GSSG TECH SOLUTIONS LLP

ISO 9001:2015 ORGANISATION

Providing best Training has been our knack, Not Compulsion

Where Technology Meets Innovators

TEKNIK™

R&D | PROJECT INDUSTRIAL TRAINING/WORKSHOP

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GSSG Tech Solutions LLP

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, LED products, Embedded Projects. The in-house R&D unit along with skilled Engineers and Technicians guide the way through towards new ideas and product.

TEKNIK is the brand of GSSG Tech Solutions LLP which has a clear motive of "Inviting Innovations". We are a client based working team who are continuously into technological improvement around the globe. Be it Web Development or Server Based Solutions or Embedded Solutions for Industries, TEKNIK is the primary key to your problem statements.

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/Diploma Students on Industrial Microcontrollers, 3D Modeling & Printing, Web Development, Server Solutions, VLSI, PLC and automation, Raspberry Pi, IOT, Image Processing, PCB design & Fabrication, Circuit Simulation, Programming Languages like Python, Java, Android and much more.

TEKNIK Activities for Students

- TEKNIK is a unit of GSSG Tech Solutions LLP which deals with Student Training and Workshops in and around West Bengal, Bangalore, Bhubaneswar, Jharkhand.
- TEKNIK has been professional towards its students and train them with utmost care from experts, during their educational tenure
- We allow students to know their subjects and learn the technical know-how in the most Industrial way. Easy to understand study materials on respective topics are provided to students.
- Students, once registered in the TEKNIK network, receives technical help from our experts all round the year.
- Till now TEKNIK has worked with many reputed colleges around the corner and has received positive responses and encouragement from students and faculties.
- TEKNIK is now keen to extend the course structures and reach out to Engineering institutes in the neighbouring states.

VISION

- To provide quality services that exceeds the expectations of our esteemed customers,
- To educate students and to develop sound knowledge of the fundamentals which will help to carry out the design process from problem definition to solution,
- To prepare students for a variety of challenging careers in industry e.g. production, service, R&D, engineering etc.,

MISSION

- To build long term relationship with our clients and to provide exceptional customer services by pursuing business through innovation and advanced technology.
- To have highly qualified faculty.
- To support application oriented research and encourage entrepreneurship,

SERVICE WE OFFER

- Embedded projects and Web-Integrated Embedded Applications (Client Based).
- Energy Saving Automation,
- Integrated IT Solutions,
- 3D Printing,
- PCB Fabrication,
- Seminars/Workshops/Training for school and colleges in different topics,

CORE VALUES

- We believe in treating our customers with respect and faith,
- We grow through creativity, invention,

TEKNIK INDUSTRIAL CLASSROOMS

Summer/Winter Training Courses

Sl.No	Course Name	Eligibility	Duration	Fees per Student
01	Python Programming Language	Diploma, B.tech, MCA, BCA (1st yr to Final Yr) all Stream.	30 hrs	Rs. 3500/-
02	Python with Raspberry Pi & IOT	Diploma, B.tech, MCA, BCA (2nd yr to Final Yr) CSE, ECE, EE, AEIE, ME.	30 hrs	Rs. 7200/- (with Kit)
03	Core Java	Diploma, B.tech, MCA, BCA (1st yr to Final Yr) CSE, IT, ECE, ME, EE.	30 hrs	Rs. 3500/-
04	J2EE (Advanced JAVA)	Diploma, B.tech, MCA, BCA (2nd yr to Final Yr) CSE, IT, ECE, ME, EE.	30 hrs	Rs. 4200/-
05	Android Application Development	Diploma, B.tech, MCA, BCA (1st yr to Final Yr) CSE, IT, ECE, ME, EE.	30 hrs	Rs. 4200/-
06	Web Development (PHP & MySQL)	Diploma, B.tech, MCA, BCA (1st yr to Final Yr)) CSE, IT, ECE, ME, EE.	30 hrs	Rs. 4200/-
07	Ethical Hacking & Cyber Security	Diploma, B.tech, MCA, BCA (1st yr to Final Yr) CSE, IT, ECE, ME, EE.	30 hrs	Rs. 4200/-
08	Embedded System & Robotics	Diploma, B.tech, MCA, BCA (1st yr to Final Yr) all stream.	30 hrs	Rs. 4600 /- (Basic Kit) Rs. 5650/-(Advanced Kit)
09	Arduino & IOT	Diploma, B.tech, MCA, BCA (1st yr to Final Yr) all stream.	30 hrs	Rs. 4250/- (Basic Kit) Rs. 4950/-(Advanced Kit)
10	Arduino Mobile System Using GSM-900.	Diploma, B.tech, MCA, BCA (1st yr to Final Yr) all stream.	25 hrs	Rs. 5000/- (With Kit)
11	AVR Microcontrollers & Automation	Diploma, B.tech, MCA, BCA (1st yr to Final Yr) all stream.	30 hrs	Rs. 4400/- (Basic Kit) Rs. 5150/-(Advanced Kit)
12	Arduino & Home Automation	Diploma, B.tech, MCA, BCA (1st yr to Final Yr) all stream.	30 hrs	Rs. 4800/- (with Kit)
13	PIC Microcontroller (Industrial Graded)	Diploma, B.tech, MCA. (1st yr to Final Yr) ECE, EE, AEIE, ME.	30 hrs	Rs. 5930/- (with Kit)
14	ARM 32 Bit Cortex-M3 Microcontrollers	Diploma, B.tech, MCA. (2nd yr to Final Yr) ECE, EE, AEIE, ME.	40 hrs	Rs. 6950/- (with Kit)
15	Nuvoton Microcontroller (Industrial Graded)	Diploma, B.tech, MCA. (2nd yr to Final Yr) ECE, EE, AEIE, ME.	30 hrs	Rs. 5950/- (with Kit)
16	Industrial Automation Using PLC & SCADA	Diploma, B.tech. (1st yr to Final Yr) ECE, EE, AEIE, ME.	40 hrs	Rs. 4500/-
17	VLSI Using EDA Tools	Diploma, B.tech, MCA, BCA. (2nd yr to Final Yr) ECE, EE, AEIE, ME, CSE.	30 hrs	Rs. 4000/-
18	3D Design & Printing (Solidworks)	Diploma, B.tech. (1st yr to Final Yr) ME, CE, EE, ECE, AEIE.	40 hrs	Rs. 4000/-
19	PCB Design & Fabrication (Eagle)	Diploma, B.tech. (1st yr to Final Yr) ECE, EE, AEIE, ME, CSE.	30 hrs	Rs. 3000/-
20	IC Engine Designing	Diploma, B.tech. (2nd yr to Final Yr) ME, AUE,SE	30 hrs	Rs. 4000/-

* Price including all taxes.

