It will not only promote the professional practices relevant to technical education but also motivates the faculty to achieve competitive teaching and learning environment, thus channelizing development with respect to academic qualifications and personal matters.

- Enhance their teaching and other skills.
- Make them aware about modern teaching tools and methodologies.
- Acquire knowledge about current technological developments in relevant fields.
- Impart professional practices relevant to technical education.
- Achieve competitive teaching and learning environment.
- Channelize development with respect to academic qualifications and personal matters.



SOFTWARE PROGRAM



SL.NO	PROGRAM ON	DURATION	FEES
01	Cyber Security	15 Hrs.	50000.00
02	Artificial Intelligence & Machine Learning	15 Hrs.	60000.00
03	Cloud Computing	15 Hrs.	60000.00



INTEGRATED PROGRAM

SL.NO	PROGRAM ON	DURATION	FEES
01	Arduino & IOT	15 Hrs.	40000.00
02	IOT with Raspberry Pi	15 Hrs.	50000.00
03	Embedded System using AVR (Atmel)	15 Hrs.	40000.00
04	Embedded System using PIC (Industrial Microcontrollers)	15 Hrs.	45000.00
05	IOT With PIC	15 Hrs.	50000.00
06	VLSI	15 Hrs.	50000.00
07	PCB Design & Fabrication (Industrial Graded)	15 Hrs.	30000.00

Course Contents:

Module 1: Introduction.

- Introduction of Cyber Security.
- Classification of Cyber Security.
- Need of Information Security.
- Phases Of Hacking.
- Understanding Penetration Testing.
- Scope and limitations of Ethical Hacking.
- Cyber Crimes and Laws.
- Risk assessment and analysis.
- Confidentiality-Integrity-Availability (CIA).
- Role based access control (RBAC).
- Dictionary attack, Brute force attack.
- Phishing and Pharming.
- Virus, Worms And Trojans.
- Virus & worms making Techniques (malware, rootkit, logic bomb).

Module 2: Cryptography.

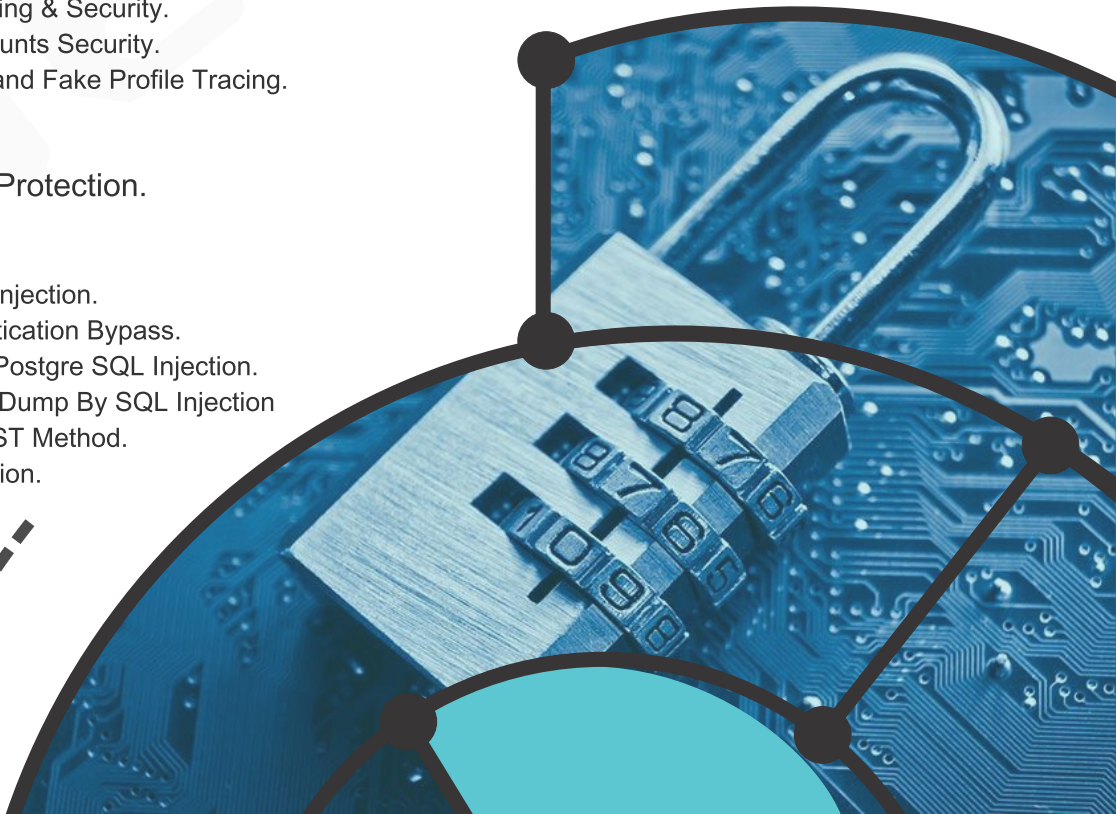
- Introduction to Cryptography.
- Types of Cryptography Algorithms.
- Encryption Analysis.
- Public key Cryptography, Private key Cryptography.
- Various Encryption Algorithm (AES, DES).