Kits Detail For Embedded Courses

SL.No	Course Name	Course Fees	Component Details	Component Price	Total Fees
02	Python with Raspberry Pi & IOT (with kit)	3500.00	Raspberry Pi	3000.00	
			Learning Board	350.00	
			SD Card 16 GB,	350.00	7200.00
08	Embedded System & Robotics (With Basic Kit)	3300.00	BOT(Chasis +BO Motor 2 pcs +Wheel 2pcs + Caster Wheel +Motor Driver + IR module 3pcs)	1200.00	
			Adapter	100.00	4600.00
	Embedded System & Robotics (With Advanced Kit)	3300.00	Basic Kit	1300.00	
			Bluetooth	150.00	
			Learning Board	350.00	
			16x2 LCD	130.00	
			Matrix Key Board	120.00	
			Accelerometer	300.00	5650.00
09	Arduino & IOT (With Basic Kit)	3300.00	Arduino Uno with cable	450.00	
			Wifi(Esp8266)	150.00	
			Learning Board	350.00	4250.00
	Arduino & IOT (With Advanced Kit)	3300.00	Basic Kit	950.00	
			Bluetooth	300.00	
			16x2 LCD	130.00	
			Matrix Key Board	120.00	
			Adapter	100.00	
			AC Load	50.00	4950.00
10	Arduino Mobile System Using GSM-900. (With Kit)	2800.00	Arduino Uno with cable	450.00	
			GSM-900	900.00	
			Learning Board	350.00	
			Headphone	150.00	
			16x2 LCD	130.00	
			Matrix Key Board	120.00	
			Adapter	100.00	5000.00
11	AVR Microcontrollers & Automation (With Basic Kit)	3300.00	AVR Dev Board	275.00	
			AVR Burner	375.00	
			Learning Board	350.00	
			Adapter	100.00	4400.00
	AVR Microcontrollers & Automation (With Advanced Kit)	3300.00	Basic Kit	1100.00	
			Bluetooth	300.00	
			16x2 LCD	130.00	
			Matrix Key Board	120.00	
			WIFI(ESP8266)	150.00	
			AC Load	50.00	5150.00

* Price including all taxes.

SL.No	Course Name	Course Fees	Component Details	Component Price	Total Fees
12	Arduino & Home Automation (With Kit)	3300.00	Arduino Uno with cable	450.00	
			Learning Board	350.00	
			Wifi (Esp8266)	150.00	
			PIR	150.00	
			16x2 LCD	130.00	
			Matrix Keypad	120.00	
			AC Load Setup	50.00	
			Remote and Tsop	100.00	4800.00
13	PIC Microcontroller (Industrial Graded) With Kit	3500.00	PIC Dev Board (16F877)	350.00	
			PIC Kit-2	1500.00	
			Learning Board	350.00	
			16x2 LCD	130.00	
			USB-TTL converter	100.00	5930.00
14	ARM 32 Bit Cortex-M4 Microcontrollers.	5000.00	ARM KIt	800.00	
			Learning Board	350.00	
			Wifi (Esp8266)	150.00	
			16x2 LCD	130.00	
			Matrix Key Board	120.00	
			Bluetooth	300.00	
			Adapter	100.00	6950.00
15	Nuvoton Microcontroller (Industrial Graded) With Kit	3300.00	Nuvton KIt	1500.00	
			Learning Board	350.00	
			Wifi (Esp8266)	150.00	
			16x2 LCD	130.00	
			Matrix Key Board	120.00	
			Bluetooth	300.00	
			Adapter	100.00	5950.00

* Price including all taxes.

TEKNIK INDUSTRIAL CLASSROOMS

Workshop Fees Details

Sl.No	Course Name	Duration	Student Strength	Fees Per Students
01	AVR/ARDUINO – Home Automation	2 Days (12 Hours)	<=40	1000.00
			>40	900.00
02	AVR/ARDUINO – Home Automation	3 Days (18 Hours)	<=40	1300.00
			>40	1200.00
03	Line Follower & Obstacle Detection	2 Days (12 Hours)	<=40	1000.00
			>40	900.00
04	Gesture Control Robotics	2 Days (12 Hours)	<=40	1200.00
			>40	1100.00
05	Arduino Mobile System Using GSM-900	2 Days (12 Hours)	<=40	1200.00
			>40	1100.00
06	Raspberry Pi -IOT	3 Days (18 Hours)	<=40	1900.00
			>40	1800.00
07	Arduino -IOT	2 Days (12 Hours)	<=40	1000.00
			>40	900.00
08	3D Printing Technology	1 Day		20000.00
		2 Days		30000.00
09	PCB Designing & Fabrication	1 Day		20000.00
		2 Days		30000.00
10	Ethical Hacking	1 Day	>40	500.00
		2 Days	>40	800.00
11	ARM 32 Bit Cortex-M4 Microcontrollers	3 Days (18 Hours)	<=40	1300.00
			>40	1200.00
12	IC Engine Designing	2 Days (12 Hours)	<=40	800.00
			>40	700.00
13	VLSI Using EDA Tools	2 Days (12 Hours)	<=40	900.00
			>40	800.00

Python Programming Language

Eligibility:
Diploma, B.tech, MCA, BCA (1st yr to Final Yr) all Stream.

Prerequisites:
Basic knowledge of Programming.

Get hands-on experience:

The program is well tuned to the needs of students who are acquainted with basics of programming and are keen to learn another open source language. Students opting for this course will:
☐ Learn to build the logic and write programs in Python using variables, operators, etc.
☐ Be able to develop a program block using functions, to store data to file, dictionaries etc.
☐ Know how to do data analysis using Python.
☐ Be able to identify basic building blocks of a programming language.
☐ Become proficient at handling files.
☐ Know how to store and manipulate data using dictionary and tuples.

Course Contents:

Module 1: Overview.

☐ History of Python
☐ Python Features
☐ Environment Setup
☐ Getting Python installing Python
☐ Setting up PATH
☐ Setting path at Windows
☐ Python Environment Variables
☐ Running Python

Module 2: Basic Syntax.

☐ Python Program
☐ Python Identifiers
☐ Python Keywords
☐ Lines and Indentation
☐ Multi-Line Statements
☐ Quotation in Python
☐ Python Comments in Python
☐ Multiple Statements on a Single Line
☐ Command Line Arguments
☐ Accessing Command-Line Arguments
☐ Parsing Command-Line Arguments

Module 3: Variable Types.

☐ Assigning Values to Variables
☐ Multiple Assignment
☐ Standard Data Types
☐ Python Numbers
☐ Python Strings
☐ Python Lists
☐ Data Type Conversion

Module 4: Basic Operators.

☐ Types of Operators
☐ Python Arithmetic Operators
☐ Python Comparison Operators
☐ Python Assignment Operators
☐ Python Logical Operators
☐ Python Identity Operators
☐ Python Operators Precedence
☐ DECISION MAKING
☐ If…else Statement
☐ The elif Statement
☐ Single Statement Suites
☐ While Loop
☐ Using else Statement with Loops
☐ Single Statement Suites
☐ For Loop
☐ Break Statement
☐ Continue Statement

Module 5: Functions.

☐ Defining a Function
☐ Calling a Function
☐ Passing by Reference Vs Passing by Value
☐ Global vs. Local variables
☐ Locating Modules
☐ Packages in Python

Module 6: Exceptions.

☐ What is Exception
☐ Handling an Exception
☐ The except Clause with No Exceptions
☐ The except Clause with Multiple Exceptions
☐ The try-finally Clause

☐ Argument of an Exception
☐ Raising an Exception
☐ User-Defined Exceptions

Module 7: Introduction to Django.