Module 3: E-Mail Security.

- Email Hacking and Social Engineering.
- Trace someone IP.
- Address, Email hacking & Security.
- Social Network Accounts Security.
- Fake Emails, Email and Fake Profile Tracing.
- SPAM Filtering.

Module 4: Website Protection.

- SQL Injection.
- Introduction to SQL Injection.
- Admin Login Authentication Bypass.
- Union Sql Injection, Postgre SQL Injection.
- Complete Database Dump By SQL Injection
- SQL Injection In POST Method.
- Tools For SQL Injection.



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Cloud Computing



Course Contents:

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- Classification of Cyber Security.
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- Understanding Penetration Testing.
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- Complete Database Dump By SQL Injection
- SQL Injection In POST Method.
- Tools For SQL Injection.

Prerequisites:

1. Basic knowledge of C / C++ Programming.
2. Analog & Digital Electronics.

Course Contents:

Module 1: Introduction to Arduino.

- Overview of Arduino.
- Description of Boards & Ports.
- Installing Arduino IDE and drivers.
- Creating Sketches.

Module 2: Foundation.

- Using Libraries & API.
- Creating Own Libraries.
- Firmware & Bootloader.
- Build Procedure.

Module 3: I/O Port Control.

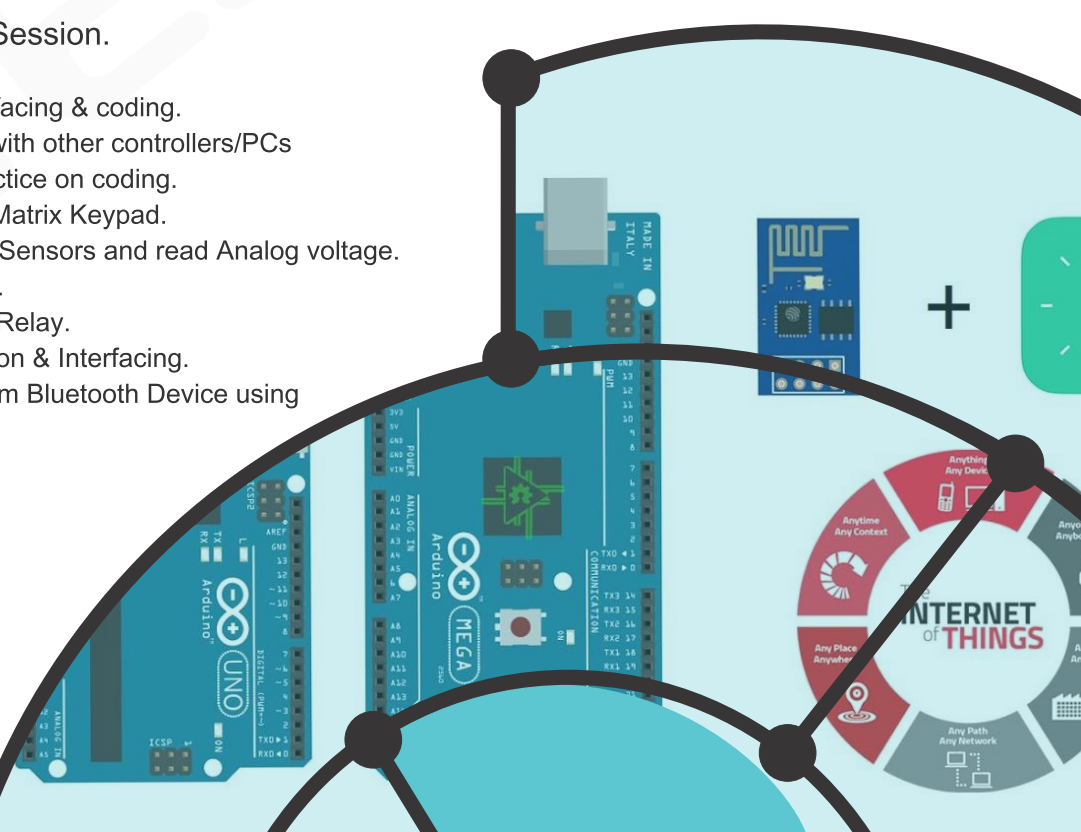
- Digital Read & Digital Write.
- Analog Read (ADC) & Analog Write (PWM).

Module 4: Serial Communication.

- Serial Interface to other Arduino / Controllers.
- Using Serial Monitor & Serial Plotter.

Module 5: Hands On Session.

- LED, Switch, LCD interfacing & coding.
- Serial Communication with other controllers/PCs
- Sample Codes and practice on coding.
- C coding in depth with Matrix Keypad.
- Working with Infra-Red Sensors and read Analog voltage.
- Motor Driver interfacing.
- AC Load Control using Relay.
- Bluetooth Communication & Interfacing.
- Reading Serial Data from Bluetooth Device using Bluetooth Module.



Internet of Things (IOT)

Module 6: Introduction to Internet of Things.

- Elements of IOT system.
- Web Servers
- Websites VS Web-Applications.

Module 7: Website Development – Front end.

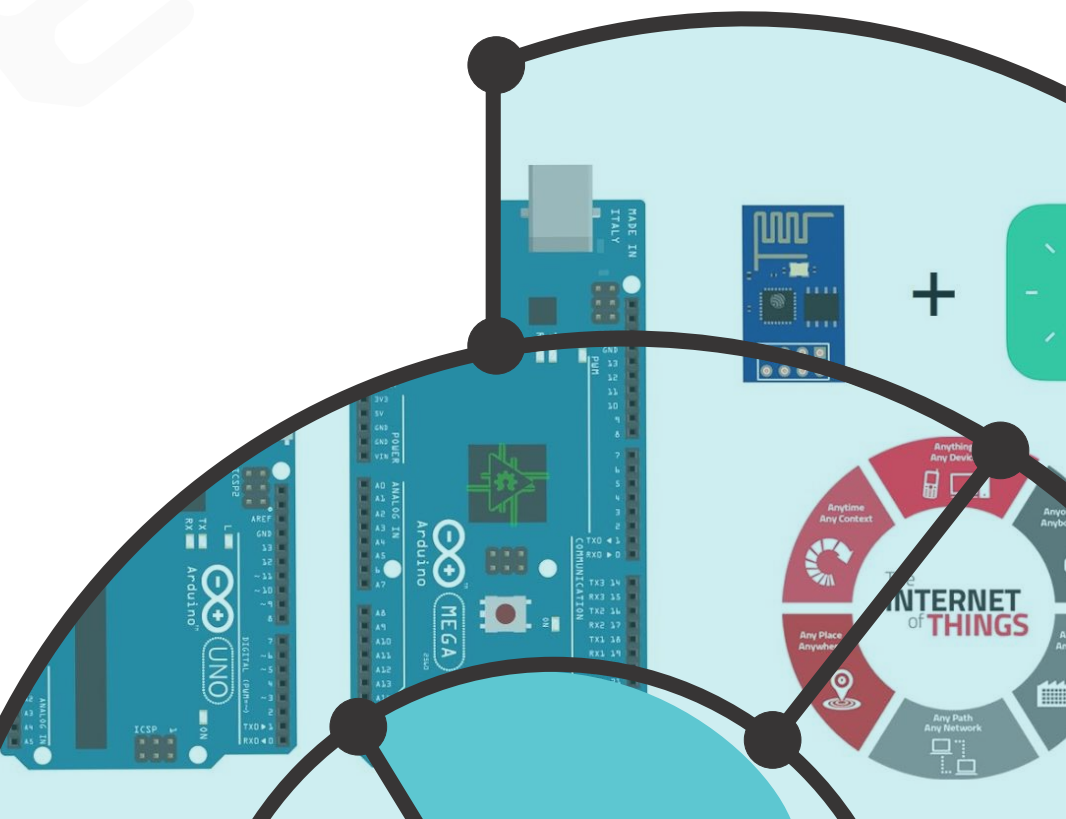
- Building a web page using HTML.
- Setting up the server and database in mysql.
- Creating/Deleting tables and columns in mysql database using phpmyadmin.

Module 8: Website Development – Back end.

- Fetching data from HTML page (forms).
- Insert/delete data into/from mysql table.
- Conditional queries.

Module 9: Application.