☐ What is Django?
☐ Django and Python
☐ Django's take on MVC: Model, View and Template
☐ DRY programming: Don't Repeat Yourself
☐ How to get and install Django

Module 8: Getting started with Django.

☐ About the 3 Core Files:
☐ models.py
☐ urls.py
☐ views.py
☐ Setting up database connections
☐ Managing Users & the Django admin tool
☐ Installing and using 'out of the box' Django features

Module 9: Django URL Patterns and Views.

☐ Designing a good URL scheme
☐ Generic Views

Module 10: Django Forms.

☐ Form classes
☐ Validation
☐ Authentication
☐ Advanced Forms processing techniques

Module 11: Django & REST APIs.

☐ Django REST framework
☐ Django-piston

Module 12: Unit Testing with Django.

☐ Overview / Refresher on Unit Testing and why it's good
☐ Using Python's unittest2 library
☐ Test
☐ Test Databases
☐ Doctests
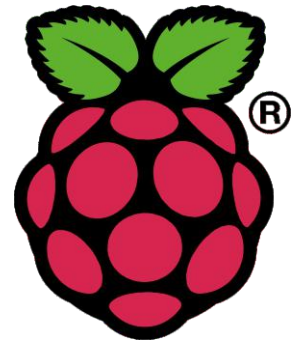☐ Debugging Best Practices
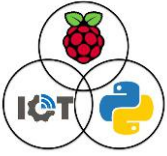
Python with Raspberry Pi & IOT

Eligibility:
Diploma, B.tech, MCA, BCA (2nd yr to Final Yr) all Streams.

Prerequisites:

1. Basic knowledge of Python Programming
2. Basics of Electronics.
3. Analog & Digital Electronics

Get hands-on experience:

Setting up the RPi – Raspbian OS
Booting
Networking
File-sharing
Audio playback
Video playback
Connecting a USB webcam
Video streaming on the RPi.

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).
☐ nequalities (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.

<u>Internet of Things (IOT)</u>

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.

Core Java

Eligibility:
Anyone can take this Training Course to be a Java Developer.

Get hands-on experience:

Learning programming and core Java concepts
Introduction to Inheritance, Threads and Collections
Deploy JDBC for connecting various applications
Understand Method Overriding and Overloading
Use Array and HashMap for storing dynamic data
Create Threads in Java by Implementing Runnable Interface
Work on live projects for hands-on experience

Course Contents:

Module 1: Java 9 new features.

☐ Introduction to JShell
☐ What is JShell: An introduction to REPL (Read-Evaluate-Print-Loop)
☐ Why use JShell
☐ Starting and stopping JShell
☐ Starting JShell in verbose mode
☐ Working with snippets in JShell
☐ Changing definition of a variable, method or class
☐ Changing level of feedback
☐ Forward references Exceptions
☐ Tab completion for snippets
☐ Snippet transformation
☐ JShell commands
    *Tab completion for commands
    *Command abbreviations
☐ External JShell editor
☐ Setting classpath and module options
☐ JShell scripts
    *Startup scripts
    *Creating and loading scripts

Module 2: Module Declarations.

☐ What is a module: dependences and dependencies
☐ Module declaration syntax
☐ Normal and open modules
☐ Module and reflective access
☐ Module directives: requires, exports, opens, uses, provides
☐ Requires modifier: transitive and static
☐ Module file specification: module-info.java

☐ The primordial module: java.base
☐ Module practical examples
☐ Unnamed module
☐ Using jlink tool to assemble and optimize a set of modules and their dependencies into a custom runtime image

Module 3:Introduction to java.

☐ Primary components of a Java program: Class, Interface, Enum and Annotation
☐ Writing, compiling and running a Java program from command line
☐ What is Java bytecode?
☐ JVM and JRE
☐ Java bytecode interpreter and JIT compiler
☐ How to work with Eclipse, Netbeans and IntelliJ IDEA

Module 4:Class and Object.

☐ What is an object: object properties and operations
☐ What is a class
☐ How does a class describe properties of objects: private fields, accessor and mutator methods
☐ How does a class describe operations using methods
☐ Method overloading
☐ The 'this' keyword

Module 5:Constructors.

☐ What is a constructor
☐ Default constructor
☐ Constructor overloading
☐ Constructor chaining

Module 6:Static or class variables and methods.

☐ Static variable
☐ Static method

Module 7:Some advanced class concepts.

☐ Static and non static field initializers
☐ Static and non static initialization blocks
☐ Order of initializations
☐ Private constructors and singleton class**

Module 8:Nested classes.

☐ Static member nested classes
☐ Member inner classes
☐ Local inner classes
☐ Anonymous inner classes

Module 9: Packages in Java.

☐ Package concept and its advantages
☐ How to place a class inside a package
☐ How to import a class
☐ The default access modifiers
☐ Compiling and running java classes in packages: concept of java classpath
☐ Creating jar packed libraries in java**
☐ Java extension mechanism**
☐ Creating executable jar files**

☐ What is inheritance: java inheritance mechanism
☐ Inheriting fields and methods from superclass
☐ Adding fields and methods in subclass
☐ Upcasting, downcasting and instanceof operator
☐ Method overriding, dynamic binding and runtime polymorphism
☐ Use of 'super' keyword
☐ Constructor chaining using 'super' keyword
☐ Inheritance and access modifiers
☐ Final classes
☐ Concept of single rooted class hierarchy in java: the 'Object' class

Module 11: Abstract classes and interfaces.

☐ Abstract method
☐ Abstract class
☐ Abstract class and inheritance
☐ Interfaces and its implementation
☐ Interfaces and multiple inheritance
☐ Interfaces and loose coupling
☐ Field declarations within an interface
☐ Marker interfaces
☐ Default implementation of methods within interface
☐ Functional interfaces and lambda expressions

Module 12: Exception handling.

☐ Why do we need exception handling in java
☐ Exception handling mechanism in java using try, catch and finally
☐ Stack unwinding
☐ Difference between Exceptions and Errors
☐ 'Throwable' class
☐ Checked and unchecked exceptions
☐ Exception chaining
☐ Custom exceptions
☐ Catching multiple exceptions in java 7
☐ Try with resources
☐ Suppressed exceptions

Module 13: Multithreading.

☐ Concept of processes and threads
☐ Multithreading by extending Thread class
☐ Multithreading by implementing Runnable interface
☐ Life cycle of a thread
☐ Thread synchronization: concept of monitor, synchronized blocks and
   synchronized methods
☐ Inter thread communication by guarded blocks: wait, notify and notifyAll
☐ Deadlock, starvation and livelock
☐ Lock objects
☐ Executors

Module 14: Generics.

☐ Why use Generics
☐ Generic Types
☐ Raw Types
☐ Generic Methods
☐ Bounded Type parameters
☐ Generics, Inheritance and Subtypes
☐ Type inference
☐ Wildcards
☐ Type Erasure
☐ Restrictions on generics

Module 15: Java collection framework.