- Setting up ESP8266 wifi module.
 - AT commands for ESP8266 – Testing.
 - Connect to server and establish communication from Arduino using ESP8266.
 - Home automation – Controlling home/industrial appliances through internet.
- or
- Weather Station –Update sensor data to online server using Arduino/AVR/PIC microcontrollers.



IOT With Raspberry Pi



Course Contents:

Module 1: Introduction to Raspberry Pi (R-Pi).

- R-Pi Board Variants.
- Processors and Speeds.
- Raspberry Pi VS Controllers.

Module 2: Setting Up R-Pi.

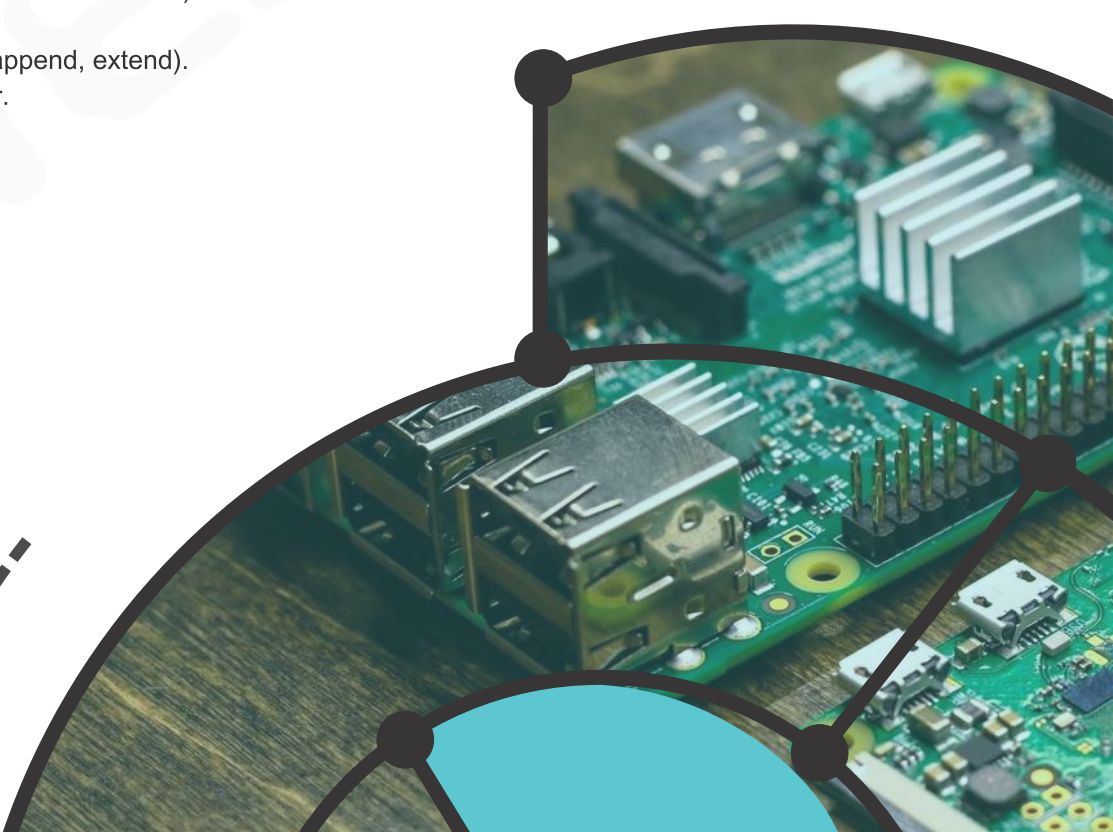
- Installing Raspbian Image (Linux OS for R-Pi).
- Booting Up R-Pi.
- Wireless setup with laptop for screen sharing via SSH connections.
- Installing updates.

Module 3: Introduction to R-Pi GPIO Pins and Ports.

- Pin Diagrams and Descriptions.
- Other Ports viz., USB, HDMI, Audio, Ethernet, Camera, Display.

Module 4: Python Programming Language.

- Printing Variables.
- Basic Math Operators.
- Basic Variable Types.
- Concatenating Strings.
- Casting Integer to String.
- Booleans (True/False).
- Inequalities (Greater than/ Less than).
- If/Else.
- Lists, List Methods (append, extend).
- Adding Lists together.
- Sets.
- For Loops.
- Indexing Strings.
- Splitting Strings.
- Tuples.
- Dictionaries.



Module 5: Physical Computing.

- Controlling GPIO pins through Python Codes.
- Leds & Buttons.
- Buzzer.
- Light Dependant Resistors/Infra-Red Sensors.
- PIR Motion Sensor/ Ultrasonic Range Finder.
- Analog Inputs.
- Motors.
- Practice Codes.

Internet of Things (IOT)

Module 6: Introduction to Internet of Things.

- Elements of IOT system.
- Web Servers
- Websites VS Web-Applications.

Module 7: Website Development – Front end.

- Building a web page using HTML.
- Setting up the server and database in mysql.
- Creating/Deleting tables and columns in mysql database using php my admin.

Module 8: Website Development – Back end.

- Fetching data from HTML page (forms).
- Insert/delete data into/from mysql table.
- Conditional queries.

Module 9: Application.

- Home automation – Controlling home/industrial appliances through internet.
- Weather Station – Update sensor data to online server using Raspberry Pi.

Embedded System using AVR



Course Contents:

Prerequisites:

1. Basic knowledge of C / C++ Programming.
2. Analog & Digital Electronics.

Module 1: Introduction to Embedded System.

- Microcontrollers & Processors.
- 8 bit controllers variants – choosing the right microcontroller.
- Field of applications.

Module 2: Introduction to AVR Architecture.

- Atmega8 features and peripherals.
- General purpose registers in AVR microcontrollers.
- Atmega-8 pin configuration and description.
- Working circuit for atmega-8 development board.

Module 3: PORT registers.

- Accessing I/O pins associated with the PORT registers.
- Setting up the registers associated with PORTs for GPIO purposes.
- Controlling the register bits for read/write operations.

Hands-on Practice:

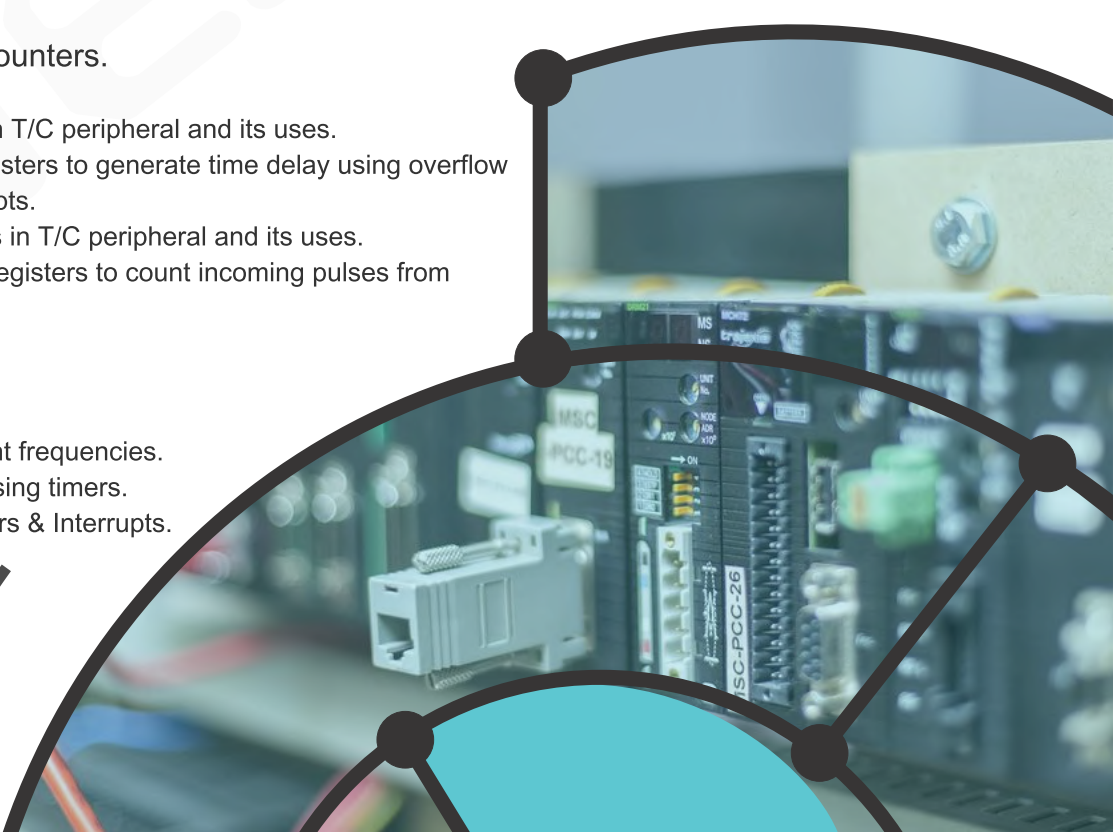
- Led Blinking, Led Shifting.
- Led control using push-to-on switch.
- Relay Operation.