☐ Introduction to Java collection framework
☐ Core collection interfaces and their implementations: Collection, Set, List, Queue,
   Deque, Map, SortedSet and SortedMap
☐ Aggregate operations: Reduction and Parallelism**
☐ Algorithms: Sorting, Shuffling, Routine data manipulation, Searching,
   Composition and finding extreme values

Module 16: Basic I/O.

☐ Concept of Input and Output in Java
☐ Byte Streams and Character Streams
☐ Buffered Streams
☐ Scanning and Formatting
☐ Command Line I/O
☐ Data and Object Streams
☐ File I/O: Nio.2

Module 17: Annotations.
☐ Annotation Basics
☐ Declaring an Annotation Type
☐ Predefined Annotation Types

Project Implementation

J2EE (Advanced JAVA)

Eligibility:
Diploma, B.tech, MCA, BCA (1st yr to Final Yr) CSE, IT, ECE, ME, EE, EIE.

Prerequisites:

All those who are looking forward to develop secured Web Application or Enterprise
Application using Servlet & JSP are welcome to enroll for this course. Basic knowledge of Java is needed for
this course.

Get hands-on experience:

☐ Implement the concept of Web Server, Application Server.
☐ Have a clear concept of JEE architecture.
☐ Understand the importance of Servlet, Filter, ServletListener, JSP and its tags.
☐ Implement MVC Architecture in JEE.
☐ Connect your Application with Oracle using JDBC drivers.
☐ Concepts of JSTL, EL, Java Beans etc.

Course Contents:

Module 1: An Introduction to Web Development Fundamentals.

☐ How web works
☐ The client server architecture
☐ Understanding the URL
☐ Different types of protocols (HTTP/HTTPS)
☐ Web request response cycle

Module 2: Front End Design using HTML, CSS, JavaScript & JQuery.

☐ Basic tags of HTML
☐ HTML require tag and its uses
☐ HTML table and form tag
☐ Design of HTML page using CSS
☐ Different types of CSS
☐ An introduction to JavaScript & Jquery
☐ Difference between Client side validation & Server side validation
☐ Form validation using JavaScript

Module 3: Front End Design using HTML, CSS, JavaScript & Jquery.

☐ What Is A Database?
☐ What Is SQL?
☐ Overview of RDBMS
☐ Entity Relationship Model

- ☐ Entity
- ☐ Attributes
- ☐ Relationship
- ☐ Database keys(Primary key, Foreign key)
- ☐ Introduction to Oracle 12c
- ☐ DML,DDL,DCL statements
- ☐ insert, update, delete and select operation
- ☐ data types in Oracle

Module 4: Introduction to JEE architecture.

- ☐ Different types of Java Application
- ☐ Two, three and multitier application
- ☐ Advantages and disadvantages of above architecture
- ☐ MVC and MVC 2 architecture
- ☐ JEE architecture, components and container of JEE
- ☐ Web and Application server
- ☐ Introduction to Tomcat Server, installing and configuration with Eclipse Oxygen
- ☐ Path setting of Tomcat 9.0
- ☐ Create a simple web application in Eclipse and run in Tomcat server

Module 5: Introduction to Servlet Technology.

- ☐ Servlet and its Architecture
- ☐ How servlets work, role of Deployment descriptor (web.xml)
- ☐ Deployment descriptor vs Annotation
- ☐ Servlet API (Javax.servlet and javax.servlet.http)
- ☐ Servlet Life cycle and its method
- ☐ How to create Servlet(Servlet interface, GenericServlet class, HttpServlet class)
- ☐ Writing service method, Constructing Responses
- ☐ Describe doGet() and doPost() method
- ☐ Deploy servlet in eclipse

Module 6: Working with Database (JDBC) using Servlet.

- ☐ Introduction to JDBC, JDBC drivers
- ☐ How to connect any java application to any database using JDBC
- ☐ Insert, delete, update. Select operation
- ☐ DriverManager class, Statement, PreparedStatement interface
- ☐ ResultSet interface and its different methods to access data from database
- ☐ Access database from Servlet
- ☐ A simple registration page example

Module 7: RequestDispatcher and Session Management in Servlet.

- ☐ RequestDispatcher and forward() & include() method
- ☐ difference between forward() and sendRedirect()
- ☐ Session Tracking using HttpSession, Cookie, URL rewriting and Hidden form field

☐ How to create session and set and get session
☐ HttpSession methods like getSession, setAttribute(), getAttribute() etc
☐ How to create cookie and set and get cookie
☐ Data management using URL rewriting and Hidden form field

Module 8: Servlet Filter, Event and Listeners.

☐ Introduction to Event Classes and Interfaces
☐ Listeners interface
☐ Servlet Filter and Filter API
☐ Concepts of Filter Chain
☐ Server side validation using Filter

Module 9: Introduction to JSP (Java Server Pages).

☐ What is JSP
☐ Advantages of JSP over Servlet
☐ JSP architecture
☐ JSP life cycle
☐ Some JSP tags like Scriplet Tag, declaration tag, Expression tag
☐ JSP implicit object
☐ JSP directives
☐ A simple example in JSP
☐ JSP Action elements (jsp:forward(), jsp:include())

Module 10: Java Beans and jsp:useBean.

☐ What is Java bean
☐ Setter, getter method and serialization
☐ Jsp:useBean tag to access a bean
☐ Jsp:setProperty and jsp:getProperty
☐ Use of bean as a model of MVC

Module 11: Scopes and Attributes

☐ Different scopes in servlet and JSP
☐ Request, session and Application scope
☐ Access those scope using servlet and JSP
☐ Attributes and different methods(setAttribute, getAttribute)
☐ Difference between ServletContext and ServletConfig

Module 12: JSTL and JSP Expression Language (EL).

☐ What is JSTL and JSTL LIBRARY
☐ Core tag, Functional tag, Formatting tag and SQL tag of JSTL
☐ A simple example showing all tags
☐ Introduction to EL
☐ Implicit objects in EL
☐ Scopes in EL
☐ Basic operator in EL

Module 13: Advance Topics.

☐ Introduction to ORM tools
☐ Hibernate and its advantages
☐ Connect hibernate with Servlet
☐ A simple example to connect servlet/JSP with Hibernate

Project Implementation.

Android Application Development

Eligibility
Diploma, B.tech, MCA, BCA (1ˢᵗ yr to Final Yr) CSE, IT, ECE, ME, EE.

Pre-requisites
Anybody interested in Android App Development can take this Training. Though basic knowledge of Java will be a plus point.