Module 4: Timers & Counters.

- Introduction to Timers in T/C peripheral and its uses.
- Setting up the timer registers to generate time delay using overflow and comparison interrupts.
- Introduction to Counters in T/C peripheral and its uses.
- Setting up the counter registers to count incoming pulses from ext. source.

Hands-on Practice:

- Dual led blink at different frequencies.
- Create delay function using timers.
- Digital clock using Timers & Interrupts.
- Object counter.



Module 5: Serial Communication (UART).

- Introduction to Serial Communication and its types.
- Features of UART in Atmega8.
- Setting up the registers associated with UART peripheral to send/receive characters, numbers and string data to/from other device.
- Application of UART in communication.

Hands-on Practice:

- Sending/Receiving data using UART peripheral.
- Automate leds using input data from serial port.
- Wireless automation using bluetooth serial communication.

Module 6: Pulse-Width-Modulation (PWM).

- Introduction to PWM and its uses.
- Setting up the registers associated with T/C peripheral to obtain PWM signal output.
- Application of PWM in automation and power control using thyristors.

Hands-on Practice:

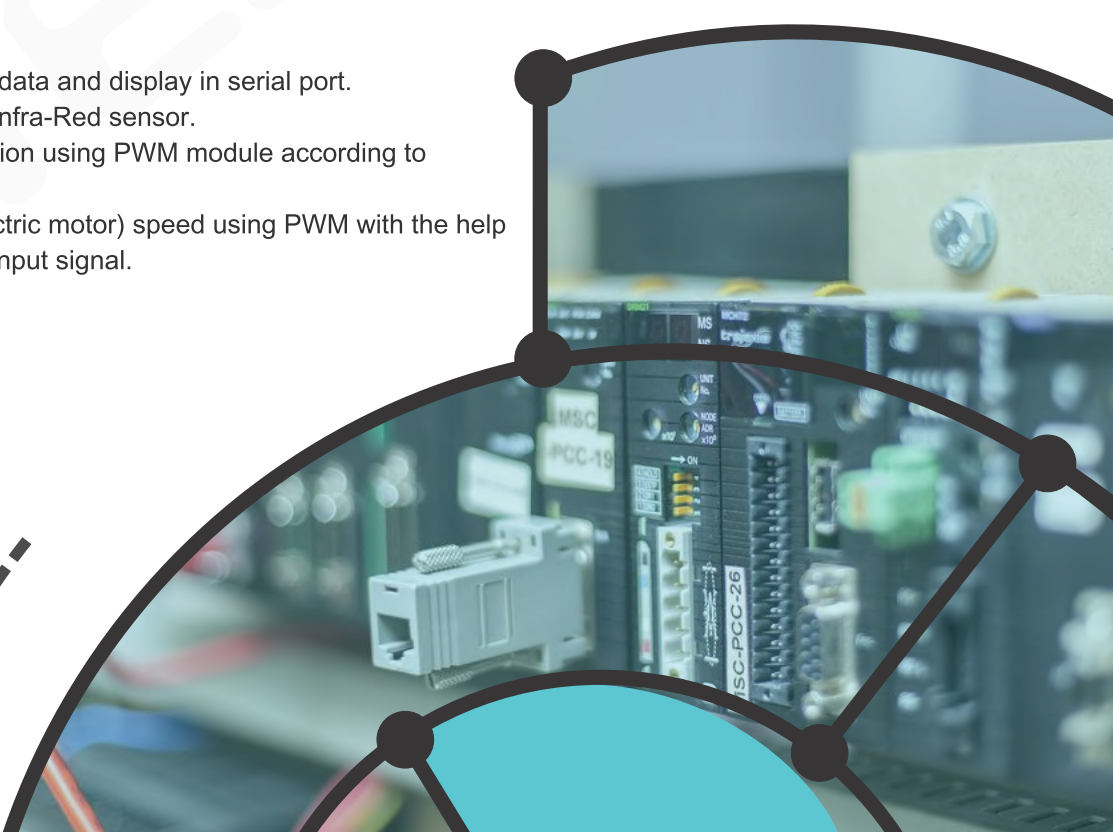
- Control led brightness using PWM signal.

Module 7: Analog-to-Digital Conversion (ADC).

- Features of ADC in AVR.
- Setting up the registers associated with ADC peripheral to get digital equivalent value of any analog signal input.
- Application of ADC in energy meters and automation.

Hands-on Practice:

- Read analog sensor data and display in serial port.
- Touch Switch using Infra-Red sensor.
- Led brightness variation using PWM module according to analog sensor input.
- Control AC load (electric motor) speed using PWM with the help of potentiometer as input signal.



Embedded System Using PIC

Industrial Microcontrollers



Course Contents:

Module 1: Introduction to Embedded System.

- Microcontrollers & Processors.
- 8 bit controllers variants – choosing the right microcontroller.
- Field of applications.

Module 2: Introduction to PIC Architecture.

- PIC16F877A features and peripherals.
- General purpose registers in PIC microcontrollers.
- PIC16F877A pin configuration and description.
- Working circuit for PIC16F877A development board.

Module 3: Introduction to MPLABX IDE and XC8 compiler for PIC microcontrollers.

- Installing MPLABX and Xc8.
- Creating new project, adding files to project.
- Building first code.

Module 4: PORT registers.

- Accessing I/O pins associated with the PORT registers.
- Setting up the registers associated with PORTs for GPIO purposes.
- Controlling the register bits for read/write operations.

Hands-on Practice :

- Led Blinking, Led Shifting.
- Led control using push-to-on switch.
- Relay Operation.

Module 5: Timers & Counters.

- Introduction to Timers in T/C peripheral and its uses.
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Hands-on Practice :

- Dual led blink at different frequencies.
- Create delay function using timers.
- Digital clock using Timers & Interrupts.
- Object counter.

Module 6: Serial Communication (UART).

- Introduction to Serial Communication and its types.
- Features of UART in PIC16F877A.
- Setting up the registers associated with UART peripheral to send/receive characters, numbers and string data to/from other device.
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Hands-on Practice :

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Module 7: Pulse-Width-Modulation (PWM).

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- Touch Switch using Infra-Red sensor.
- Led brightness variation using PWM module according to analog sensor input.
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Module 9: Introduction to Internet of Things.

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- Web Servers
- Websites VS Web-Applications.

Module 10: Website Development – Front end.

- Building a web page using HTML.
- Setting up the server and database in mysql.
- Creating/Deleting tables and columns in mysql database using phpmyadmin.

Module 11: Website Development – Back end.

- Fetching data from HTML page (forms).
- Insert/delete data into/from mysql table.
- Conditional queries.

Module 12: Application.

- Setting up ESP8266 wifi module.
- AT commands for ESP8266 – Testing.
- Connect to server and establish communication from PIC microcontrollers using ESP8266.
- Home automation – Controlling home/industrial appliances through internet.
- Weather Station – Update sensor data to online server using Arduino/AVR/PIC microcontrollers.