Get hands-on experience

☐ Learn about the Android basic, its Architecture and the App Market.
☐ The various components of Android and Application Life cycle Resources
☐ Create Menus and Layouts in Android
☐ Use the SQLite Database for creation of Android Applications
☐ Work on animation, content creation, data storage, Maps API
☐ Work with Android Studio, DDMS, Listeners and other tools
☐ Learn to design interactive apps with animation.
☐ Working with various Widgets.
☐ Publish the app on the Google Play Store

Course Contents

Module 1: Introduction to Android

☐ Why we need mobile app
☐ Different kind of mobile app
☐ Briefly about mobile app
☐ What is android and history about android

Module 2: Android Architecture and Installation

☐ Overview of android stack
☐ Android os layer and its features
☐ Installation of android studio
☐ Setting up environment
☐ AVD creation
☐ Creating android project

Module 3: Building UI and Activities

☐ Activities
☐ The manifest file
☐ Layout resource
☐ Activity life cycle
☐ Creating UI design through code and XML

Module 4: Android Widgets

☐ Implicit and Explicit Intents
☐ Toasts, Custom toast
☐ Dialogue
☐ Status bar Notification

Module 5: Data Storage

☐ Shared Preferences
☐ Introduction of SQLite
☐ SQliteOpenhelper and creating a database
☐ Working with cursor, update and delete

Module 6: Services, Content Providers

☐ Overview and implementation of services
☐ Service life cycle
☐ Creating a content provider
☐ Storage Access Framework

Module 7: Connectivity and Cloud

☐ Introduction to wireless connectivity
☐ Introduction to volley
☐ Firebase Cloud Messaging

Module 8: Android Camera

☐ Using existing camera application in our application and example
☐ Directly using camera API provided by android in our application and example

Module 9: Sending Emails, SMS and Phone calls

☐ Intent Object- Action to send Email
☐ Intent Object- Data/Type to send Email
☐ Intent Object- Extra to send Email
☐ Intent Object- Action to send SMS
☐ Intent Object- Data/Type to send SMS
☐ Intent Object- Extra to send SMS
☐ Intent Object- Action to make Phone calls
☐ Intent Object- Data/Type to make Phone calls

Module 10: Location based Services, Google map

☐ The Location object
☐ Get current and update location
☐ Location quality of service
☐ Displaying Location address
☐ Creation of Google map based application

Module 11: Location Based Services.

☐ The location object
☐ Get the current location
☐ Get the updated location
☐ Location quality of service
☐ Displaying a location address
☐ Example
☐ Install the google play services sdk
☐ Create android application

Module 12: Sending Email.

☐ Intent Object - Action to send Email
☐ Intent Object - Data/Type to send Email
☐ Intent Object - Extra to send Email
☐ Example

Module 13: Sending SMS.

☐ Using smsmanager to send SMS
☐ Using Built-in Intent to send SMS
☐ Intent Object - Action to send SMS
☐ Intent Object - Data/Type to send SMS
☐ Intent Object - Extra to send SMS
☐ Example

Module 14: Phone Calls.

☐ Intent Object - Action to make Phone Call
☐ Intent Object - Data/Type to make Phone Call

Module 15: Android Bluetooth.

☐ Example

Module 16: Android Camera.

☐ Using existing android camera application in our application
☐ Example
☐ Directly using Camera API provided by android in our application
☐ Example

Module 17: Android Google Maps.

Project Implementation.

Web Development (PHP & MySQL)

Eligibility:
Diploma, B.tech, MCA, BCA (1st yr to Final Yr) CSE, IT, ECE, ME, EE.

Pre-requisites:
Basic understanding of C.

Course Contents:

Module 1: Introduction to HTML 5 & CSS 3.

☐ HTML Tags
☐ Basic understanding of CSS
☐ Lab Session

Module 2: Introduction to PHP 7.

☐ Learn the new features of PHP 7
☐ Configure PHP 7 (XAMPP/WAMP)
☐ Use Form Handling
☐ Use Variables and Expressions
☐ Use various types of operators
☐ Explain usage of scalar type declarations in programs
☐ Use conditional and flow control statements
☐ Use functions
☐ Create and use arrays
☐ Lab Session

Module 3 : Introduction to Form Handling.

☐ Understanding GET, POST & REQUEST methods
☐ Handling Form events
☐ Sanitize and validate form data.
☐ Encryption techniques
☐ Protecting form data from SQL / URL injections
☐ Lab Session

Module 4: Introduction to MySQL Database.

☐ Introduction to database management (RDBMS)
☐ Preparing SQL Query statements
☐ Basic understanding of ERDiagram
☐ Database connectivity
☐ DML Operations using MySQLi
☐ Lab Session

Module 5:Introduction to State Management.

☐ Use cookies & Perform session management
☐ Lab Session

Module 6: Introduction to File Uploading.

☐ File upload & download in server
☐ View and delete uploaded file
☐ Lab Session

Module 7: Introduction to Javascript , jQuery and Ajax.

☐ Basic understanding of Javascript
☐ Understanding of DOM
☐ Variable declarations
☐ Use conditional and flow control statements
☐ Use functions
☐ Event Handling
☐ Data Validation
☐ Introduction to jQuery
☐ Implement Ajax using PHP
☐ Lab Session

Module 8: Hello World App.

☐ Advance Topics covered in Tutorial sessions
☐ Features of Word Press , Understanding MVC Architecture
☐ How to install Word Press with WAMP Server
☐ Working with Front End Design by using Word Press Tools

Project Implementation.

Ethical Hacking & Cyber Security

Eligibility:
Diploma, B.tech, MCA, BCA (1st yr to Final Yr) CSE, IT, ECE, ME, EE.

Pre-requisites:
Basic knowledge of Networking and Internet.

Get hands-on experience:
The prime objective of this course is to make you ready for the industry where you can use your skills to protect the organization. After completion of this course you will be able to successfully document Vulnerability Assessment report for the organization.

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
☐ Compliance and audit
☐ Conclusion Identity and Access Management techniques
☐ Confidentiality-Integrity-Availability (CIA)
☐ Role based access control (RBAC)
☐ Dictionary attack
☐ Brute force attack
☐ Phishing and Pharming
☐ Virus, Worms And Trojans
☐ Difference between Virus, worms & 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

Embedded Systems and Robotics

Eligibility:
Diploma, B.tech, MCA, BCA (1st yr to Final Yr) all Stream.

Prerequisites:

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

Course Contents:

Module 1:

☐ What is embedded system
☐ Examples of embedded system
☐ What is a Microcontroller ?
☐ Three criteria for choosing microcontroller
☐ Block diagram of Processor
☐ ASIC (Application Specific Integrated Circuit)
☐ Advantages of Microcontroller

Module 2:

☐ Features of Arduino Microcontroller
☐ Internal block diagram
☐ Pin description

Module 3:

☐ Arduino Series Micro-Controllers
☐ Switch Interfacing
☐ Analog Sensors
☐ LED interfacing with vivid patterns
☐ Practice Sessions on various real-life problem statements
☐ Serial Communication
☐ Bluetooth Communication
☐ Printing data on 16*2 LCD display

Module 4:

☐ DC Motor Interfacing with Arduino Microcontroller
☐ H-Bridge Motor Control
☐ Controlling Direction of Rotation of a Motor
☐ Stepper Motor Interfacing with Arduino - Theory
☐ Rotation in forward and backward direction
☐ Controlling speed of stepper motor
☐ Rotating stepper motor at given angle/distance
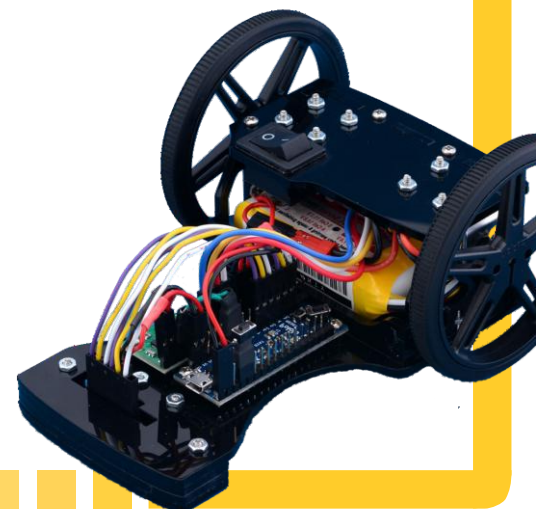
Module 5:

☐ Working of IR Sensors – Theory
☐ Digital IR Sensors – Theory
☐ Detecting White and Black surface with Digital
☐ Controlling Motor with Digital IR Sensor.
☐ Introduction to ADC – Theory
☐ Analog IR Sensors - Theory
☐ Controlling Motor using Analog IR Sensor.
☐ Line follower robot
☐ Password based Door locking system
☐ Wall follower robot

Project Implementation.

Arduino And IOT

Eligibility:
Diploma, B.tech, MCA, BCA (1st yr to Final Yr) all Stream.

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.
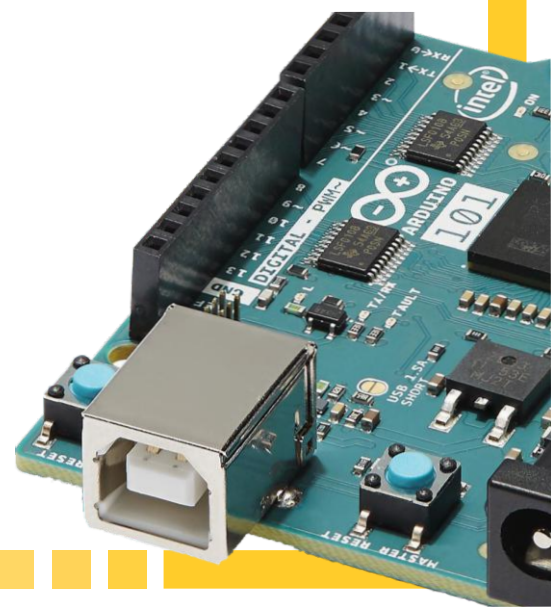
Module 6: Introduction to Internet of Things.

☐ 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.
<div align="center">or</div>
☐ Weather Station –Update sensor data to online server using Arduino/AVR/PIC microcontrollers.

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.
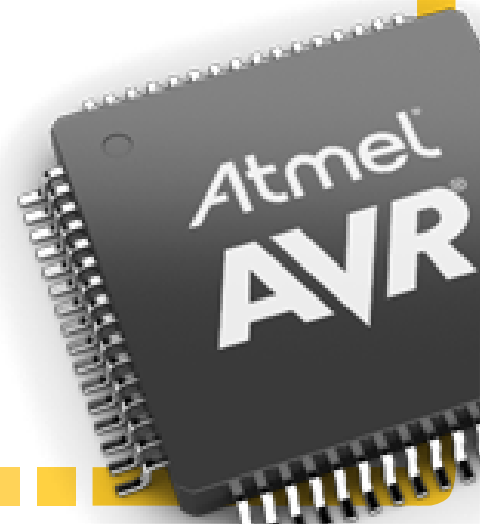
Module 5: Serial Communication (UART).

☐ 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 eneargy 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.

PIC Microcontroller

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.
☐ 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.

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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.
☐ 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 7: 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 8: Analog-to-Digital Conversion (ADC).

☐ Features of ADC in PIC microcontrollers.
☐ 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.

ARM 32 Bit Cortex-M3

Eligibility:
Diploma, B.tech, MCA, BCA (2nd yr to Final Yr) all Stream.

Prerequisites:

1. Basic knowledge of C Programming
2. Basics of Electronics.
3. Analog & Digital Electronics

Course Contents:

Module 1

☐ short session on c programming (loops, array, pointers, structures, class).
☐ Introduction to embedded systems and arm processorintroduction to stm32f103xx   G.microcontroller
☐ Details session on stm32f103xx bus architecture, clock architecture, peripheral structure.
☐ Introduction to stm32f103xx programming from scratch using keil uvision4 and embedded   G c++
☐ GPIO input output programming using leds and switch

Module 2

☐ GPIO programming using header and debugging using keil debugger
☐ Introduction to timers of stm32 and timer programming using header
☐ Introduction to usart of stm32 and usart programming using header
☐ Introduction to nested vector interrupt and interrupt programming
☐ Mini project on above

Module 3

☐ Introduction to layered programming , cmsis and hardware abstruction layer
☐ ntroduction to stm32cube mx software and configuration
☐ GPIO, timer, usart, interrupt programming using hal
☐ Introduction to communication protocols i2c and spi
☐ Programming oled i2c display using hal
☐ Introduction to adc in stm32 programming using hal
☐ Introduction to pwm in stm32
☐ Led dimming using stm32 pwm coding in hal
☐ Mini project on above

Module 4

☐ Introduction to parallel programming and real time operating systems

Project Implementation.
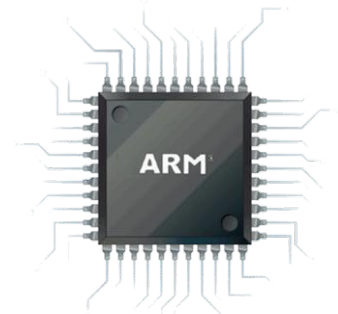
NUVOTON Microcontroller

Eligibility:
Diploma, B.tech, (2nd yr to Final Yr) EE, ECE, EIE, ME, CSE.

Prerequisites:

1. Basic knowledge of C Programming
2. Basics of Electronics.
3. Analog & Digital Electronics

About the Course:

Nuvoton Microcontroller is a processor with built-in memory and RAM and is manufactured by Nuvoton Technology Corporation. Nuvoton Microcontroller is used 8051 architecture compact microcomputer designed to monitor operations of embedded systems in mostly weighing industries, home appliances and devices. However, it is used in systems, where it is required to control certain processes, obtain information from external sources and to interpret collected information. All electronic devices that are used for household purposes comprises of microcontrollers because in every device there is a need to monitor processes or perform some actions.