PCB Design & Fabrication



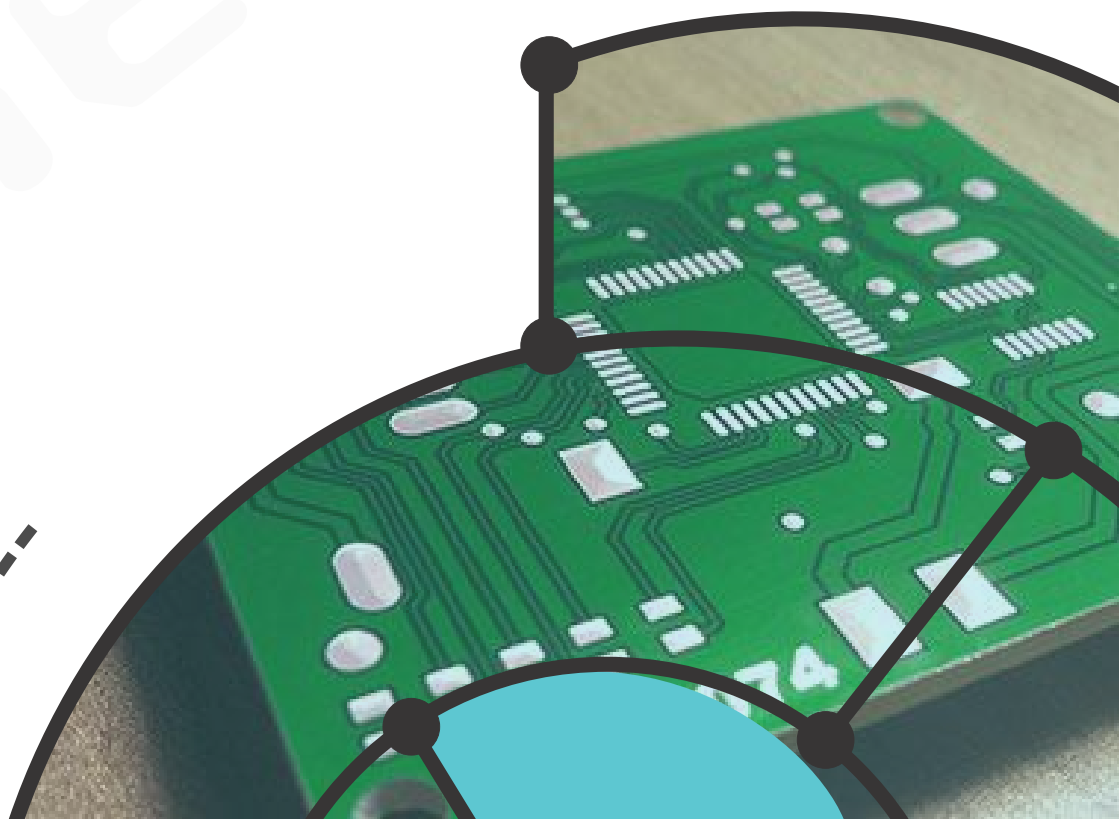
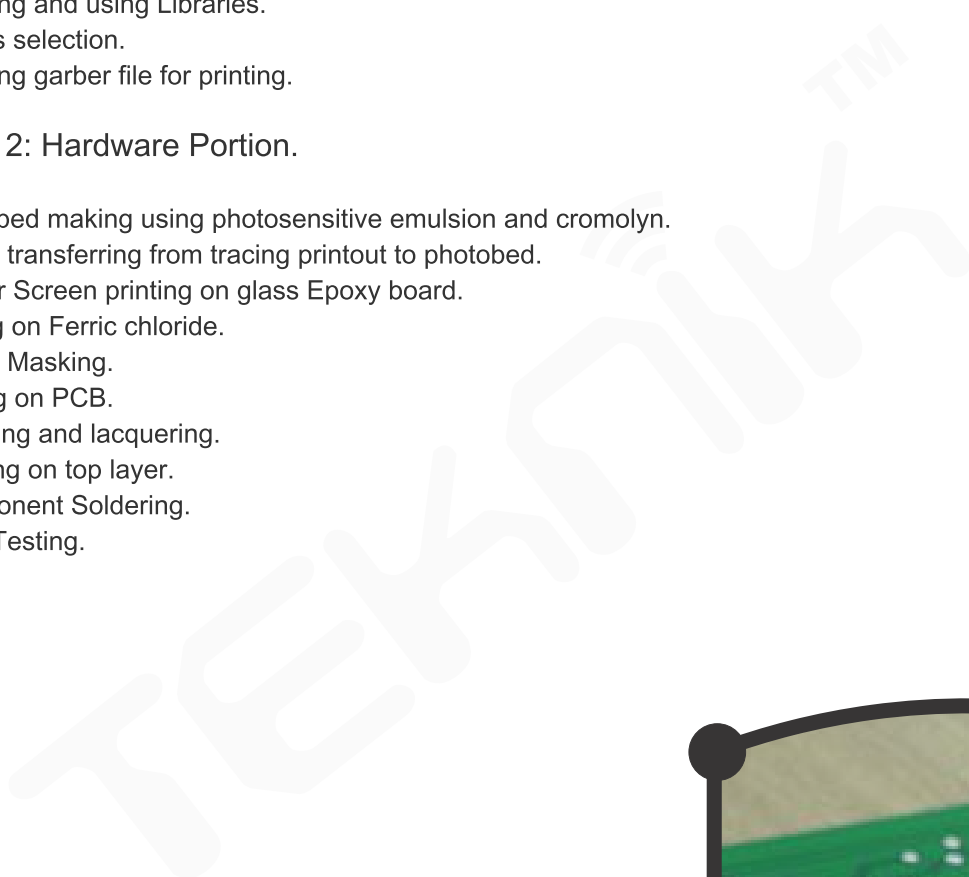
Course Contents

Module 1: Software Portion.

- Eagle professional installation.
- Librari upgradation.
- Setting up styles.
- Setting up layers.
- Adding components.
- Adding shapes.
- Adding new libraries.
- Editing items to a design.
- Creating and using Libraries.
- Layers selection.
- Creating garber file for printing.

Module 2: Hardware Portion.

- Photobed making using photosensitive emulsion and cromolyn.
- Image transferring from tracing printout to photobed.
- 3 layer Screen printing on glass Epoxy board.
- Itching on Ferric chloride.
- Green Masking.
- Drilling on PCB.
- Cleaning and lacquering.
- Marking on top layer.
- Component Soldering.
- Final Testing.





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