Students of Electronics & Telecommunication, Instrumentation, Electrical, Mechanical, Computer Science Engineering, who wish to work in Nuvoton microcomputer area, can opt for this Nuvoton microcontroller training. Besides students, even working professionals working on other controller can enroll in the training course to attain proficiency in it. Candidates and professionals are imparted with the skills to work with Programmable Interface Controllers (Nuvoton microcontrollers) at both the hardware and software fronts. By undergoing training program candidates meet the embedded system industry requirements, as they learn to programme the electronic circuits to work for different tasks.
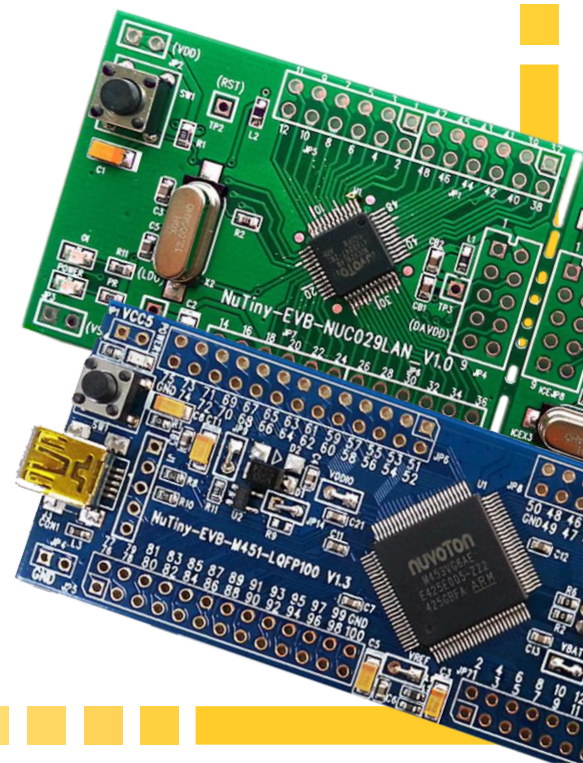
Course Contents

Module 1: Introduction.

☐ What is Embedded System
☐ Microprocessor vs Microcontroller
☐ CISC vs RISC

Module 2: Overview of Architecture of N76E003.

☐ Processor Core and Functional Block Diagram
☐ Description of memory organization
☐ Overview of ALL SFR's and their basic functionality

Module 3: programming Concepts.

☐ Addressing Modes & memory architecture
☐ Introduction to Keil uvision-5 compiler
☐ Introduction to micro c programming language
☐ Embedded C language implementation, programming,& debugging
☐ Library reference

Module 4: On-ChipPeripherals Study, Programming, and Application.

☐ Ports: Input/Output
☐ Timers & Counters
☐ Interrupts
☐ USART
☐ A/D converter
☐ Watchdog Timer
☐ Brown-out reset

Module 5: External Interfaces Study, Programming and Applications.

☐ LEDS
☐ Switches(Momentary type, Toggle type)
☐ A/D converter
☐ 16x2 LCD (8bit, 4bit, Busy flag, custom character generation)
☐ Matrix Keypad
☐ AC load drive using Relay

Project Implementation.

Industrial Automation Using PLC

Eligibility:
Diploma, B.tech, (1st yr to Final Yr) EE, ECE, EIE, ME.

Prerequisites:

1. Basics of Electronics.
2. Concept of Digital Logic

About the Course:

Industrial Automation using PLC is designed in such a way that the trainee can understand the function of PLC and its important in the industry. Basically in this course the student will learn to write program and hardware configuration using Siemens PLC. They will also learn to get the knowledge of basic controlling devices such as Relay Contactor Switches MCB RCCB Sensors, Timer Counter and other various controlling device used in the industry.
The PLC is a vital element in modern industry and this course provides a solid base for personnel to progress in industrial automation area.

Course Contents

Module 1: Introduction.

☐ What is Programable Logci Controller
☐ Different types of module
☐ Operation

Module 2: Input/output component of PLC.

☐ Familiarisation with different types of switches.
☐ Familiarisation with different types of relay.
☐ Familiarisation with contactor.
☐ Inching and Latching performance using all inputs.
☐ Jogging function
☐ Board wiring

Module 3: PLC hardware component

☐ Rack Assembly
☐ Power supply module
☐ Processor (CPU) module
☐ Interfacing(IFM) module
☐ DI/DO, AI/AO (SM)module

Module 4: PLC Programing Language.

☐ LAD
☐ FDB
☐ STL

Module 5: Graphical Programing using ladder logic.

☐ Exclusive OR operation
☐ Task on toggle switch
☐ Task on NO/NC operation
☐ Task on SPDT switch
☐ Task on Inching and Latching operation
☐ Task on motor Forward reverse
☐ Task on interlocking
☐ Task on Memory bit operation
☐ Task on Timer operation
☐ Task on Flasher operation

Module 6: Communication.

☐ PC to PLC
☐ Adapter
☐ Ethernet
☐ PLC to PLC
☐ PROFIBUS
☐ PROFINET
☐ CAN BUS
☐ MODBUS

Module 7: Interfacing.

☐ Interfacing field hardware with PLC
☐ controlling field hardware with PLC

Project Implementation.

VLSI Using EDA Tools

Eligibility
Diploma, B.tech, MCA (2nd yr to Final Yr) CSE, IT, ECE, ME, EE.

Pre-requisites

1.Basics of Electronics.
2.Solid states
3. Analog Electronics & digital Electronics

Get hands-on experience

☐ To be aware about the trends in semiconductor technology, and how it impacts scaling and performance.
☐ Able to learn Layout, Stick diagrams, Fabrication steps, Static and Switching characteristics of inverters
☐ Synthesis of digital VLSI systems from register-transfer or higher level descriptions in hardware design languages.
☐ To understand MOS transistor as a switch and its capacitance.
☐ Student will be able to design digital systems using MOS circuits and Design various digital circuits using VHDL programming.
☐ To understand FPGA design and ASIC

Course Contents

### Module 1: Introduction To VLSI System Design

☐ SSI,MSI,LSI,VLSI
☐ Real time applications
☐ Current control Vs Voltage Control Device
☐ Design Challenges
☐ System Level Requirements.

Module 2: Embedded Systems

☐ Design flow of VLSI
☐ Y chart in VLSI
☐ FPGA
☐ ASIC
☐ VLSI Applications

Module 3: MOS And CMOS based VLSI Circuits

☐ NMOS, PMOS, CMOS Gates
☐ Effect Of Capacitive Loading
☐ Minimizing Propagation Delay
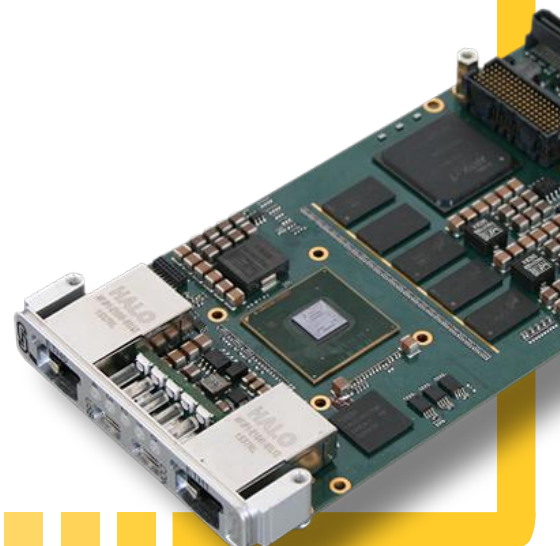
☐ Transistor Sizing For Performance
☐ CMOS Power Consumption
☐ Low Power Design Techniques
☐ Switching Characteristics of CMOS
☐ CMOS Interconnection Delays
☐ MOSFET Capacitance

Module 4: Circuit design using CMOS Technology

☐ NAND Gate, AND Gate
☐ NOR & OR Gate
☐ XOR & X-NOR
☐ Design for Boolean expression

Module 5: Transmission Gate

☐ Gate design
☐ Multiplexer
☐ Decoder
☐ Encoder
☐ Boolean Expression

Module 6: Digital Electronics

☐ Basic idea on digital electronics
☐ Circuit making using gates
☐ Combinational logic circuits
☐ Flip-flop
☐ Latch
☐ Counter
☐ Register

Module 7: VHDL (VERY HIGH SPEED INTEGRATED CIRCUIT HARDWARE DESCRIPTIONLANGUAGE)

Introduction to VHDL

☐ Entity and Architecture
☐ VHDL Component
☐ VHDL Designing Hierarchies

Concurrent VHDL

☐ Signal Assignment
☐ Concurrency
☐ When and with statements.
☐ Behavioral Model
☐ Generics.
☐ Data Types

VLSI

Sequential VHDL

☐ Process Statement
☐ If Statement/Case Statement
☐ Multiple Assignment
☐ Wait Statement
☐ Loop Statements

Library

☐ Libraries
☐ Packages
☐ Procedures
☐ Functions

Structural VHDL

☐ Component Declaration
☐ Port map
☐ Generic map
☐ Configuration
☐ Components in a package.

Test bench

☐ Different forms of test bench
☐ Text IO.

Module 8: Layout Design in Micro wind

☐ Introduction of Micro wind
☐ Design of CMOS inverter
☐ NAND & NOR Gate
☐ Boolean expression design

Project Implementation

3D Design & Printing (Solidworks)

Eligibility
Diploma, B.tech, MCA, (2ⁿᵈ yr to Final Yr) all Stream.

About the Course

Stands for Computer Aided Three-dimensional Interactive Application, Solidworks is the most powerful Knowledge based and widely used CAD (Computer Aided Design) software of its kind in the world. Solidworks has been created by Dassault Systems of France and is marketed & technicaly supported worldwide by IBM. The software is being used by designers, manufacturing facilities, assemblers, architects, industrial engineers etc. Have a Look around you. Everything and Anything you see had to be designed before manufacturing. The desk you are using, the chair you are sitting in, your daily use appliances, your car, your home etc.The list is almost endless. Nearly Everything is being designed on computers. Solidworks plays a major role in the design process.The software is being used by the majority of automotive and aerospace industries for automobile and aircraft products and its auxiliaries and tooling design. Thousands of Engineering companies throughout the world over are using Solidworks, thus making CATIA a Essential tool. The most commonly Solidworks users are generally Aerospace, Appliances, Architecture, Automotive, Construction, Consumer Goods, Electronics, Medical, Furniture, Machinery, Mold and Die, and Shipbuilding industries. Solidworks has played a major role in NASA's design of the various Space equipments. Beside this Solidworks has also been used as Vital tool for designing "jet-fighter" aircraft, aircraft carriers, helicopters, tanks and various other forms of weaponry extensively used by the Defense Sector. Solidworks is used throughout the North American and European continents, as well as Australia. Apart from this Solidworks is increasingly being used by Asian countries like India, Japan etc.

Course Contents

Module 1: Part Design.

☐ Introduction to Sketcher.
☐ Analyzing the Degrees of Freedom to the Sketch.
☐ Sketch Based Features.
☐ Dress up Features.

Module 2: Assembly Design.

☐ Introduction to Assembly Design.
☐ Importing Existing Part into Assembly Portions.
☐ Positioning the Parts at their Respective Positions.
☐ Defining the Assembly Constraints.
☐ Saving Assembly into the Database using save Management.

Module 3: Drafting.

☐ Introduction to Generative Drafting.
☐ Frame, Title Block and view Generation.

☐ Saving a Drawing Document and its Links.
☐ Adding Section views and cuts for Details Information.
☐ Annotations, Texts and Different Tools to Improve the View.

Module 4: Generative Shape Design (Surfacing).

☐ Wireframe Creation to Create Skeleton for Surface.
☐ Creation of Basic Surfaces.
☐ Surface Operation.
☐ Assemble, Relimit and Connect the Surfaces.
☐ Analyzing the Quality of Surfaces.

Project Implementation.

PCB Design & Fabrication

Eligibility
Diploma, B.tech, (1st yr to Final Yr) CSE, IT, ECE, ME, EE.

Pre-requisites

1.Basics knowledge of designing.
2.Basics knowledge of electronics Component.

Get hands-on experience

☐ Circuit Designing on EAGLE Professional.
☐ Live demo on photo bed making and silk screen printing.
☐ Live Professional PCB fabrication process.
☐ Make your own Arduino board.

Course Contents

Module 1: Software Portion.

☐ Eagle professional installation.
☐ Librari upgradation.
☐ Starting a new design
☐ Opening an existing design
☐ Setting up styles
☐ Setting up layers
☐ Adding items to a design
☐ Adding buses
☐ Adding components
☐ Adding shapes
☐ Adding text
☐ Adding pads
☐ Adding tracks
☐ Editing items to a design
☐ Creating and using Libraries
☐ Layes selection
☐ Creating garber file for printing

Module 2: Hardware Portion

☐ Photobed making using photosensitive emulsion and cromolyn.
☐ Image transferring from tracing printout to photobed.
☐ Screen printing on glass Epoxy board.
☐ Itching on Ferric chloride.
☐ Drilling on PCB
☐ Cleaning and lacquering.
☐ Component Soldering.
☐ Final Testing of your Arduino.

TRAINER PROFILE

1. Shiladitya Ghosh
2. Gokul Sarkar
3. Prodipto Das
4. Priya Sultaniya
5. Tapishnu Samanta

SHILADITYA GHOSH

Qualification: B.Tech (ECE)
Designation: Training Head
Year of Exp: 4

EXPERTISE IN

AVR, Arduino, PIC, Nuvoton, Automation, Robotics, Embedded System, PCB Design, Project Management.

CONTACT DETAILS

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GOKUL SARKAR

Qualification: B.tech (AEIE),M.Tech (ECE)
Designation: Department In-Charge
Year of Exp: 4

EXPERTISE IN

Automation, PLC, SCADA, PCB Design,
Analog/Didital Circuits, Designing.

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email: gklskr0@gmail.com

PRIYA SULTANIYA

Qualification: B.Tech (CSE)
Designation: Trainer
Year of Exp: 3

EXPERTISE IN

UI/UX Design – HTML, CSS,
JavaScript. Core Java, J2EE,
SQL Injection + Cross site scripting. MySQL

CONTACT DETAILS

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PRODIPTO DAS

Qualification: B.Tech (ECE)
Designation: Trainer
Year of Exp: 2

EXPERTISE IN

Web Development, Networking,
Python, Core Java, .NET, ORACLE

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TAPISHNU SAMANTA

Qualification: B.Tech (ME)
Designation: Trainer
Year of Exp: 3

EXPERTISE IN

AutoCAD, CATIA, SolidWorks,
3D Printing, IC Engine Designing

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GSSG TECH SOLUTIONS LLP

ISO 9001:2015 ORGANISATION

OUR SERVICES

- Home / Industrial Automation
- R&D Services
- PCB Design & Manufacturing
- 3D Design & Printing
- Engineering Training & Workshop
- Customized Project Development

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